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THE AGE OF HRM 4.0 – IS DIGITALIZATION OF HRM REQUIRED FOR THE STRATEGIC HUMAN RESOURCE MANAGEMENT ORIENTATION?

Abstract:
Strategic human resource management orientation (SHRM), as the company's philosophy of aligning human resource management (HRM) policies and practices with an organizational strategy for maximizing organizational results, is considered the highest level of the company's HRM development according to the contemporary HRM theory. At the same time, one of the trends in HRM is the digitalization of HRM activities, following the global trend of adoption of digital tools for increasing individual and organizational efficiency and effectiveness, leading to the age of HRM 4.0. However, it is interesting to reveal whether is there a relationship between HRM digitalization and SHRM orientation. Consequently, we developed two research questions: (1) Are digital HRM practices positively related to the SHRM orientation? and (2) Are some digital HRM practices more relevant for the SHRM orientation than others?

For providing empirically based answers to research questions, we utilized the CRANET 2021 dataset, covering 4495 organizations with more than 200 employees from 38 countries worldwide. We used nine indicators revealing the existence of digital HRM (manager self-service, employee self-service, HRIS, algorithm-based HRM, HR analytics, telework, digital learning, social media recruitment, social media selection) and five indicators for determining the SHRM orientation (HR manager's membership in the management board or equivalent; involvement of HR manager in the development of business strategy; existence of written HRM strategy; HR to employee ratio, the level of HR department performance evaluation) from the CRANET database. SHRM orientation was determined using K-Means cluster analysis, and relationships between variables were analysed using correlation and multiple logistic regression analysis.

The correlation analysis revealed that all indicators of digitalization of HRM processes have a positive and a significant relationship with SHRM orientation, implying that digital HRM practices are relevant for the SHRM orientation. The results of logistic regression indicated that the usage of manager self-service, algorithm-based HRM, HR analytics, telework, digital learning and social media selection increase the probability of organizations' SHRM orientation more than other explored indicators. The HR analytics, digital learning and social media selection were identified as the most relevant digital HRM practices for an organization's SHRM orientation.

Findings imply that HRM needs to pursue the global trend of digitalization to have the strategic leverage. To be on the optimal level of HRM development, organizations must not only employ their digital HRM assets to assure the maximum functionality for their internal customers, but keep the pace with technological advancements.

Keywords: strategic HRM, strategic HRM orientation (SHRM), digitalization of HRM, digital HRM practices, CRANET

1. INTRODUCTION

Strategic human resource management (SHRM), as the alignment of human resource management (HRM) goals, strategies and activities with organizational strategy to achieve organizational goals, is considered to be the ultimate stage in the evolution of HRM according to the contemporary theory (Pološki Vokić, 2016). Namely, the contribution of well-designed and implemented HRM activities to organizational performance has been documented numerous times (e.g., Collins & Clark, 2003; Jackson, Schuler, & Jiang, 2014; Schuler & Jackson, 2005). Simply, HRM combined with strategic orientation should be able to achieve strategic goals better (Chow, Teo, & Chew, 2013).

At the same time, technological development and information and communications technology (ICT), as components of the modern business environment, influenced the development of many business areas, including the HRM function which is "not 'spared' by new ways of performing activities and tasks" (Berber, Đorđević, & Milanović, 2018, p. 22). Nowadays, there is almost no HRM activity that has not been digitalized, leading to the age of HRM 4.0. HRM digitalization started with the digitalization of HR administration, data collection and analysis (on a higher level enabled by human resource information system – HRIS), HR planning and job analysis applications, internet recruitment, and e-learning. It continued with online testing and video interviewing, online performance goal setting and evaluation, and manager and employee self-service. Today, it is heading towards the algorithm-based HRM and the usage of artificial intelligence (AI) in HRM.

On the one hand, the SHRM literature emphasizes the importance of the integration between HRM and strategy to attain superior performance (Chow et al., 2013), and on the other hand digital economy has become a matter for HRM (Febrianti & Jufri, 2022). Therefore, it is interesting to analyse whether a digitalization of HRM is an important element of SHRM orientation. As Lepak and Snell (1998, p. 229) indicated two decades ago, "as firms continue to push the limits of IT to achieve organizational objectives, we would encourage SHRM researchers to examine how IT can function not only as a cost-reducing tool but as an asset that helps better control and coordination across organizational boundaries". Similarly, Meijerink, Boons, Keegan and Marler (2021) recently suggested that future research should answer the question of what will happen to organizations that are still in the process of becoming digital. Consequently, we have set two research questions as follows: RQ1 = Are digital HRM practices positively related to the SHRM orientation? and RQ2 = Are some digital HRM practices more relevant for the SHRM orientation than others?

Moreover, studies on the consequences of digital HRM are limited and mainly focused on its influence on users' attitudes and behaviours or on HRM-related outcomes such as HRM service quality and HRM effectiveness (Zhou, Liu, Chang, & Wang, 2021). Studies on the role of digital HRM for the SHRM orientation are even scarcer. Therefore, we strive to fill this research gap. Answers to our research questions are rooted in the theory of comprehensive SHRM perspective that integrates the best from universalistic, contingency, configurational and contextual approach to SHRM (see Martín-Alcázar, Romero-Fernández, & Sánchez-Gardey, 2005). Namely, Martín-Alcázar et al. (2005) suggest that the integrative explanation of SHRM could be useful as a reference framework for future research in the field of SHRM as it could foster the analysis of concrete HRM topics, such as certain policies or practices, in this case digital HRM practices.

In the theoretical background part of our paper, we shortly define concepts of SHRM orientation and HRM digitalization, as well as present the existing reflections and findings on the relationship between digital HRM and SHRM. In the empirical part of our paper, we explore the aforementioned relationship using variables from the CRANET 2021 database.

2. THEORETICAL BACKGROUND

2.1. SHRM orientation

According to Marler (2009), there are two overarching strategic perspectives related to SHRM. The first perspective indicates that SHRM contributes to an organizational competitive advantage when it fits or is in vertical alignment with firm-level business strategies – achieving a competitive advantage is contingent on whether HRM policies and practices fit the firm's business strategy. The second perspective is based on the well-known Resource-Based View (RBV) which focuses on strategic resources and capabilities within the firm as sources of competitive advantage (see Barney 1991; Prahalad & Hamel, 1994) – the HR function has the potential to produce human resources and organizational capabilities critical to achieving competitive advantage.

As Chow et al. (2013) explain, not only that an organization's strategic orientation is a vehicle that transforms the value of human capital into superior firm performance, but it also plays a critical role in linking HRM to performance. Consequently, the SHRM orientation encompasses three aspects needed for achieving coordination and integration between HRM systems and organizational goals achievement. It usually starts with HRM practices being designed to be strategic, meaning that they are critical for organizational outcomes. According to Wright and McMahan (1992), HRM practices are strategic when the pattern of planned human resource deployments and activities enables an organization to achieve its goals. The second aspect implies that HR professionals are becoming more aware and focused on strategic issues (Bissola & Imperatori, 2014). This requires from them to acquire new skills and capabilities – to master the theory and practice of forming and implementing strategy, in other words, to possess the knowledge and skills that enable them to engage in discussions of vision, values, purpose and intent (Ulrich, 1998). The final aspect indicates the strategic role of the HR department in the company, referring to its mandatory participation in strategic decision-making. As strategic

partners, as Ulrich named this potential role of the HRM function back in 1997 (see Ulrich, 1997; 1998), HR professionals have 'a seat at the table' when any kind of business decision is made (Jackson et al., 2014).

Unlike some topics (e.g., total quality management, business process reengineering) that have obtained faddish status in HRM over the years, SHRM has achieved staying power (Lengnick-Hall, Lengnick-Hall, Andrade, & Drake, 2009). Environmental turbulence increased the importance of SHRM, and the HR department is now considered to be a potent powerhouse for strategic management (Azmi, 2014). Moreover, SHRM orientation is particularly important for the organizational success (Karoliny, Bálint, & Tiszberge, 2015) in the time of changes in numerous HRM areas caused by strong digitalization and accelerated development of technology.

2.2. HRM digitalization

HRM digitalization refers to the usage of digital technologies for supporting or conducting HRM activities. Lepak and Snell (1998) were the first to write about the role and impact of IT on structural integration within HRM, and developed their famous three-part typology: (1) operational aspect – IT streamlining HRM operations and alleviating much of the administrative burden, (2) relational aspect – IT increasing the timeliness and service levels by providing managers and employees with remote access to HR databases and information, and increasing their ability to connect with other parts of the corporation as well as outside service providers, and (3) transformational aspect – IT enabling people to communicate across geographic boundaries and share information, eliminating barriers of time and space. Afterwards, researchers (e.g., Berber et al., 2018; Bissola & Imperatori, 2014; Parry & Strohmeier, 2014; Ruël, Bondarouk, & Looise, 2004; Strohmeier & Kabst, 2014) used this typology as the basis for writing about different types of HRM processes that can be ICT-based, resulting in the terminology of operational, relational and transformational e-HRM[1].

Today, many transactional (processing, controlling) and transformational (motivational, developmental) digital HRM solutions are employed. Transactional activities supported by digital HRM are for instance: (1) data administration, which consists of collecting (e.g., attendance registers, electronic work diaries), recording (e.g., personal data, work performance data), computing (e.g., payroll/benefits processing) and analysing data (e.g., HR analytics); (2) HR planning (e.g., workforce modelling), (3) job analysis (e.g., job analysis applications), and (4) recruitment (e.g., online recruitment through specialized and organizational websites, social media platforms, online applications). Transformational segments of digital HRM refer usually to the following HRM areas: (1) selection (e.g., online testing, video interviewing, chatbot interviewing, applicant tracking system, algorithmic selection decisions), (2) performance management (e.g., online performance goal setting, online performance evaluation, digital career management systems, digital talent management systems, onboarding chatbots), (3) training and development (e.g., video learning, online learning, e-learning, online assessment), (4) work design (e.g., algorithmic work distribution, remote work, online communication and collaboration, manager self-service, employee self-service), (5) internal communication (e.g., digital information provision, electronic newsletters, Intranet), and (6) employee well-being (e.g., online attitudes assessment, online psychological support, online workout programs).

As already revealed a decade ago (e.g., Parry, 2011, Parry & Tyson, 2010), a large proportion of transactional HRM activities is delivered exclusively or greatly by software solutions rather than HR administrators, making the transactional HRM 'technology-intensive' compared to its 'labour-intensive' characteristic from the past. Nowadays, algorithmic HRM and the usage of big data and AI in HRM (see Kurek, 2021; Meijerink et al., 2021) make the transformational HRM even more 'technology-intensive'. Eventually, all this leads to either the reduction of the number of employees in HR departments or to the transformation of HR department's role into a strategic partner one.

Abovementioned applications of HRM digital solutions imply that organizational investments in the digitalization of HRM processes could be grouped into efficiency- and effectiveness-based ones. Firstly, ICT was used for accelerating, simplifying and monitoring HRM activities, reducing HR administration costs and errors, as well as improving internal information sharing. Moreover, soon it became evident that the usage of ICT in HRM results in a better quality of services provided, improved work collaboration and smarter HRM decisions. Precisely, digital HRM solutions reduce administrative burden, increase the speed of realization, optimize procedures and lower costs (e.g., Berber et al., 2018; Strohmeier & Kabst, 2014). They also support HRM operations which leads to productivity increases (e.g., Berber et al., 2018; Parry, 2011; Parry & Tyson, 2010; Strohmeier & Kabst, 2014) and generates insights into crucial HRM issues that improve the quality of HR-related decisions (e.g., Bissola & Imperatori, 2014; Meijerink et al., 2021; Strohmeier & Kabst, 2014; Zhou et al., 2021). Positive outcomes of the adoption of digital HRM systems are as well increased transparency of HRM policies and greater trust in the HR department (e.g., Bissola & Imperatori, 2014; Burbach & Royle, 2014). As the final outcome, the digitalization of HRM processes supports organizational strategy, and consequently has an effect on organizational performance (e.g., Bondarouk & Ruël, 2013; Febrianti & Jufri, 2022; Parry & Tyson, 2010; Parry & Strohmeier, 2014; Ruël, Bondarouk, & Van der Velde, 2007; Strohmeier & Kabst, 2014; Zhou et al., 2021). It can be summarized that "HRM digitalization has the potential to simplify and enrich, steer and support, and shorten and speed up the pursuit of organizational and employee goal accomplishment" (Bondarouk, Parry, & Furtmueller, 2017, p. 114).

[1] Although the term e-HRM is largely used as a synonym for digital HRM, the concept of digital HRM is broader as it refers to any kind of digitalization of HRM, while e-HRM involves the use of web-based technologies for providing services regarding HRM (Berber et al., 2018).

2.3. HRM digitalization for the strategic leverage of HRM

As already mentioned, studies relating digitalization of HRM to SHRM are rare, especially empirical and quantitative ones, and have not yet provided solid evidence that digital HRM solutions have a part in the SHRM orientation of an organization. For example, upon the literature, Ruël et al. (2004) highlight that improving HRM's strategic orientation is one of the three types of e-HRM goals, together with improving administration and efficiency, and improving client orientation and service. However, after exploring five large international companies they concluded that links between the e-HRM content and the overall HRM strategy are not clear. Nevertheless, authors stressed that the most important e-HRM effect seemed to be the strategic integration of HRM with the company strategy, structure and culture.

Afterwards, Ruël et al. (2007) analysed the relationship between e-HRM assessment and HRM effectiveness through a quantitative study conducted in the Ministry of Internal Affairs of the Netherlands. Their e-HRM assessment included job relevance, quality of applications and ease of use, while HRM effectiveness was measured by more efficient HRM processes, higher level of service delivery and better strategic contribution. The results showed that the quality aspect of an e-HRM application has a positive and significant effect on HRM effectiveness, which according to authors, will lead to decreased costs, improved HRM service level and the elevation of the HR department to the role of a strategic partner. However, this study has been conducted in one public organization, and it is debatable if HRM effectiveness can be used as a proxy of SHRM orientation.

By composing a theoretical model, Marler (2009) concluded that a primarily administrative HR function is unlikely to become more strategic with the addition of e-HRM. However, only one year after, using ten case studies from a range of UK organisations, Parry and Tyson (2010) provided some evidence for the strategic impact of e-HRM through enabling HRM to support the organisation in achieving its strategic goals by improving efficiency and effectiveness. As evidence of the transformational impact of e-HRM, they offer the finding that HR staff had more time and information to support the organisation in achieving its organizational strategy when e-HRM was used. One year after, Parry (2011), using 2003 CRANET data, supported the hypothesis that organizations in which the HR function played a more strategic role would be more likely to implement e-HRM. However, this was supported for the 'use of e-HRM' but not for the 'sophistication of e-HRM'. Based on previous research, she arguments that the use of e-HRM has been linked with a transformation of the HR function into a more strategic one (as it enables spending more time on delivering the organizational strategy by changing the focus from administrative to HRM activities that have a strategic relevance), but her empirical data was not suitable for testing this premise.

Finally, results from the exploratory study conducted by Bondarouk and Ruël (2013) in a governmental organization indicated that e-HRM alone is not sufficient to transform the HR function into a strategic partner. The research revealed that e-HRM could lead to strategic reorientation if certain conditions such as the integration of modules and the willingness and readiness of users to acquire new skills are met. However, the research was conducted as a single case study in which HRIS has been implemented only 15 months before the analysis. Additionally, the strategic orientation was measured only by the perception of HR roles by different employee groups, not by any objective SHRM indicator.

Presented findings signal that there is still much to be revealed about the role of digitalized HRM processes in the SHRM orientation of an organization, which encouraged us to empirically assess the issue on a large-scale data set.

3. METHODOLOGY

3.1. Data and sample

In our analysis we used global data from the 2021 CRANET research. The CRANET research is the largest and most representative research of HRM practices in the world. It is a multi-country, multi-time-point survey undertaken regularly over the past 30 years by a collaborative network of scholars from over 40 countries (Parry, Farndale, Brewster, & Morley, 2021). It analyses developments in HRM in a national, cross-national, and quasi-longitudinal way to extend the range of internationally comparable evidence about policies and practices in the field (Parry, Stavrou-Costea, & Morley, 2011). The CRANET research enables the comparison of HRM policies and practices in a large number of countries across the globe and allows the examination of trends and changes in HRM over the years (Lazarova, Morley, & Tyson, 2008).

In the CRANET research, a unit of analysis is an organization, and the highest-positioned individual in the HR department is responsible for answering the questionnaire. The CRANET questionnaire inquires into HRM policies and practices through a set of common questions and covers all important areas – general HRM characteristics, resourcing practices, employee development, compensation and benefits, and employee relations and communication. For this analysis, parts of the questionnaire related to the digital HRM and SHRM orientation were used.

Our analysis includes 4,495 organizations with more than 200 employees from 38 countries worldwide. 67.4% of organizations in the sample are from the private sector, 20.5% from the public sector, 4.8% from the non-for-profit sector and 3.5% with mixed ownership. Regarding the number of employees, 37.8% of organizations in the sample have between 200 and 500 employees, 22.5% from 500 to 1000 employees, 18.7% from 1000 to 2500 employees, and 21.0% have more than 2500 employees.

3.2. Measures

Digital HRM indicators. To reveal the existence of digital HRM, nine indicators from the CRANET database were used: (1) usage of manager self-service, (2) usage of employee self-service, (3) usage of HRIS, (4) usage of algorithm-based

HRM, (5) usage of HR analytics, (6) presence of telework, (7) existence of digital learning, (8) social media recruitment and (9) social media selection. All digital HRM variables were ordinal (variables 1 to 5 and variable 7 were measured on a scale from 0 = 'not at all used' to 3 = 'used to a very great extent'; variable 6 was measured on a scale from 0 = 'not used' to 4 = 'used for more than 50% of employees; variables 8 and 9 were recoded to the scale from 0 = 'not used for any group of employees' to 2 = 'used for both managers/professionals and clericals').

SHRM orientation indicators. For the analysis, five variables were extracted from the CRANET database as indicators of an organization's SHRM orientation: (1) membership of HR manager in the management board or equivalent, (2) involvement of HR manager in the development of business strategy, (3) existence of written HRM strategy, (4) HR to employee ratio, and (5) existence of HR department performance evaluation. All SHRM variables were binary variables (0 = not the case / not present, 1 = the case / present), including the HR to employee ratio (1 = if the value was 1% or higher).

3.3. Data analysis

The first step of the analysis was the cluster analysis, which was performed by using SHRM indicators to differentiate two groups of organizations according to their SHRM orientation. K-means clustering was used, as one of the most common non-hierarchical, partitioning techniques which attempts to minimize the within-cluster sums-of-squares error and finds clusters that are externally isolated and internally cohesive (Cormack, 1971; Steinley & Brusco, 2008). Cluster analysis resulted in 56.3% of organizations in cluster 1 (organizations which do not have the SHRM orientation) and 43.7% of organizations in cluster 2 (organizations which do have the SHRM orientation). Clusters were used as a binary variable of SHRM orientation. Next, correlation analysis (Spearman's rank correlation coefficients) and multiple logistic regression were performed for revealing the relationship between various digital HRM indicators and the SHRM orientation. Statistical analysis was performed with IBM SPSS Statistics 25.

4. RESULTS

Table 1 presents correlations between nine indicators of digital HRM and the existence of SHRM orientation within the organization.

Table 1: Correlations between digital HRM practices and SHRM orientation

	1	2	3	4	5	6	7	8	9	10
1. Manager self-service		.658**	.427**	.408**	.390**	.244**	.319**	.080**	.144**	.247**
2. Employee self-service	.658**		.440**	.380**	.359**	.282**	.345**	.094**	.155**	.229**
3. HRIS	.427**	.440**		.394**	.504**	.221**	.318**	.036*	.127**	.204**
4. Algorithm-based HRM	.408**	.380**	.394**		.571**	.163**	.290**	-.023	.226**	.224**
5. HR analytics	.390**	.359**	.504**	.571**		.164**	.328**	.004	.188**	.261**
6. Telework	.244**	.282**	.221**	.163**	.164**		.340**	.132**	.105**	.237**
7. Digital learning	.319**	.345**	.318**	.290**	.328**	.340**		.122**	.156**	.281**
8. Social media recruitment	.080**	.094**	.036*	-.023	.004	.132**	.122**		.198**	.077**
9. Social media selection	.144**	.155**	.127**	.226**	.188**	.105**	.156**	.198**		.157**
10. SHRM orientation	.247**	.229**	.204**	.224**	.261**	.237**	.281**	.077**	.157**	

Note: ** $p < .01$; * $p < .05$

The correlation analysis revealed that all indicators of digital HRM processes are positively and significantly related with the existence of SHRM orientation. In other words, digital HRM practices are more present in organizations with the SHRM orientation compared to organizations without it.

To investigate which digital HRM practices predict the SHRM orientation better, we conducted a multiple logistic regression, and the results are presented in table 2.

Table 2: Logistic regression analysis of digital HRM practices as predictors of SHRM orientation

Predictors	β (SE)	Wald	Exp (β)	Model summary	
Constant	-1.08 (0.12)	13.387	0.341**	Omnibus test of model coefficients – χ^2, df	498.62**, 9
Manager self-service	0.22 (0.06)	0.877	1.247**	Hosmer and Lemeshow test – χ^2, df	14.69, 8
Employee self-service	0.06 (0.06)	1.281	1.057	Cox and Snell R^2	0.17
HRIS	0.06 (0.05)	8.283	1.061	Nagelkerke R^2	0.24
Algorithm-based HRM	0.19 (0.07)	36.297	1.214**	-2 log likelihood	2679.70
HR analytics	0.36 (0.06)	39.779	1.433**		
Telework	0.24 (0.04)	40.716	1.277**		
Digital learning	0.32 (0.05)	1.128	1.379**		
Social media recruitment	-0.06 (0.06)	15.256	0.942		

Social media selection	0.28 (0.07)	80.276	1.318**

Note: ** p < .01

The Omnibus test of model coefficients and the Hosmer and Lemeshow test indicate a good model fit. The Omnibus test of model coefficients indicates that the logistic regression model performed to determine the effects of various HRM digitalization indicators on the likelihood that an organization has a SHRM orientation was statistically significant (χ^2 = 498.68; df = 8; p < .01). The Hoshmer and Lemeshow test that assesses whether predictions made by the model fit with observed group memberships was insignificant (χ^2 = 14.69, df = 8; p = .066), which indicates that the data fit the model well. Cox and Snell R^2 and Nagelkerke R^2 reveal that the model is explaining between 17.0% and 24.5% of the variance in the SHRM orientation. Finally, the -2 log likelihood for the model is high (2679.70), which as well indicates that the model fits a dataset.

Results of the logistic regression, precisely significant odds ratio values (1.247 < Exp (β) < 1.433 p < .01), are demonstrating that manager self-service, algorithm-based HRM, HR analytics, telework, digital learning and social media selection predict an organization's SHRM orientation more than other digital HRM indicators explored. When looking at odds ratios, it is visible that the most relevant digital HRM practices for the SHRM orientation are HR analytics (Exp (β) = 1.433), digital learning (Exp (β) = 1.379) and social media selection (Exp (β) = 1.318). In other words, organizations which use HR analytics to a greater extent have 43.3% more probability of having a SHRM orientation, those that use digital learning to a greater extent have 37.9% more probability of having a SHRM orientation and those that use social media selection for selecting a wider range of employees have 31.8% more probability of having a SHRM orientation.

5. DISCUSSION

5.1. Theoretical implications

Previous research suggested that the use of digital HRM can help the HR function to increase its value by becoming more strategic (e.g., Bondarouk & Ruël, 2013; Parry, 2011; Parry & Tyson, 2010, Ruël et al., 2004; Ruël et al., 2007). However, the empirical evidence on the relationship between digital HRM practices and SHRM orientation is still inadequate, as emphasized by Boundarouk et al. (2017). Moreover, there is a lack of quantitative and larger-scale empirical research in the field. Finally, previous studies showed that the digitalization of HRM could have transformational outcomes (e.g., Parry 2011; Parry & Tyson, 2010; Ruël et al., 2007), but opposite conclusions are as well present in the literature (e.g., Boundarouk & Ruël, 2013; Marler, 2009; Ruël et al., 2004). All this raises the need for further exploration of the topic. Our research therefore adds to the discussion by empirically positioning digital HRM practices as an important element of SHRM orientation. Our results, based on a large-scale global data set, revealed that each digital HRM practice explored (manager self-service, employee self-service, HRIS, algorithm-based HRM, HR analytics, telework, digital learning, social media recruitment, social media selection) is positively and significantly related with an organization's SHRM orientation (RQ1).

Moreover, to the best of our knowledge, up to date there were no studies which compare the contribution of various digital HRM practices to an organization's SHRM orientation. Our study revealed that six out of nine practices explored – manager self-service, algorithm-based HRM, HR analytics, telework, digital learning and social media selection – are more relevant for having a SHRM orientation (RQ2). Organizations which have those practices have a higher probability of strategically oriented HRM.

Three practices – HR analytics, digital learning and social media selection – turned to be the most relevant for the SHRM orientation. The revealed importance of HR analytics is in line with the newest research on HR professionals' competencies (see Ulrich, Ulrich, Wilson Burns, & Wright, 2021). Namely, HR professionals are nowadays required to make decisions and solve problems based on the most relevant information. HR analytics, as the supreme stage of the transactional HRM activity of data manipulation, is therefore indispensable. Next, in the last few years, and additionally accelerated by the COVID-19 pandemic, the usage of digital tools for selection and learning is increasing. As accentuated by Kurek (2021), digital HRM technologies support organizations to manage vital HRM activities, such as selection and learning, more objectively and easily.

5.2. Managerial implications

Given the rapid development of technology, organizations must be informed about the importance of HRM digitalization for the positioning of HR function as a strategic partner. The findings of our research indicate that organizations need to pursue the latest trends in the field of digital HRM to obtain or retain the SHRM orientation. However, to enhance the SHRM orientation through the digitalization of HRM processes, organizations must be ready for digital HRM solutions, and managers and employees should acquire new technical and analytical skills (e.g., Bondarouk & Ruël, 2013; Parry, 2011). Therefore, the role of HR department is to foster the HRM digitalization, which includes training managers and employees to use e-HRM solutions, encouraging them to engage in further HRM digitalization, and ensuring that HRM digitalization processes are aligned with organizational needs. With such a comprehensive approach, HRM digitalization will have a transformational impact, observable through the existence of SHRM orientation and its gains.

Furthermore, our results imply which HRM digitalization processes organizations should focus on to achieve the maximal SHRM orientation. Manager self-service, algorithm-based HRM, HR analytics, telework, digital learning and

social media selection are the best options to begin with while digitalizing HRM practices, as those practices are the most relevant ones for the HR function to have a strategic position and strategic results.

5.3. Limitations

Limitations of our analysis arise from the CRANET data specifics. First, although CRANET data was used previously for the assessment of HRM digitalization (e.g., Berber et al., 2018, Parry, 2011, Strohmeier & Kabst, 2013) and SHRM orientation (e.g., Rimac Bilušić, 2022; Szierbowski-Seibel, Wach, & Kabst, 2019), the CRANET questionnaire collects selected digital HRM and SHRM indicators. Moreover, CRANET measures are relatively simple (Parry, 2011). A further limitation of the CRANET methodology is the problem of common method variance, as variables are collected from a single source (a representative of the organization). However, Berkery, Morley, Tiernan, Purtill and Parry (2017) argued that the CRANET methodology is following all techniques which are suggested to minimize common method bias, such as psychological and methodological separation of criterion and predictor variables. Precisely, as the validity of single-source measures depends on the expertise of the source responding to the questions and the clarity of items comprising the survey (see Berkery et al., 2017.; Huselid & Becker, 2000), the CRANET questionnaire was asked to be completed by the most senior HR professional in the organization (the presumption of the strongest expertise), and only factual (not subjective) data was collected. To assure that questions were specific and clear, questionnaires were piloted in each country of data collection. Despite numbered limitations, our analysis contributes to the both fields explored – digital HRM and SHRM orientation, as it was conducted on a large-scale international dataset.

6. CONCLUSION

The objective of our study was to shed further light on the relationship between HRM digitalization and SHRM orientation. The results indicate that HRM digitalization is important for achieving the ultimate stage in the evolution of HRM – the SHRM orientation. For that, the most relevant digital HRM practices are the usage of manager self-service, algorithm-based HRM, HR analytics, telework, digital learning and social media selection. Our study provides empirical support for the relevance of HRM digitalization for strategic HRM outcomes, as well as gives insights into digital HRM practices that could be considered a priority while digitalizing HRM.

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THE DEVELOPMENT OF REGIONAL AND LOCAL HR PRACTICES IN HUMAN RESOURCE MANAGEMENT DUE INTERNATIONAL COMPARISON ON THREE CONSECUTIVE CRANET RESEARCHES

Abstract: With our present empirical research and conference presentation, following the contextual research paradigm proposed by Chris Brewster, we are looking for an answer to where the human resource management practice of organisations in Central-Eastern Europe and Hungary is at the moment, compared to global trends and what characteristics it shows. In addition to the theoretical approaches to human resource management, we use the conceptual framework provided by cultural clusters and comparative economics, examining their mutual influence and connections in explaining the phenomena**.**

Keywords: HRM, Cranet, CEE-region and Hungary

1. INTRODUCTION

People – as one of the 4Ms (money; methods; markets; men) – are an essential element of any organization. Their characteristics and the way they behave in their work play a privileged role that makes some organizations and institutions more successful while others less so.

With the spread of globalization, the transfer of management governance principles, models (e.g., HR) and technologies between companies and government institutions (e.g., EU rules and laws) has become an increasingly common practice. Inevitably, this situation has placed the question of convergence (similarities) and divergence (differences) between the practices of societies, nations, institutions and companies at the center of management research.

The study of convergence and divergence is not a new topic for human resource management. Proponents of the universalist approach believe that advances in technology (Kerr et al., 1960) are blurring cultural differences and that this is driving convergence across both nations and sectors. The spread of globalization has made this theory increasingly widely accepted also in the field of HR.

On the opposite pole, divergence advocates emphasize national, cultural (Hofstede, 2008) and sectoral differences (Ronen et al., 1985). This tendency emphasizes the importance and specificity of local culture, business, institutions and labour market when applying management techniques. Differences can be observed, in particular, in the extent of the involvement of trade unions and governments in the employee relations system. The changes of the similarities and differences observed between countries also vary, which can be attributed to the specific institutional factors in each country.

In 1995, Cranet founder Brewster published a landmark article questioning the universality of American HRM and mentioning the raison d'etre of a European HRM model. This network of researchers was the first *to provide academic evidence on the contextual nature of HRM* (Dewettinck & Remue, 2011). Many have discussed the functions and evolution of HR in relation to the major management culture blocs (American, Asian and European) (Brewster et al., 2004). A new phenomenon in this line of discussion is the presentation of HR practices in Central and Eastern European countries (former socialist countries) (Kazlauskaite, 2013).
The methodology of the Cranet survey (Brewster–Hegewisch, 1994) follows the standards established at the beginning, with only minor changes over the three decades. Today, the non-for-profit Cranet research network, which brings together researchers from more than 40 countries around the world, plays a prominent role in the study of international (global, regional and local) developments in HRM practices.
In 2003, researchers from the Faculty of Business and Economics of the University of Pécs, representing Hungary, joined the network, which was joined in 2011 by researchers from MATE University (formerly the Faculty of Economics and Social Sciences of Szent István University) (Karoliny & Poór, 2019). The authors of this paper are now the organizers of four rounds of surveys, which have provided the basis for the findings of this paper, drawing on international databases.

2. DISCUSSION POINTS OF COMPARATIVE HRM

In order to interpret the empirical data on regional and local HRM, it is worth briefly outlining the latest trends in the debate mentioned in the introduction (divergence, convergence, universalistic vs. contextual approaches).
According to Gooderham (et al., 2019), awareness of the institutional context is notably absent in the most influential areas of HRM. This lack of attention to the external context has resulted in related articles, studies and research often not reflecting reality. Gooderham (et al., 2019), cited earlier, suggests that it is worth working within a contextual framework embedded in economic institutional theory to address the problem areas of HRM. The authors suggest that this methodology should form the basis for comparative research approaches to HRM in the future. The framework has been validated with publications on institutional comparative HRM from the CRANET research network over the last decade.
According to Parry (et al. 2021), the most fundamental issue in international comparative HRM and at the same time the most important subject of academic debate can now be identified in the relationship between the paradigms of universalism and contextualism. The universalistic approach seeks to build generalizable knowledge, whereas the contextual perspective seeks to achieve full understanding by fully understanding the context and exploring the 'whys". This issue is most acute when we want to transfer social science models from one society (country) to another and interpret the results. It is then a critical phenomenon that special attention needs to be paid to scientific and research constructs when crossing national borders, otherwise data and phenomena will not be properly analyzable and comparable. Today's analyses are becoming more complex as local specificities are taken into account, but the all-encompassing complexity is a challenge that will strengthen theory, and the appreciation of management practices embedded in context will also be deeper, as they are more likely to work in much more diverse constellations. Compared to universalistic approaches, although we must strive to take many more factors into consideration, there will be fewer constraints on the usability and practicality of the theories. Context needs to be considered at several levels: macro-, meso- and micro-, i.e., concepts need to be examined at the level of regions, nations, sectors, organizations, functions and units.
Stakeholder interests, situational factors and, from a broader perspective, economic, cultural and political forces are also areas to be considered in relation to context, which points to the different perspectives of the Harvard and Michigan models of HRM, which had already been addressing key issues of context more than 30 years ago. Yet despite the long experience of these perspectives, for a long-time researchers ignored the study of context in international comparative research. The "best practice" HRM solutions from the USA have gained ground all over the world, and academic journals have been most open to this topic, on the grounds that strategic HRM in particular suggested implications for managers who had the staff to select and implement the strategic approaches suitable for them. As a result of this effort, the universalistic approach gained ground, which sought to demonstrate a direct link between best practice practices and organizational performance. Since it was seen that these practices were indeed being effectively and successfully applied in the US, they were generalized and spread around the world as good practices. Nevertheless, a number of researchers have emerged who insisted that a deeper understanding of the external environment of the firm is an important issue (Schuler, Jackson, Farndale, Paauwe) because they believe that firms do not operate in a vacuum. Given the hegemony of the US HR systems globally, it can be seen that the universalistic strategic HRM currents continue to prevail; however, there is now a smaller but growing academic cluster and research interest with a focus on context, which is predominantly at national, country level. Thus, we can already see the growth of academic interest and the development of the topic in academic discourses, in various periodicals and conferences. For example, Brewster has attempted to identify a "European HRM" by looking at influencing factors such as culture, laws, economic trends, ownership patterns, international context (European Union) and national HRM contexts (education, labour market, trade unions). However, this does not mean that researchers who also focus on context discard or ignore universalistic approaches, they merely examine them from a contingency perspective (Parry et al. 2021).

For example, Paauwe & Farndale (2017) developed the contextual strategic HRM framework, which structured the framework for the new approach based on the following contexts (see Figure 1):

- competitive mechanisms: organizational position in the competitive market, technology, products, services;
- institutional context: regulations, society, politics, legal context;
- heritage mechanisms: structure, systems, human capital;
- organizational capabilities: efficiency, flexibility, quality, innovation;
- legitimacy: legal compliance, fair pay, working hours, participation.

The above factors set the context in which policy makers choose strategic directions on employment issues, in the logic of Figure 1. This choice will affect the evolution of HRM systems and capabilities, which will influence the work of employees and ultimately determine HR outputs, organizational performance, employee well-being and societal well-being as well.

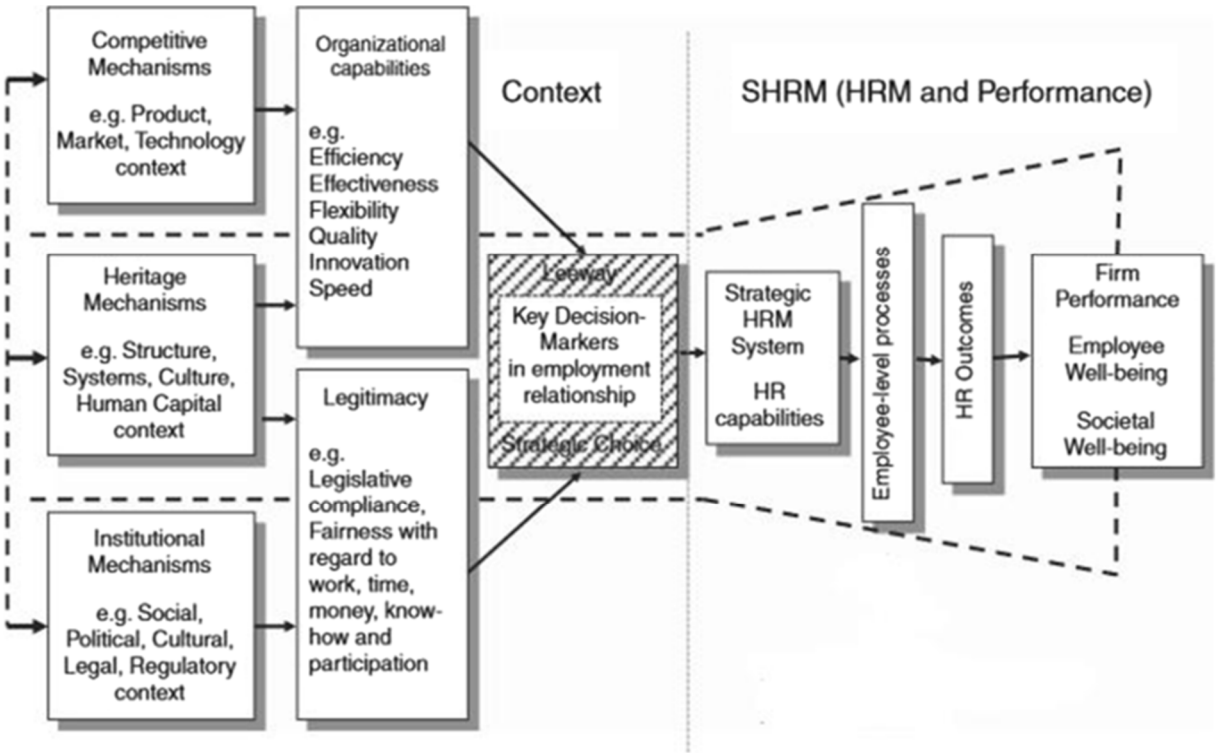

Figure 1: Contextual strategic HRM framework

Source: Paauwe J. & Farndale E. (2017) Strategy, HRM, and performance: a contextual approach. 2nd ed. Oxford: Oxford University Press; 2017. p. 103.

The study by Brewster & Haak-Saheem (2020) focuses on comparative human resource management (HRM). It reveals differences between nations in the way they manage their human resources. In the context of increasing globalization, the study highlights the importance of context for HRM outputs and organizational performance. To understand differences between countries, two basic concepts need to be understood and applied: the notions of cultural and institutional differences, and the notions of convergence and divergence. If these factors and phenomena are also measured and analyzed, they will contribute to a better understanding and utility of the main findings on comparative HRM. According to the authors cited, cultural and institutional explanations are valuable in a comparative approach to HRM, while directional convergence of trends is evident, but end convergence remains unrealistic.

2. EMPIRICAL ANALYSIS

In our empirical analysis below, we seek answers to the following questions:

a. How has the strategic position of HR evolved in the world and in the Central and Eastern European region?
b. How has the effectiveness of HR work changed in different regions of the world, has it increased? Are there more employees per HR worker today than in the two previous rounds of the survey?
c. How has the practice of training-development, its importance in terms of the number of training-development days per capita, evolved, changed in one direction or another in the world and in the Central and Eastern European region?

2.1. The sample

In the three Cranet survey cycles examined (2008, 2016, 2021), the number of countries and organizations participating in the survey were almost similar, with 6,509 organizations from 39 countries participating in 2021, 6,800 from 35 countries in 2016 and 6,415 from 33 countries in 2008. Of these, 11 organizations from 11 countries belonged to the region Central and Eastern Europe (CEE) in 2021, 1,270 organizations from 10 countries in 2016 and 1,735 organizations from 10 countries in 2021, compared to 1,203 organizations from 9 countries in 2008. Of these, Hungary (HU) was represented by 161 organizations in 2021, 273 in 2016 and 139 in 2008.

Table 1: Respondents by organizations and countries

	2021				2016				2008			
	CEE	Non-CEE	HU	Total	CEE	Non-CEE	HU	Total	CEE	Non-CEE	HU	Total
Responses	1270	5239	161	6509	1735	5065	273	6800	1203	5212	139	6415
Participant countries	11	28		39	10	25		35	9	24		33

Source: Authors own research

In terms of the breakdown of organizations by ownership, the private sector represented the largest share (almost three quarters of respondents) in all three survey cycles, and this was similar in the CEE region and Hungary.

Table 2: Respondents by sectors

Sector	2021				2016				2008			
	CEE	Non-CEE	HU	Total	CEE	Non-CEE	HU	Total	CEE	Non-CEE	HU	Total
Private sector	71,6%	72,0%	74,2%	71,9%	71,7%	68,8%	63,8%	69,6%	76,8%	73,5%	68,8%	74,1%
Public sector	23,8%	18,7%	19,5%	19,6%	25,2%	21,8%	32,8%	22,7%	18,2%	18,6%	22,5%	18,5%
Not for profit	1,5%	5,8%	3,1%	5,0%	1,3%	5,3%	3,0%	4,3%	1,7%	5,8%	1,4%	5,0%
Mixed (public and private sector)	3,1%	3,6%	3,1%	3,5%	1,8%	4,1%	,4%	3,5%	3,3%	2,1%	7,2%	2,4%

Source: Authors own research

About a third of respondents were from the SME sector, i.e., organizations with 250 or fewer employees. In the CEE region, their share was significantly higher, 46% in 2021, 44% in 2016 and 60% in 2008.

Table 3: Respondents by organization size

Headcount (people)	2021				2016				2008			
	CEE	Non-CEE	HU	Total	CEE	Non-CEE	HU	Total	CEE	Non-CEE	HU	Total
1-100	8,9%	11,5%	2,5%	11,0%	10,7%	8,6%	30,4%	9,2%	29,5%	11,5%	47,3%	14,9%
101-250	37,5%	23,6%	32,3%	26,2%	33,1%	19,0%	21,1%	22,7%	31,0%	18,1%	17,6%	20,5%
251-1000	37,1%	37,1%	38,5%	37,1%	38,7%	40,7%	29,6%	40,2%	27,8%	43,9%	19,1%	40,9%
1001-5000	13,9%	18,8%	23,0%	17,8%	14,1%	22,8%	14,4%	20,5%	10,3%	19,1%	15,3%	17,4%
Above 5000	2,7%	9,0%	3,7%	7,8%	3,4%	8,9%	4,4%	7,5%	1,4%	7,4%	,8%	6,3%

Source: Authors own research

2.2. Evolution of the strategic role and effectiveness of HR

When looking at the organizational position of HR, we found that the proportion of organizations with an HR department was highest in the 2016 survey at 90.6% but was just below that, at 89.4% in the 2021 survey. The proportion of respondents with an HR department is slightly lower in all three surveys in the CEE region. It was highest in 2021 at 83.6%. Considering the proportion of firms in the SME sector, this result is impressive, but it should be forgotten, either, that in such a survey, respondents are more likely to be from companies where HR activities are given more attention and importance.

The proportion of organizations with an HR manager or HR person in charge in the top management of the organization showed a small but steady increase from a relatively high level (67.3%) in the overall sample, reaching almost 70% in 2021. The proportions in the CEE region are not only lower in proportion in this respect, but the trend of change is also

fluctuating, with 57.2% of respondents in 2021, 51.3% in 2016 and 61.9% in 2008 claiming that HR is a top management position in their organization. In 2021, the rates in Hungary are even lower than those in the CEE region (52.5%), while in 2008 they were the opposite, higher (57.3%).
Some level of HR involvement in shaping business strategy across the overall sample shows similar figures in all three surveys, with around 90% of organizations involving HR to some extent in shaping business strategy. In addition, around half of the responding organizations stated that they had involved HR in the development of business strategy from the very beginning. Again, the proportions in the three surveys show only deviations in a margin of error (49.0%; 50.8%; 49.4%). In terms of some level of involvement, the organizations in the CEE region fall just short of the results reported in the overall sample, with rates ranging from 88% to 89% in all three surveys. Hungarian organizations, particularly in the 2016 survey, were significantly behind (70.7%). In comparison, the last survey shows a strong increase (83%), with the proportion of CEE and national organizations involved in strategy development from the outset already slightly above the overall sample (51.5% and 52% vs. 49%).

Table 4: Presence and strategic importance of HR activities /departments

Presence of HR department	2021				2016				2008			
	CEE	Non-CEE	HU	Total	CEE	Non-CEE	HU	Total	CEE	Non-CEE	HU	Total
Is there an HR department?	83,6%	90,8%	75,0%	89,4%	81,5%	93,6%	80,1%	90,6%	65,1%	88,5%	59,7%	83,7%
HR participation in senior managen	57,2%	72,9%	52,5%	69,8%	51,3%	67,8%	57,3%	63,5%	61,9%	68,6%	87,5%	67,3%
Is there a written HR strategy?	51,2%	63,4%	52,5%	61,0%	61,1%	70,3%	55,1%	67,9%	39,2%	56,2%	43,3%	52,7%
HR participation (at some level) in shaping the business strategy	88,1%	89,7%	83,0%	89,4%	88,7%	90,7%	70,7%	90,2%	88,0%	91,1%	91,3%	90,5%
Involvement of HR in shaping the business strategy from the beginning	51,5%	48,5%	52,0%	49,0%	43,1%	53,4%	44,0%	50,8%	46,7%	50,1%	60,9%	49,4%

Source: Authors' own research

Regarding the change in HR efficiency, the data for the whole sample show that there is a significant shift in the number of employees per HR person over the period under review. However, instead of an increase in efficiency expected by many, the overall sample showed a sharp decline, especially for non-CEE respondents. In 2008, this indicator was 121.4 for the overall sample, falling to 79.6 in 2016 and 50.5 in 2021. The indicator calculated for the CEE region, however, shows a very different picture from this trend, with values fluctuating only slightly over the three survey cycles, ranging from 84.7 to 90.8. In Hungary, we see lower values compared to the CEE region: 62.3 employees per HR in 2021, 66.5 in 2016 and 71.4 in 2008, which is closer to the total sample values than to those of the CEE region.

Table 5: Number of employees per HR person

	CEE	Non-CEE	HU	Total
2021	84,7	49,5	62,3	50,5
2016	90,8	77,6	66,5	79,6
2008	86,1	123,8	71,4	121,4

Source: Authors' own research

2.3. Trends of change in the practice of training and development

Regarding the importance of training and development in the overall sample, the first two rounds under study are characterized by a slight decrease in its importance in terms of average annual training days from 2008 to 2016. On the other hand, it can be observed that there has been little change in the ranking of importance among the main groups of employees: the number of annual training days is highest for intellectual (professional) staff (11.6-7.97 days/year) and then for managers (between 7.5-11.6 days/year), while it is lowest for administrative and blue-collar workers (below 7 days/year).
The latest survey figures for the full sample show, on the one hand, a strong increase in training and development, averaging more than 5 days per year, while the trend of a slight (less than one day) decrease in the number of days spent on development for administrative and/or blue-collar staff compared to managers and professionals continues. The combined effect of these is to bring the annual training day figures for the overall sample to over 11 days/year and 12 days/year respectively – for the overall sample!
The importance of training and development in the practice of CEE regional organizations in the three survey rounds is similar to the overall sample in that fluctuated in a similar direction. That is, compared to 2008, the average annual number

of training days decreased in 2016 and then increased sharply in 2021. While the rankings of the employee groups also show similarities, their absolute values in all categories are below the averages for the full sample. The largest gap is in the number of training days offered to administrative and/or blue-collar workers: around only 5.5 days/year in the first two rounds, rising to only 8.5 days/year by 2021.
Based on the indicators of training development expressed in annual average days, the Hungarian practice indicates a less developed level even within the specificities of the CEE region, so that the change in the last round can hardly be described as an improvement, since only a relative strengthening can be identified.

Table 6: Training and development days per year, by employee groups

Position categories	2021				2016				2008			
	CEE	Non-CEE	HU	Total	CEE	Non-CEE	HU	Total	CEE	Non-CEE	HU	Total
Leaders/managers	10,72	12,53	7,52	12,18	7,19	7,63	7,65	7,51	8,96	9,23	6,81	9,17
Professional employees					7,37	8,21	7,59	7,97	9,29	12,35	6,63	11,59
Administrative and/or manual workers	8,44	11,95	6,92	11,27	5,40	7,34	4,67	6,80	5,61	7,29	3,53	6,89

Source: Authors' own research

3. CONCLUSIONS

In this study, changes in HR practices over the last decade and a half (2008-2021) are presented along some characteristics that can be compared using the Cranet database. Looking at the preceding period, we found that the *HR practices of* the CEE region – the former socialist countries – which were once very similar, underwent *transformations that are substantial but not of the same direction and magnitude by the beginning of the post-millennium years* (Poór et al., 2018). This assessment is confirmed by the results of the analysis conducted by the Morley & Heraty (2019). In many respects, the changes in Hungary at that time appeared to be faster and more pronounced than in other CEE countries. A striking feature of the CEE characteristics of HR practices in this region was that, *unlike in all the other groups of countries studied, the key decision-makers in HR policies* are direct (upline) *managers*. A similar view was reached by the research team coordinated by Kazlauskaite (2013).

The increasingly visible characteristics of the SMEs towards the end of the second decade of the new millennium were found to be similar to the distinctive elements of the US-rooted HR model typically followed by the Anglo-Saxon countries, different, divergent from the characteristics of the (Western) European HR model (e.g. strong legitimacy of trade unions, tradition of collectivism). The latter indicated, on the one hand, that after the enlargement of the EU, the initially non-uniform European HR model diversified further. On the other hand, the universal paradigm of the CHRM was further supported by the existence of a link between certain (HPWP) HR solutions – in this case HR practices based on co-decision by managers and HR practitioners – and organizational performance elements (Karoliny & Poór, 2019).

The issues of the initial directions and areas of change examined in this study further nuance our findings so far. In fact, looking at the responses of the *whole sample,* we find that the directions and rates of change are varied, since:

- while the person in charge of HR is in a high proportion of cases of senior management, this position is slightly but gradually *strengthened* over the three rounds of the survey;
- for the vast majority of respondents, HR is involved to some extent in the strategy making process, and this is the case for an almost *unchanged* proportion (~50%) of respondents across the survey rounds;
- there is a significant shift in the change in HR efficiency, but not the expected increase, but a *significant decrease* in the number of employees per one HR person;
- the importance of training and development, expressed in terms of the average number of training days per year, *fluctuated* over the three periods studied, with *a slight decrease in* the first period and then a relatively *sharp increase*.

For the aspects examined, the changes in the CEE region were similar to the overall sample in some places, while in other areas they varied significantly in direction and extent, but also showed similar features, as

- the person in charge of HR is not only a member of senior management at a *narrower range* of respondents, but *the trend here is* also *uneven*;
- the proportion of HR respondents involved in the strategy development process shows a very *similarly high level* of participation at some level to the results reported in the overall sample,

- the HR staff's efficiency indicators (measured by the number of staff they serve), unlike those of the sample as a whole, *show only a slightly fluctuation around the medium level* (84.7-90.8) over the three survey cycles*;*
- the change in training and development in this region *has* not only *fluctuated in a similar direction to* the overall sample, but the importance *rankings* of the employee groups *are the same*, while their *absolute values in all categories* remain below the overall sample averages.

Thus, while changes in many areas of HR practices are influenced by a wide range of factors, their direction, extent and levels of specificity of practice reflect the dynamic processes of rebalancing.

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NEW WAYS OF MANAGING INTERNATIONAL HUMAN RESOURCES IN TIMES OF MULTIPLE GLOBAL CRISES AND DEGLOBALIZATION

Abstract: First, we outline the general trends of globalization. We point out how this has influenced International Human Resource Management (IHRM) trends. After that, we briefly refer to how COVID -19 affected the HR practices of foreign-owned companies. In the next part of our article, we will show how similar the HR practice was in the case of domestic and foreign-owned companies in Hungary in the light of our research conducted during the first and second wave of Covid 19. In our study, we try to show that there is a difference between the HR practices of domestic and foreign-owned companies and organizations.

Keywords: Globalization, IHRM, MNCs, COVID-19

INTRODUCTION

According to the official theory, the Sars-Covid virus that started the pandemic is believed to have first appeared in China in December 2019 and then spread to other parts of the globe. In just two months, it had spread to 114 countries and had already claimed the lives of over 4,000 individuals. In March 2020, the WHO made the pandemic's existence known. Around the time that governments in Europe and other regions started to implement policies to halt the virus. The virus-fighting efforts over the following two years had a profound effect on global trade, and other parts of economy and working life. Some economic sectors have been very seriously affected (e.g. catering, tourism, personal services, passenger and freight transport). On the other side, some industries have started to expand (e.g. the IT sector, PC sales, online services, sales of health masks, disinfectants, vaccines). At the same time, there was no economic branch that was not affected in some way by the pandemic or the measures taken to curb it. The organization of work and the retention of employees and key talents in the radically changed environment caused a serious challenge for the HR departments of businesses and other organizations.
In this article, we present the results of our empirical research carried out during the period of Covid-19 pandemic. The research analyzes the disruption meant by the pandemic for the HRM practices of organizations and the reactions HR managers take to stand on the arisen challenges. The results published in current paper are only a part of the entire research. In this article we have been focusing on a comparison of HRM practices of domestic and foreign-owned companies during the pandemic.

1. LITERATURE REVIEW

Human resource management has undergone significant development and change over the past century, which was generated by the disturbances provided by the everchanging environment (Dajnoki-Héder, 2017). However, the first appearances or traditional HR functions such as performance evaluation, employee selection, motivation, development or retention can be traced back to the early 1900s, they gained real importance only in the modern era. Personnel

administration has gradually been replaced by strategic human resource management, where employees' competencies are of particular importance (Poór-Roberson, 2003). Strategic HRM focuses on how employees are hired, managed, and developed to help the company achieve its strategic objectives (Armstrong & Taylor, 2020: 3). This was disrupted by the pandemic, which forced managers to devise radical, novel solutions in all aspects of HRM, including hiring, performance management, development, training, compensation, safety, and health management (Hamouche, 2021). Strategic agility is required to ensure the achievement of corporate goals, especially during times of uncertainty (Liu, Lee & Lee 2020). The pandemic presented a major challenge that could jeopardize the accomplishment of organizational goals.

Several sources however claim that Covid-19 only accelerated existing HR patterns rather than disrupting them (Caligiuri et al., 2020; Gartner, 2021; Parry et al., 2021; Ulrich, 2021). The COVID-19 crisis has highlighted the significance of the global viewpoint, according to Budhwar and Cumming (2020). They contend that the pandemic demonstrates the unusual extent of globalization. For today, numerous theoretical (Collings et al, 2020; Liang et al, 2022; Przytuła et al., 2020) and empirical studies (Kalogiannidis, 2021; Gigauri, 2020; Adikaram et al., 2021) can be found in the scientific literature on the subject matter. Particularly in situations like the resolution of the pandemic situation, studies from different regions can provide crucial local insights and aid in the discovery of global solutions (Sipos et al., 2020:73).

2. RESEARCH METHODOLOGY

The KoronaHR research group was founded in Hungary in May 2020, a few months after the first European diseases brought on by COVID-19. Gradually, other researchers from the Central European countries joined. The first phase of our online survey was conducted between June 12 and July 31, 2020, followed by the second phase between August 1 and November 15, 2020, and the third phase between March 1 and April 20, 2021. During the first period we collected 508 evaluable questionnaires, during the second period, we received 1,014 analyzable responses from organizations, mainly companies and institutions, and finally, in the third research phase, 288 organizations honored us with their answers. Our empirical investigation is basically ex-post (Usunier et al., 2017), i.e. relying on opinions and factual data related to the observation period, we examined the impact of the crisis caused by Covid-19 on the human resource management practices of the domestic corporate/institutional sphere. However, based on the geographic distribution of the respondents, the research does cover the whole country even though it is not representative. The responses collected were analyzed with multivariate statistical methods using SPSS data analysis software.

3. DISCUSSION AND ANALYSIS

In this part of our article, we present the similarities and differences in the HR practices of domestic and foreign-owned companies in Hungary in the light of the research conducted during the first and second waves of Covid-19.

In the examined sample, nearly half of the 1,401 responding organizations represent the domestic private sector, more than a quarter are foreign or mixed-owned, while nearly a fifth belong to the state/municipal sector.

Table 1: Composition of the sample

	Frequency	%
State, municipal	269	19,2
Domestic private	697	49,8
Foreign or mixed	387	27,6
Non-profit	48	3,4
Altogether	1401	100,0

Source: authors' own compilation

3.1. HYPOTHESES TESTING

H#1: We assume that there is a significant difference between the HR practices of domestic and foreign-owned companies. Foreign-owned companies tend to have an HR department, and human resources are more likely to be considered of strategic importance, and they also pay more attention to crisis management, so they tend to have a crisis plan and in a crisis situation, they attach more importance to professional HR work.

The table below shows that only one fifth of overseas enterprises lack an HR department, compared to nearly three-quarters of local private sector companies. HR departments with a large number of employees are also primarily found in foreign companies and in state/municipal organizations, which can of course also be attributed to the fact that in these two categories there is a higher proportion of organizations with a large number of employees. The relationship between the variables (owner – HR department size) is significant (Chi-square test), the relationship is medium strong (Cramer's V= 0.317).

Table 2: Existance and size of HR department

Size of the HR department	Owner				Total
	State, municipal	Domestic Private	Foreign or mixed	Non-profit	
No HR department	26,6%	73,0%	19,6%	66,0%	49,0%
1-5 people	25,8%	19,9%	36,6%	27,7%	25,9%
6-10 people	13,1%	3,0%	15,4%	6,4%	8,5%
11-30 people	19,4%	1,9%	14,0%		8,5%
Over 30 people	15,1%	2,3%	14,5%		8,1%
Total	100,0%	100,0%	100,0%	100,0%	100,0%

Source: authors' own compilation

The results regarding the action plan developed for the pandemic situation are shown in the following table. It can be seen that while one-fifth of domestic private sector companies do not have any action plan and do not see it as necessary, only 4% of foreign companies said so, and among state/municipal organizations even less, then 1.5%. The relationship between the variables (owner - action plan) is significant (Chi-square test), the relationship is weak (Cramer's V= 0.214).

Table 3: Existence of an action plan developed for unpredictable situations

Existence of an action plan developed for unpredictable situations	Owner				Total
	State, municipal	Domestic Private	Foreign or mixed	Non-profit	
We had and apply it unchanged	11,2%	7,8%	7,5%	6,3%	8,3%
We had one that was updated	28,7%	8,9%	18,1%	10,4%	15,3%
Had not before, it has been developed during the pandemic	54,5%	49,3%	66,6%	60,4%	55,4%
Still do not have but planned	4,1%	13,2%	3,9%	8,3%	8,7%
Do not have and not planned	1,5%	20,8%	3,9%	14,6%	12,2%
Total	100,0%	100,0%	100,0%	100,0%	100,0%

Source: authors' own compilation

Companies with foreign or mixed ownership tend to regard human resources as of strategic importance, this is highly characteristic of 61.8% of the respondents, with an average of 3.43 on the four-point scale. In the case of domestically owned private companies, however, 17.7% say this is not typical for them, their average is 3.0. However, in the case of the latter, the dispersion of responses is greater (Std.dev: 1.147), while the response of foreigners is more homogeneous (Std.dev: 0.838). There are also significant differences in the assessment of the importance of professional HR work. According to almost half of the domestic companies (42.6%), it is not typical that the importance of this would further increase as a result of the crisis, and only a fifth of them (20.8%) consider this to be very typical. Among foreign owned companies, however, 37.9% think it is very typical, while only 12.2% consider it not typical. This difference is also reflected in the averages: 2.17 and 2.98. The dispersion of the answers to this question is, however, very similar for the two forms of ownership, the standard deviation values are 1.191 and 1.015.

There is also a significant difference in the assessment of the importance of training. Almost half of the domestic companies (42.4%) considered their role in making the organization less affected by the crisis, and only 16% considered it very typical. On the other hand, 22.3% of foreign owned companies say that this is characteristic of them to a large extent, while only 22.2% do not consider it important. The averages also show difference between the two types of companies: 2.07 and 2.52, in this case there is no significant difference in the dispersion of the answers either (1.111 and 1.071). On the other hand, there is quite a lot of agreement between foreign and domestic companies regarding the damage resulting from the intellectual capital flowing out due to layoffs related to the crisis, as well as unique, hard-to-

copy knowledge and expertise, as a way out of the crisis, and the importance of retaining key people and talents. In the latter case, however, the responses of foreign companies show greater agreement than those of domestic private companies (Standard deviation: 0.996 vs. 1.107). Examining the answers of domestic and foreign/mixed ownership companies with a two-sample t-test and Mann-Whitney test, the answers of the two groups differ significantly in six of the eight questions. However, this cannot be said in two cases, these are: the damage resulting from the intellectual capital flowing out due to layoffs related to the crisis (Mann-Whitney Sig=0.233, t-test Sig=0.237) and the importance of retaining key people and talents (Mann-Whitney Sig=0.170, t-test Sig=0.073).
Based on all this, we accept H1.

Table 4: Importance of HR

Importance of HR	State, municipal	Domestic Private	Foreign or mixed	Non-profit	Total
Human resources are of strategic importance to our organization	3,22	3,00	3,43	3,17	3,17
We pay attention to reduce the unpleasant effects of the crisis on the private sector	2,30	2,39	2,65	2,42	2,45
The importance of professional HR work continues to increase	2,61	2,17	2,98	2,20	2,49
The unique, hard-to-copy knowledge and expertise inherent in our organization can be a way out of the crisis	2,41	2,55	2,76	2,48	2,58
Layoffs related to the crisis are harmful in the long term, because significant intellectual capital leaves our organization	1,86	2,17	2,27	2,00	2,13
Retaining key people and talents has now become especially important for us	2,95	3,09	3,21	3,02	3,09
The importance of continuous and well-organized training is outstanding so that the crisis affects our organization less	2,26	2,07	2,52	1,98	2,23
Rethinking workplace and employment conditions	2,57	2,35	2,72	2,36	2,50

Source: authors' own compilation

H#2: There is a difference between the practices of domestic and foreign-owned companies with regard to HR functions, which play an increasing role. Foreign-owned companies responded more to job preservation, education and training, and the possibility of working from home in the case of Covid-19.
Only 557 organizations gave evaluable answer to the related question, which is probably due to the fact that it was an open question, which was coded afterwards. The values discussed below represent percentage distributions within these 557 organizations.
From the table below, it can be seen that "Retention, motivation, incentive, commitment" as an area of increasing importance in HR work, appears rather in the practice of domestic organizations, be they state/municipal or private. Some of 28% and 26% highlighted this area, while only 18% of foreigners did. The field of "Training and development, online education, e-learning" was highlighted in a slightly higher proportion by foreign-owned companies than by domestic private sector companies (19% vs. 12%). There is hardly any difference in terms of "Home-office, remote work, atypical employment", 10% of foreign or mixed-owned companies and 11% of the domestic companies consider this to be an area of increasing importance. This area was marked by state/municipal organizations in a slightly higher proportion (15%). Significant differences between the domestic private sector and foreign or mixed-owned companies are also found in "Internal/personal/online communication, contact, information" (18% and 26%) and "Administration, labor law, labor affairs" (23% and 16%), although the differences cannot be said to be significant in these cases either. Furthermore, it can be said that in the case of the latter, the responses of the state/municipal sector are closer to the responses of domestic private companies (20% and 28%).
It should also be noted that the area with the highest proportion in all three ownership categories was "Recruitment, selection, headhunting, hiring, personnel management", one third of the surveyed organizations marked this as an HR area of increasing importance.
Based on all this, we reject H2.

Table 5: Areas of HR with increasing importance in 2020

Areas of HR with increasing importance in 2020	Owner				Total
	State, municipal	Domestic Private	Foreign or mixed	Non-profit	
Recruitment, selection, headhunting, hiring, personnel management	31%	33%	33%	7%	32%
Internal/personal/online communication, contact, information	20%	18%	26%	21%	22%
Retention, motivation, incentive, engagement	28%	26%	18%	0%	22%
Training and development, online education, e-learning	17%	12%	19%	21%	16%
Wage support, wage management, payroll	11%	15%	11%	7%	12%
Home-office, remote work, atypical employment	15%	11%	10%	21%	12%
Administration, labor law, labor affairs	28%	23%	16%	29%	22%
Occupational safety, health protection, employment etc.	10%	8%	11%	0%	9%
Performance evaluation, TM	5%	8%	5%	7%	6%
HR digitization, eHR	4%	6%	3%	0%	4%
Organizational development, change management	2%	4%	3%	7%	3%
Online recruitment, online interviews	3%	2%	3%	7%	3%
Downsizing, dismissal, termination of employment	3%	8%	5%	7%	6%
Job analysis, planning, transformation, job descriptions	9%	3%	4%	14%	5%
Pandemic-related tasks (protective equipment, tests, measures, coordination, handling of social/psychological problems, etc.)	5%	7%	10%	36%	8%

Source: authors' own compilation

H#3: There is a difference between the HR-level opportunities created by the pandemic and the areas of change needs in the practice of domestic and foreign companies.

As a result of the crisis, we can already find several differences between organizations with different ownership backgrounds in the assessment of HR areas that represent potential development opportunities. However, it should be emphasized that this is a closed question, yes/no answers could be given, therefore the willingness to answer is much higher, a total of 1357 organizations gave evaluable answers.

The respondents highlighted the area of "Internal communication" in the highest proportion, two-thirds of foreign or mixed-owned companies (67.7%), almost half of domestic private companies (47.3%). The second most important option is "Atypical employment/home office", two-thirds of foreign companies (66.9%), while one-third of domestic private companies (33.6%) see this as a potential development opportunity. Third in line is the field of "Occupational health and safety", more than half (54.3%) of foreign or mixed-owned companies and 39.3% of domestic private companies see this as an opportunity for development. In all three cases, there is a significant difference (according to the Chi-square test) between the individual ownership categories. Other areas where the difference is significant, but with much lower response rates: "Recruitment, selection, integration systems", "Development of social, mental and family support", "Labor relations, participation, involvement" and "Diversity management" areas.

The areas of "Manpower planning, succession planning" and "Job scope analysis and planning" also offer significant development opportunities. Overall, approximately one-third of the respondents (31.8% and 34.0%) mentioned these, however, only a minimal difference can be seen here between the foreign or in the assessment of mixed ownership and domestic private companies.

Table 6: HR areas where the impact of the crisis potentially represents an opportunity for development

HR areas where the impact of the crisis potentially represents an opportunity for development	Owner				Total	Chi-sq. Sig.	Cramer's V
	State, municipal	Domestic Private	Foreign or mixed	Non-profit			
personnel planning, succession planning	33,2%	30,1%	34,9%	25,0%	31,8%	0,273	0,054
job analysis and planning	37,4%	30,8%	36,3%	41,7%	34,0%	0,089	0,069
recruitment, selection, integration systems	26,0%	20,2%	34,4%	16,7%	25,1%	0,000	0,142
atypical employment/home office	53,2%	33,6%	66,9%	45,8%	47,0%	0,000	0,287
performance management	19,6%	24,1%	25,8%	18,8%	23,5%	0,255	0,055
incentive and compensation management	27,5%	25,6%	28,2%	12,5%	26,2%	0,121	0,065
development of social, mental and family support	29,8%	18,3%	32,5%	22,9%	24,6%	0,000	0,151
human resource development	24,5%	18,5%	25,0%	20,8%	21,5%	0,049	0,076
labor relations, participation, involvement	14,7%	10,6%	20,2%	25,0%	14,5%	0,000	0,128
occupational health and safety	44,9%	39,3%	54,3%	35,4%	44,4%	0,000	0,132
career planning	10,2%	11,5%	13,2%	8,3%	11,6%	0,588	0,038
internal communication	60,4%	47,3%	67,7%	60,4%	55,9%	0,000	0,180
retention management	27,5%	27,2%	32,3%	29,2%	28,7%	0,364	0,048
generation management	9,1%	8,9%	7,3%	8,3%	8,5%	0,800	0,027
equal opportunity	11,7%	7,7%	8,3%	10,4%	8,8%	0,263	0,054
diversity management	6,4%	4,6%	10,2%	12,5%	6,8%	0,002	0,103

Source: authors' own compilation

In addition, after examining which HR practices are especially necessary to transform as a result of the coronavirus pandemic, internal communication is also in first place. However, 58.9% of foreign or mixed-owned companies and 42% of the respondents in the domestic private sector reported the need to transform this area. Based on all this, we accept H3.

Table 7: HR practices that need to be transformed based on the impact of coronavirus

HR practices that need to be transformed based on the impact of coronavirus	Owner				Total	Chi-sq. Sig.	Cramer'sV
	State, municipal	Domestic Private	Foreign or mixed	Non-profit			
employment	26,8%	28,3%	25,5%	20,8%	27,0%	0,596	0,037
key person program	19,2%	20,1%	23,7%	20,8%	20,9%	0,491	0,042
pay/incentive practice	32,1%	29,0%	35,5%	27,1%	31,3%	0,163	0,061
internal communication	54,7%	42,0%	58,9%	56,3%	49,6%	0,000	0,154
administration	32,5%	23,4%	31,5%	45,8%	28,2%	0,000	0,120
supply planning	27,2%	19,9%	28,8%	12,5%	23,5%	0,001	0,107
training	33,6%	25,7%	39,0%	18,8%	30,7%	0,000	0,133
data management	13,2%	10,6%	17,7%	10,4%	13,0%	0,011	0,091
employee welfare programs	27,5%	16,4%	27,4%	10,4%	21,4%	0,000	0,142

Source: authors' own compilation

CONCLUSION

The disruptions caused by the COVID-19 pandemic have similarly affected employers, companies and other organizations globally. We conducted our empirical research with the conscious aim of mapping the problems, spreading the creative solutions used in practice and thereby contributing to the exploration of the opportunities and solution alternatives generated by the Covid-crisis.

Our goal was also to monitor the changes in the human resources management practice of the domestic corporate/institutional sphere to the challenges of the crisis during the first and second phases of the pandemic. Within the framework of an academic collaboration, we laid the foundation for the further development of HR knowledge related to the crisis and recovery, and its integration into the curriculum. With our cooperation, we would like to support the best possible foundation of the national efforts against unpredictable happenings such as the COVID-19 pandemic, also by enabling the participants to make the dissemination of the results available through publications of the highest possible level. In this paper we presented the differences between organizations with different ownership backgrounds in the assessment of HR areas that represent potential development opportunities. We found that there is a significant difference between the HR practices of domestic and foreign-owned companies. Foreign-owned companies tend to have an HR department, and human resources are more likely to be considered of strategic importance, and they also pay more attention to crisis management, so they tend to have a crisis plan and in a crisis situation, they attach more importance to professional HR work. According to our findings, retention, motivation, incentive and commitment are the areas of increasing importance in HR work at domestic companies. The fields of training and development, online education, e-learning was highlighted in a slightly higher proportion by foreign-owned companies. There is hardly any difference in terms of home-office, remote work, atypical employment. Internal communication comes first when analyzing which HR practices must be changed as a consequence of the coronavirus pandemic. However, 42% of respondents in the domestic private sector and 58.9% of foreign or mixed-owned businesses indicated the need for this area to be transformed.

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DOING MORE BY DOING LESS? THE ROLE OF SETTING FORMALIZED GUARDRAILS IN THE APPLICATION OF HR ANALYTICS

Abstract: HR analytics comprises several ethical uncertainties associated with datafication and algorithmization of employee data, such as issues concerning data privacy. These uncertainties shape the actions of the actors – in particular HR professionals, data scientists, and works councilors – who are involved in the adoption and implementation of HR analytics. Using a relational perspective on technology that takes the uncertainties of technology adoption into account, we examine how the uncertainty navigation of these actors shapes the implementation of HR analytics. Based on a rich corpus of qualitative data in two contexts with marked differences in the regulatory environment covering digital technologies (Austria and Germany vs. Switzerland), we find that the actors involved in the implementation of HR analytics deal with ethical uncertainties by setting formalized guardrails of containment, i.e., by delineating acceptable and inacceptable usages as well as authorized and prohibited connections between technological entities such as data and software programs. The guardrails channel actors' behavior, i.e., they limit and enable their actions. Thus, they not only provide means to navigate ethical concerns, but also help to streamline and accelerate development and implementation processes by clarifying uncertainties, e.g., what HR analytics tools can be used for. HR managers can refer to these formalized guardrails to reduce tensions between actors and to find data-based solutions to business problems more quickly. Through our analyses, we contribute to a better understanding of the ethical uncertainties inherent to the implementation of HR analytics as well as the ways in which actors deal with these uncertainties.

Keywords: HR analytics, HR management, digitalization, formalized guardrails, relational perspective

1. INTRODUCTION

The ongoing "datafication" (Mejias & Couldry, 2019) of our lifeworld and the interrelated recent developments in data analytics and artificial intelligence has not left the field of human resource management (HRM) untouched. Quite the contrary: Under umbrella terms such as people analytics or HR analytics an ever-increasing number of actors, from software providers to HR consultants, are promoting a supposedly novel "data-driven" and "evidence-based" approach to HRM. As a current definition of HR analytics puts it this approach relies on "information technology that uses descriptive, visual, and statistical analyses of data related to HR processes, human capital, organizational performance, and external economic benchmarks to establish business impact and enable data-driven decision-making" (Marler & Boudreau, 2017: 15). However, there is a debate among HR practitioners and researchers as to how feasible a large-scale realization of data-driven approaches to human resource management across industries is at the moment (Angrave, Charlwood, Kirkpatrick, Lawrence, & Stuart, 2016; Arora, Prakash, Mittal, & Singh, 2022; Bechter, Brandl, & Lehr,

2022). Further, currently subjects of debate include whether or not HR analytics constitutes a disruptive shift in the field, or a less consequential management fad (Minbaeva, 2021; Ulrich & Dulebohn, 2015).
While the future of data analytics in HRM seems uncertain, it has become clear that an intensifying abstraction and – increasingly algorithmic – analysis of employee data for managerial ends inheres "simmering ethical challenges" (Edwards, Charlwood, Guenole, & Marler, 2022) leading one recent commentator to express concerns about an "unholy union of AI and HR" (Dicken, 2022). One salient challenge lies in the danger of algorithmic biases enacting discriminatory practices of hiring and firing. Widely publicized cases of algorithmic bias, for example at Amazon, give credence to arguments diagnosing essential biases inherent to data analytics and machine learning technologies and the dangers these biases constitute once humans are made subject to unregulated data-based and algorithmic decision making (Chun, 2021). Marxist scholars, in turn, have interpreted the datafication of human resource management as a novel tayloristic attack on the autonomy of workers, subjecting them to ever stricter surveillance and discipline (Dyer-Witheford, Kjøsen, & Steinhoff, 2019; Kels & Vormbusch, 2021; Moore, Akhtar, & Upchurch, 2018). These discourses show that, far from foreclosing spaces for ethical considerations (Weiskopf & Hansen, 2023) by "saving consensus" (Luhmann, 2012: 313), the information technologies of descriptive, predictive and prescriptive analysis of HR-related data contain ethical uncertainties that actors confronted with these technologies must engage with.
While the scholarly discourse surrounding HR analytics seems to be well aware of these ethical dimensions (Charlwood & Guenole, 2021; Leicht-Deobald et al., 2019; Tursunbayeva, Pagliari, Di Lauro, & Antonelli, 2021), such accounts largely remain at the level of the theoretical identification of ethical issues and possible responses. Research that empirically engages with the complexities of HR analytics implementation and usage has rarely made these ethical implications its central focus, centering instead on issues such as HR analytics practitioners' legitimacy (Belizón & Kieran, 2021), identity (Jörden, Sage, & Trusson, 2022), as well as their engagement of storytelling techniques (Fu, Keegan, & McCartney, 2022). Furthermore, these studies tend to focus on HR analytics practitioners, bracketing out the perspectives of those who are subject to these managerial technologies and practices and those tasked with representing their interests (for an exception, see Loscher & Bader, 2022).
This paper, therefore, seeks to provide insight into the ways in which actors engaged with HR analytics identify and navigate its ethical uncertainties. We draw on a rich corpus of qualitative data collected through interviews and observations in Germany, Austria, and Switzerland with a variety of actors such as HR analysts, HR analytics consultants, HR managers as well as ethics consultants, labor council members and representatives of unions and union-adjacent institutions. We show that our interviewees particularly underscore two sources of ethical uncertainties, the sensitivity of personnel data and the limits of quantification of human complexity. We also demonstrate that actors seek to mitigate these uncertainties by setting formalized guardrails to prohibit connections between certain technological entities and prevent ethically questionable HR analytics practices. Our findings show, the setting of these formalized guardrails can take the form of political deliberation between management and workers councils, or of ethical self-regulation of HR analytics practitioners either within organizations or amongst organization spanning networks and institutions. Thus, we contribute to the discourse surrounding the handling and analysis of personnel data in the field of HR analytics by showing (1.) how different actors make sense of the ethical uncertainties inherent to this phenomenon and (2.) how these uncertainties are rendered manageable through the setting of formalized guardrails that, once established, streamline engagements with HR analytics.

2. THEORETICAL FRAMEWORK

HR analytics promises to provide evidence bases through the analysis of discrete data and thus appears in a veneer of neutrality and scientific rationality. Therefore, it may serve to obfuscate the ethical and political dimensions of managerial practices, such as hiring and firing, by placing them on a supposedly neutral, rational footing (Weiskopf & Hansen, 2023). However, as critical engagements with technological entities in management from strategy matrixes (Jardat, 2017) to business plans (Townley, 2004) have argued, despite their rational and scientific appearances, they are far from neutral in the way they classify, sort, and process objects and subjects. To explore how actors identify and navigate these ethical nuances in the implementation and handling of HR analytics, we will draw on both a relational and a practice-oriented perspective on technology.
From a relational perspective recently formulated by Bailey et. al. (2022) technological entities, such as data infrastructures or analytics tools are entities enacted in relation to other entities. Thus, the underlining assumption of this perspective posits that the relations between entities are constitutive of their functionalities and agency (Cooper, 2005). The functions a technological entity, such as an algorithm, can perform, is thus dependent on its relation with other entities such as data infrastructures (Alaimo & Kallinikos, 2022). Bailey et. al. (2022) speak of dynamical constellations of relations to underscore how the effects of technology development and implementation arise from the relations various entities hold amongst each other and not from the intentions of the subjects engaged in this process. They, therefore, argue that "as relations increasingly channel data, a host of new functions can be performed that may rapidly and drastically alter constellations of relations." (Bailey et al., 2022: 11) Datafication, accordingly, does not only provide novel means of management by enabling the production of sophisticated evidence bases for decisions. By drastically altering constellations of relations, including those amongst actors, it can also produce novel uncertainties (Ratner & Plotnikof, 2022).

A practice oriented perspective ads to these theoretical considerations by pointing out that the way technological entities relate to actors is, primarily, through the practical engagement of the latter with the former (Schatzki, 2005). As Townley (2004) argues we can only meaningfully grasp technological entities in the ways they are engaged and made sense of by actors in consequential situations. Dependent on the practices through which we engage these entities, they might not only reveal their techno-scientific and rational but also ethical and practical dimensions (Townley, 2004). An HR analytics dashboard can thus appear as a rational depiction of an organizational reality, as an object of ethical considerations or as a useful visual aid for a certain argument. This depends not only on the entity and the relations it entertains but also on the concrete practices and the way in which they imply certain goals and conceptions of worth.
Taking these theoretical assumptions together, implies that , firstly, we need to pay attention to the ways in which constellations of technological entities and actors can produce uncertainties in organizations. Secondly, we also need to take into account how these uncertainties are conceived by actors who practically engage with them, thus revealing and addressing their rational, ethical, and practical dimensions.

3. METHODOLOGY

We conducted 35 expert interviews with HR professionals, consultants, and works council and trade union representatives across Austria, Germany, and Switzerland. These experts were either directly or indirectly involved in the implementation of HR analytics tools in organizations or advised HR professionals or workers councilors during this process. On average, the interviews lasted 48 minutes. Our interview partners represent a wide range of industries (e.g., manufacturing, banking, and retail) and seniority levels (e.g., from junior HRM business partner to head of HRM). Additionally, we collected a rich corpus of qualitative data, including 23 hours of observations of presentations from practitioners' conferences and meet-ups where organizations presented their best practices and HR analytics tools, as well as additional documents such as industry guidelines and recommendations published by trade unions. Through our thematic analysis (Braun & Clarke, 2021) and triangulation, we abstracted major themes on how strategic actors in the emerging field of HR analytics perceive and navigate the uncertainties of HR analytics.

4. FINDINGS

Our findings are structured in line with the themes we extracted from the qualitative material. We start by highlighting the ethical uncertainties that actors in the field of HR analytics face before illustrating one major strategy to address these uncertainties by limiting the scope of HR analytics through formalized guardrails of containment.

4.1 Ethical Uncertainties

In our first theme, we elaborate on the ethical uncertainties discussed by our interviewees. The data reveals that as personnel data is connected to novel data infrastructure, analytics software, and made subject to analytical practices two major uncertainties arise: One relates to the sensitivity of personnel data and the other to the limits of quantification with regards to human complexity.
As personnel data is increasingly channeled through various entities such as business information systems or data-lakes they can form the basis of novel managerial functions. At the same time, issues surrounding data privacy and potential misconduct become increasingly important. Many of our interviewees claimed that accounting for this sensitivity in their practical engagement of HR analytics tools is an important aspect of their work. As one HR manager describes her work: "We work with the most sensitive data you can have about a human being." (HR Manager, Germany) The sensitivity of the data extends to the potential consequences its use might have for human subjects. As one HR analytics practitioner explains: "We need to be aware that the tools we construct and the insights we generate have a potentially strong influence on the careers of employees." (HR Analyst, Switzerland). Thus, these actors reflect the special status of data concerning human behavior, relations etc. when engaging it to produce datafied evidence bases for managerial praxis, acknowledging not only the techno-scientific but also the ethical dimensions of HR analytics in their practical engagements. For those representing the employees affected by HR analytics tools, the increasing importance of sensitive digitized data through HR analytics is often discussed in light of possible misconduct. While we encountered no direct reference to a case of clear misconduct by management, the worry that individual managers might make ill use of sensitive data is omnipresent. Therefore, the implementation of HR analytics can introduce a potential of normative struggle into the relations between actors in an organization. One works council member described her position on the matter as such: "We are always defensive. Our position is, that right now we have a good relation to personnel, but that can always change." (Works councilor, Germany)
For HR managers and HR analytics practitioners this worry translates into a consciousness of their responsibility and an awareness that their reputation depends on the ethical use of HR analytics. One HR analyst describes the importance of trust and reputation in his work: "As soon as trust is lost either in the data or in the handling of the data, in the organization, I think you have a very bad chance of getting back on your feet with this issue. (…) For five years, as I said, we have

been struggling with trust in this activity and now we have a very good foot on the ground as far as this trust is concerned, and this trust can be squandered again with one or two failed processes. Not analytically, but regulatory failed processes." (HR Analyst, Germany) Thus, as the implementation of HR analytics alters the relations between actors by introducing novel ethical uncertainties and potentials for misconduct, actors engaging HR analytics are made aware of the importance of trust and reputation for their position. This underscores the importance of ethical dimension inherent to their practical engagement with HR analytics tools.

Beyond the sensitivity of the data processed in the course of HR analytics projects another source of ethical uncertainty is the abstraction of complex human attributes and behaviors in the form of metrics such as attrition rates. In a sense HRM is premised on the necessary simplification of human complexity into manageable resources (Czarniawska & Mouritsen, 2009). However, as HR analytics enables the production of metrics through the connection of certain personnel data, the issues represented by such metrics become increasingly complex. One controversial topic that arises in the data is the production of individual attrition scores. One HR manager gives a quite succinct description of this issue arguing, "You can't capture human complexity with 50 kilobits." (HR Manager, Austria) Thus, on the one hand, the abstraction of the diffuse phenomena of human relations and behavior into discrete digitized data allows for increasing managerial capacities as these phenomena can now be handled as numeric evidence bases. On the other hand, however, interviewees consider the risk inherent to this development, namely that "you don't look at the human anymore, but just make data-driven decisions." (HR Manager, Switzerland)

Amongst employee representatives this issue is also a cause for concern. For some it is part of a larger trend towards leadership by numbers that threatens to lose its human touch. Thus, datafication not only serves to reduce the complexity of human dynamics to manageable level. Through their practical engagement with HR analytics actors reflect the limits of the quantification of these complexities. This is observed not only as an ethical but also as a practical issue. Due to the inherent limits of the abstraction and quantification of human motivation and behavior some interviewees voiced harsh criticisms of data objects that they understood as not only ethically dubious but of questionable practical use.

One HR manager makes this case with regards to individual attrition scores "I'm not interested in what's always in the media: 'With certain indicators I already know who's going to quit.' I have no need for that kind of stupidity. That's something I absolutely reject ethically." (HR Manager, Austria) Thus, the limits of quantification appears as an important source of ethical uncertainty.

4.2 Setting Formalized Guardrails

As illustrated above, the implementation of HR analytics inheres certain ethical uncertainties, stemming from the sensitive nature of personnel data and the limits of quantification of human complexity. Under such uncertain circumstances both actors implementing HR analytics and those subjected to it seek to mitigate these uncertainties, leading them to engage in the setting of formalized guardrails for the technological entities and practices comprising HR analytics.

These guardrails serve to delineate acceptable and inacceptable usages as well as possible and impossible connections between technological entities and data streams. They channel actors' behavior, i.e., limit and enable the way actors can engage with HR analytics. Thus, they not only provide means to navigate ethical concerns but also help to streamline and accelerate development and implementation processes by clarifying uncertainties, e.g., giving actors clear guidance what personnel data and HR analytics tools can and cannot be used for. As one interviewee recalls: "I have one month's clear data in this database and I would theoretically be in a position, on the basis of this clear data, to also release data from three years ago for these employees on a person-specific level. And that has actually been requested already. Not with malicious intent, but simply out of interest. And at this point I have to say: Sorry, we're not allowed to do that." (HR Analyst, Germany) With reference to a code of conduct, this HR analyst was therefore able to avoid any discussions of the ethical and practical implications of individual-level analyses. This also helps sustain a kind of consistency within the constellation of relations between technological entities, actors, and their practices that compose an individual HR analytics system. As the HR analyst reference above explains the code of conduct and the prohibition of individual-level analyses is in part premised on the database being "strategic in nature." (HR Analyst, Germany) Beyond streamlining analyses by avoiding discussions surrounding certain analyses on ethical bases, such guardrails of containment allow practitioners to find data-based solutions to business problems more quickly, because the limited access to data and, thus, reduces data complexity.

Formal guardrails can assume different formats, in part dependent on the organizational and institutional context in which they are formed. In organizations in Austria and Germany where works councils are institutionalized by labor law the adoption of HR analytics is accompanied by political negotiations between HRM representatives and works councilors as major important actors. In this case formal guardrails take the form of legally binding company agreements. Faced with the ethical uncertainties mentioned above, works councils seek to demarcate clear red lines for HR analytics' usage: "We set the framework: no general performance and behavioral control, no profiling, no linking of different effects, evaluations. We also don't allow downloads in Excel, because then I could also do quite a lot" (Works councilor, Germany) As we have seen, the implementation of HR analytics has the potential of alter the relations between management and works council by introducing novel risks of misconduct and ethical uncertainties. The demarcation of red lines can aid the engagement with HR analytics in practice and stabilize the relationship between HR analytics practitioners and employees. This is because since any practice that falls within these lines does not have to be subjected to scrutiny, while actors engaging HR analytics can envisage the potential for controversy of an undertaking in advance.

Beyond these legally binding agreements some interviewees underscore the importance of organizational and trans-organizational codes of conduct, best practice papers and other documents that, as one interviewee puts it, are "maximally nonbinding and at the same time highly relevant." (HR consultant, Germany) As constellations of relations within organization are rapidly altered through the implementation of HR analytics, those that wish a sustainable development of HRM towards data-driven and evidence-based management practices are acutely aware of the importance of trust and reputation in mitigating the uncertainties inherent to these alterations. Particularly Swiss interviewees underscored the important of such self-devised guardrails, since company agreements between management and workers councils are not institutionalized there. As one interviewee explains: "If only one company steps out and does things that are not okay, like surveillance and I don't know what, then I think we as HR Analytics [practitioners] have a problem […] because then the trust will absolutely deteriorate. And the willingness to kind of give data will decrease. So […] for me personally, it's such a big, important thing. Um. Yeah, that we're all in the same boat, kind of." (HRA analyst, Switzerland) Thus, this interviewee points to a shared interest amongst different organizations to mitigate the ethical uncertainties associated with HR analytics. This points towards an institutionalization of data ethics, which is also indicated by NGO's conducting reports that rank organizations according to their data ethics (e.g., ethos & EthicsGrade, 2022).

5. DISCUSSION

Our findings resonate with recent theoretical accounts of the various ethical uncertainties implied by the datafication of HRM under the umbrella term of HR analytics (Charlwood & Guenole, 2021; Edwards et al., 2022). We identify two sources of such uncertainties in our expert interviews: (1.) the sensitive nature of personnel data and (2.) the limits of quantification with regards to human complexity. As personnel data is channeled into data infrastructures and processed by HR analytics tools and practices it reveals novel functions, namely serving as the material for evidence bases. Thus, this highly sensitive data is no longer simply stored but productively used and processed, leading to novel ethical uncertainties. Interviewees reflected on these ethical uncertainties, acknowledging that said data is not only a source for increasing organizational effectiveness but also objects of ethical considerations. Furthermore, the processing of said data allows for the construction of metrics representing complex human behaviors and attributes. This impacts the relations amongst actors by introducing the potential for an intensifying managing by numbers and a worry about a loss of human touch. It also leads actors that are practically engaging these metrics to reflect on their practical and ethical limits.

Thus our findings lend credence to the relationally focused arguments by Ratner and Plotnikof (2022) and Bailey et al. (2022) who propose that any emergent technology is an entity enacted in relation and thus holds to potential to alter existing constellations of relations between and amongst technological entities and human actors and thus not only introducing novel functionalities but also uncertainties. We have shown that in practice, HR analytics not only yields the potential for extending a kind of evidence based, calculative rationality further into HRM but also unveils practical and ethical dimensions that are mostly related to the sensitive and complex nature of the source from which data is abstracted. This is in line with Townley's (2004) argument that any practical engagement with managerial technologies inheres not only technical-scientific but also practical and ethical dimensions and that actors can make reference to these dimensions in their various practical engagements with these technologies.

Furthermore, we have proposed the setting of formalized guardrails that contain potentially cascading relations as well as certain practices. As exemplified by the company agreement prohibiting the integration of personnel data into Excel, these guardrails can constitute disconnections between certain technological entities thus channeling the dataflow. An example of such guardrails prohibiting certain practices is given by the code of conduct mentioned above, which prohibits analyses at an individual level. Our conceptualization of these guardrails contributes to the relational perspective by underscoring the importance of containment. Without a sensibility for the ways in which cuts between data flows are constitutive to the constellations of relations described by Bailey et. al. (2022) a relational perspective risks overemphasizing connectivity and resulting cascades of relations. Studying the ways in which actors reflect on the HR analytics' practical application can uncover those practical and ethical uncertainties that may lead to disconnection between and amongst certain practices and technological entities. As Cooper puts it: "Connections imply disconnections and both are necessary features of the inter space between the human agent and the objects that surround and support it." (Cooper, 2005: 1690)

With our interviewees highlighting both the sensitivity of the data processed in HR analytics applications but also raising concerns about the simplification of complex human interactions. While these are addressed by several means, in the respective paper we focus on setting formalized guardrails as important mechanism to build credibility vis-à-vis employees and works' councilors.

For practitioners, formalized guardrails for HR analytics are worth considering for several reasons. Firstly, they help to foster legitimacy for HR data and analytics. This is an essential aspect, particularly when it comes to data sharing and data quality, as well as the legitimacy of conclusions, practices, and measures that result from analyses in the scope of HRA. Formalized guardrails create a structure that enables organizations to interpret and understand HR data better. As a result, data-driven decisions are more reliable and accurate, and any practices or measures derived from such decisions are more credible. Secondly, the guardrails decrease managerial discretion. This, in turn, makes it easier to focus on specific topics. When there is too much discretion, it can lead to bias and a lack of consistency in decision-making. By establishing a clear framework, HR professionals can concentrate on specific issues and make data-driven decisions that are more objective. This can help to fully elevate the promises of HRA, namely more accurate and un-biased decision

making. Thirdly, as outlined by tool developers and HR analysts in MNEs, adhering to the strong regulation and co-determination present in Germany and Austria can be beneficial. By meeting these high standards, they are well equipped for international markets. This can lead to more significant opportunities for growth and expansion, as well as increased credibility and trust in their tools.
While our study outlines the value of guardrails in tackling ethical uncertainties around HR analytics, more research into this process is needed. Future research could, for instance, investigate the interplay of (mis)trust in HR analytics and the effects on the negotiations around the guardrails.

6. CONCLUSION

Human resources analytics has emerged as a promising tool to help organizations make evidence-based decisions about their workforce. By analyzing vast amounts of data, HR analytics enables practitioners to identify patterns, trends, and insights that can inform a wide range of HR processes, from recruitment and talent development to performance management and employee engagement. However, despite its potential benefits, the implementation of HR analytics is not without challenges and ethical uncertainties. Within the scope of this paper, we tried to illuminate how different actors in the emerging field of HR analytics deal with the ethical uncertainties that are inherent to the datafication and algorithmization of HR processes. Analyzing a rich corpus of qualitative material, we identified data sensitivity and fears of being leading by numbers, as well as depicting complex HR phenomena in KPIs as major uncertainties. Actors try to address these uncertainties by formalizing guardrails that restrict data points and potential analyses to an internally coordinated set. Thereby, containing the actual use might, in the long run, offer some positive effects for the actors involved in the implementation and use of HR analytics.

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TALENT DEVELOPMENT AND ORGANIZATIONAL SUCCESS: EVIDENCE FROM SELECTED BALKAN COUNTRIES BASED ON CRANET RESEARCH 2021

Abstract: Employee development, as an activity of human resources management (HRM), refers to the constant acquisition of new knowledge and skills, as well as new work and practical experience, that is, the application and verification of knowledge and skills in practice. Thus, the development of employees should create the conditions for organizations, and through that, the whole society to be innovation-oriented, to manage knowledge and gain a competitive advantage in the changing modern business environment. Special attention needs to be directed to talent development, since talented individuals have great value in the labor market and because talent development can lead to higher loyalty among talents. It is important for an organization to recognize talents, in the period when they have not yet fully realized their potentials, and to enable talents to develop themselves, providing them with the necessary conditions for personal and professional self-actualization. The aim of the paper is to investigate the importance and components of talent development in the function of building a knowledge-based society as well as the practice of training and talent development in selected countries of the Balkans (Serbia, Bosnia and Herzegovina, Croatia, and Slovenia) based on Cranet research from 2021. The research methodology includes the analysis of theoretical achievements in the field of talent development and training, as well as the analysis of empirical data generated during the latest round of Cranet research from 2021. Data analysis techniques used in the work are descriptive statistics, factor analysis, and correlation analysis. The expected results should enable an insight into the current practice of training and talent development in companies in the analyzed countries, as well as indicate deviations of practice in the Balkan countries compared to other countries of Central-Eastern Europe.

Keywords: Employee development, employee training, talents, Cranet

1. INTRODUCTION

The term "knowledge society", which was first used by Peter Drucker in 1969, gained real significance in the nineties of the XX century. Today's concept of knowledge society refers to the use of knowledge as the main resource, which makes today's society post-capitalist. The main competitive advantage in today's conditions is the knowledge-based economy (Polovina et al., 2011).

Dimitrovski (2011) points out that a society based on knowledge is based on the most relevant solutions: creativity, inventions, innovations, flexibility, creation, and acceptance of the new. The new state of society is based on the ability to create new knowledge and transform it into economic value and wealth through product, service, and process innovation. Knowledge management is one of the most effective ways to improve business results in organizations. Also, it is necessary to increase and stimulate innovation to keep up with the competition (Vukotić, Zakić & Ćurčić, 2017). In the modern business environment, knowledge and technology are becoming more and more complex, the participation of knowledge-based activities (high-tech production and knowledge-based services) is increasing significantly, and the connection of companies in these areas with private and public institutions facilitates the

development and successful application of innovations, resulting in higher level of competitiveness of companies and even the whole country (Filipović, 2015).
On the way to reaching the knowledge-based society what the modern society strives for, the actualization of knowledge and the constant development of skills and abilities of individuals constitutes one of the basic development levers. Employee development, as an activity of human resources management (HRM), refers to the constant acquisition of new knowledge and skills, as well as new work and practical experience, that is, the application and verification of knowledge and skills in practice. Thus, employee development aims to create the conditions for organizations and society to be innovatively oriented, to constantly learn and be able to enter into the cooperative and competitive structures of the modern world. According to the authors Lewis and Heckman (2006), talent means a person who brings something new to the company and who in some way exceeds the standard resources of knowledge and abilities in the observed company. Gofee and Jones (2007) point out that talent actually represents a set of ideas, knowledge and skills of employees, which give them the potential to produce disproportionately large value compared to the resources available to them. Thus, talents play a significant role in creating the foundations of a knowledge-based society.
The aim of the paper is to investigate the importance and components of talent development in the function of building a knowledge-based society as well as the practice of training and talent development in selected countries of the Balkans (Serbia, Bosnia and Herzegovina, Croatia, and Slovenia) based on Cranet research from 2021. The research methodology includes the analysis of theoretical achievements in the field of talent development and training, as well as the analysis of empirical data generated during the latest round of Cranet research from 2021. Data analysis techniques used in the work are descriptive statistics, factor analysis, and correlation analysis. The expected results should enable an insight into the current practice of training and talent development in companies in the analyzed countries, as well as indicate deviations of practice in the Balkan countries compared to other countries of Central-Eastern Europe.
The paper is structured in four parts. The first part is related to theoretical investigation of the talent development and training concept and practices in modern HRM. The second part of the paper presents the methodology of the empirical research. The third part is dedicated to results and discussion, while the final part consists of practical and theoretical implications, limitation, and potentials for future research.

2. TALENT DEVELOPMENT IN A FUNCTION OF BUILDING A KNOWLEDGE-BASED SOCIETY

The development of talents, as the basis of building a knowledge-based economy and society, is based on the adequate development of talented individuals. There are several reasons for continuous talent development, among which we highlight:

- Changes in technology that cause rapid obsolescence of knowledge and require continuous education;
- Increasing complexity, turbulence and uncertainty of the business environment, which requires more complex knowledge and puts people and their development in the foreground;
- Modern business requires new skills that were not so important in the traditional way of doing business: interpersonal and communication skills, conflict management skills, time management, and new forms of effectiveness and excellence;
- A very important pragmatic reason for the intensification of education in companies and the appearance of employers in the role of trainers is the widening gap between increasingly complex work requirements and existing knowledge on the labor market. Current business more and more requires certain knowledge and skills that are not processed sufficiently or adequately in the formal education process;
- The education system, business life and work requirements have different dynamics, where the dynamism of business life is much greater, and changes are much faster, now even every day (Bahtijarević-Šiber, 1999).

In a knowledge-based society, continuous professional education plays a special role. According to Queeney (1996) it is in fact the training of professionals, which takes place after their basic, preparatory training for a given profession, which aims to expand their knowledge and skills and thus contributes to the development of the quality of daily performance throughout their career. Life-long learning means constantly rewarding and refreshing the knowledge, abilities and skills of professionals. Compared to the usual training programs organized in companies, continuous professional education puts the primary focus on the growth and development of the individual expert. By expanding and developing knowledge, skills and abilities, it contributes to the broader development of employees' competencies, which can be used not only in the current position, but also prepares an expert for career development. In a society based on knowledge, continuous professional education should accompany the development of experts throughout their entire career. The main challenges of the training of the experts are related to two areas: a) motivation of experts to be active during training - dedication to continuous improvement and development is a condition for training success, but also for adequate performance of experts in everyday circumstances; b) provision of such continuous professional education that affects the execution of daily activities of professionals, which is based on the analysis of current knowledge and required competencies in the future. The effectiveness of training largely depends on the definition of training standards.

In order to effectively manage talent development, the authors Haskins and Shaffer (2010) emphasize the importance of a planned and systematic approach and recommend the following conceptual framework for talent development:

- Talent development should begin by determining the needs of the company, which includes the analysis of business drivers, business strategy, challenges the company faces, the role of values in shaping the organizational culture, as well as determining the required leadership behavior and aligning with measures and rewards. At this stage, it is recommended to analyze in detail the market served by the company, global business perspectives, competitive advantage, development of economic value, as well as the existing and required organizational culture, i.e., leader behavior and whether it contributes to effective talent development. The result of this phase is the determination of the specific goal of talent development.
- The second stage is shaping the learning model. First, characteristics, knowledge, skills, etc. are defined which employees in the organization should possess to achieve the defined goal. Another question in this phase is related to how to shape the development program, which training methods to use so that it best suits the needs of the participants.
- As a part of continuous development, various shorter and longer training and development programs are organized with the aim of regularly updating the knowledge, skills and competences of talents.
- Focus on achieved results - the key results of the program of continuous talent development are the improvement of the process of succession planning and talent development, the improvement of the process for identifying and developing talents and increasing the internal supply of superior talents in the organization. To evaluate the effects, it is necessary to establish a feedback loop with the initial assumptions, that is, the factors that are designated as the key drivers of the program.

Many past research investigated the effects of T&D on different performances of an organization, and in most of them, training and development had positive effects on performances, individual, team, or organizational (Tharenou et al., 2007; Glaveli & Karassavidou, 2011; Sung & Choi, 2014; Morley et al., 2016; Slavić & Berber, 2019; Katić et al., 2020; Ismale et al., 2021). Therefore, management of T&D process is one of the most important issues that needs to be investigated in more details.

1.2 Management of the training and development programs

Leading authors in this field (Armstrong & Taylor, 2014; Dessler, 2013) emphasize that a training program should include the following steps: needs assessment, training plan, training implementation, and training program evaluation.
A training needs assessment is a diagnostic and decision-making tool that uses a variety of techniques (questionnaires, interview, observation, etc.) to identify the training needs of a target population. We distinguish three types of methods for assessing the need for expert training. Basic methods for assessing the need include individual statements, focus groups, nominal group technique, Delphi method, etc. These needs assessment methods are generally applied by the persons involved in the implementation of the needs assessment themselves or in consultation with experts for this. Questionnaire-based methods - include questionnaires (mailed or online questionnaires) and interviews (in person and over the phone). Since the creation of the questionnaire and the actual implementation of the research require expert knowledge, the persons involved in the implementation of the needs assessment usually hire experts for this. Methods for evaluating performance - include observation, simulations and assessment centers and aim to determine the work output and the way an individual's work is carried out. Although these methods are the most demanding in terms of development and implementation, they most effectively point to the need for training an individual.
Assessing the readiness of employees to learn is the second step in the process of preparing a training program. Managers can play an important role in the training process. Motivation to learn should result in willingness to learn the content of the training program. Various research showed that motivation results in the expansion of knowledge, changes in behavior or in the acquisition of skills. Motivation is achieved through self-efficacy; by understanding the benefits that training brings, through building awareness of training needs, interests and career goals; by understanding the characteristics of the environment, providing basic skills and more (Noe et al., 2006).
The third step is to create a learning environment. Learning takes place in conditions of constant changes in behavior. The program should contain specific learning principles. Employees need to know why they need to learn and how to use their own experiences as a basis for learning. In addition, it is important for employees to have opportunities to practice. Feedback is needed to fulfill the training objectives because it provides information on how to correct the behavior of employees and who are the persons whose behavior has changed in an adequate way, and they should be praised. People learn by observing and imitating others. For the model to be effective, the desired behaviors or required skills must be clearly specified and the model should have characteristics similar to those of the target group. Employees need a training program that is appropriately coordinated and organized. Training program coordination refers to activities before, during and after the program.
The next step is the learning transfer, which refers to the application of knowledge, skills and behaviors learned during training on the job. The success of the transfer of the training, that is, the use of the knowledge and skills learned during the training, depends on the degree of mastery (level of learning) as well as on the readiness of the candidates to use the elements of the work environment. Therefore, learning depends on the learning environment (equipment, materials, practice opportunities, feedback) and on the readiness of employees to accept the training program (self-efficacy,

awareness of the need for training and level of basic skills). If any of these two conditions are missing, the transfer will not take place. The transfer of training can also be improved by connecting with the persons being trained. These can be meetings where problems and successes in implementing new skills or behaviors are discussed (Dessler, 2013).
There are many methods that can be used to acquire new knowledge, skills or behaviors. Training methods include presentation techniques, practical techniques, group building techniques as well as modern employee training methods. Presentation techniques include training methods where the instructor conveys information to mostly passive listeners. Instruction in classrooms is the cheapest way to present information on specific topics, since a large group of participants is trained at the same time. Distance learning - modern technology through various online courses provides significant advantages compared to classic classroom instruction. Online courses allow employees to follow a lecture or presentation live or later when they have time to do so. Audio-visual techniques - this training serves to improve communication skills, interviewing skills, customer service skills and to illustrate how new procedures should be followed. Hands-on (practical) techniques include on-the-job training, simulations, games and case studies and interactive video and similar methods that are based on the active role of the trainees in the training process. These methods are ideal for developing special skills, for understanding how skills and behaviors can be transferred to work, for gaining the experience necessary to complete a task and the process of making interpersonal decisions. Group building techniques help participants to exchange ideas and experiences, build the identity of their group, understand the dynamics of interpersonal relationships, and realize their own strengths and weaknesses, as well as the strengths and weaknesses of their colleagues. These include learning through adventure (often referred to as team building), the primary goal of which is to develop teamwork and leadership skills using structured outdoor activities.
A necessary step in the implementation of the training is the assessment and evaluation of the training at the end of the program. Usually, participants are surveyed at the end of the training regarding their impressions, they should evaluate the instructor, the material, the way of working, etc. However, the real value and effectiveness of the training program is seen in the results of the participants' work after the training. That is why it is necessary to ask for feedback related to the impact of the training on the performance of the trainees. Supervisor observation, performance analysis and assessment centers are often used for this purpose. It is recommended to first analyze the need for training using adequate techniques, and after a certain time after the training (several weeks or months), determine the impact of the training on the work results. If an improvement in results is found, then it is most likely that it is the result of training, although other external factors can also affect the performance. Regular monitoring of work results can also indicate changes in attitudes towards the work of individuals (Dessler, 2013).
In the process of managing the development of talents an economic analysis of costs and benefits of training is necessary. The training evaluation process ends with the determination of the economic usefulness of the training program. Training costs are analyzed from the aspect of direct costs, indirect costs, development costs, and overhead costs. Direct training costs include the following items: salaries of all training employees (instructors, consultants, training program designers), rental or purchase of classroom equipment, travel expenses. Indirect training costs include the following items: training management, administrative staff salaries, travel and expenses are not directly related to the training program. Development costs include: the cost of purchasing the program, training the instructors. Overhead costs mainly refer to the cost of top management time (time spent coordinating the training). Similar to the costs, the benefits of the training are expressed in different ways, for example, comparing the results achieved before the training and after the training (the quality of work is compared, like % of scrap; the number of errors, the number of accidents), then, based on the calculation of differences in performance between trained and untrained workers, based on the difference in the time at which the training program is expected to begin to affect performance. Other types of economic benefit analysis evaluate training according to how much it benefits the company, by tracking the direct and indirect costs of training and the increase in wages because of completed training (Noe et al., 2006).

3. METHODOLOGY

3.1. Cranet questionnaire

The research was conducted during 2021, according to the methodology of the Cranet international network. The sample used for this research contains data from 436 organizations from 4 countries from Balkan region, Bosnia and Herzegovina, Croatia, Serbia, and Slovenia. Responses on the questions from the standardized questionnaire were gathered from HR managers or some executive positions in a company, with a single-respondent approach. The questionnaire was back-translated to the national language of each country. The research is based on the more objective data and indicators, excluding opinion and attitudes of respondents (Berber et al., 2020). The questionnaire contains questions on HRM practices in organizations and the structure of the questionnaire is following:

- The first part deals with the characteristics of HR departments of the analyzed organizations.
- The second part of the questionnaire emphasizes the staffing practices of the surveyed organizations.
- The third part deals with issues of training and development of employees.
- The fourth part deals with the management of employee performance, the method of determining basic salary, incentive salary and benefits provided to employees.

- The fifth part of the questionnaire analyzes the relationship between employers and employees and deals with various issues of communication with employees.
- The sixth part contains basic organizational data.
- The seventh part refers to the data of the person who filled out the questionnaire (Slavić et al., 2017).

3.2. Sample

The largest share (61%) of organizations in the sample belongs to private sector, while 26% are in public sectors, and the rest of the sample are organizations from mixed, private and public sector and/or not for profit. About 3% of the sample organizations operate in the sector of agriculture, almost 1/3 in manufacturing sector, while 60% are service sector organizations. Slightly over 10% of the sample organizations works only on local markets, 46% work on national and regional markets, while 32% operate on world and global markets. The largest share (59%) of the sample are large organizations with more than 250 employees. SMEs represent 41% of the sample. About 16% of organizations in the sample employs more than 1000 employees.

4. RESULTS

We start our results presentation with two very interesting questions, on the **existence of HR training and development strategy and primary responsibility for decision on T&D** (tables 1 and 2). Based on the data in table 1, about 50% of organizations possess a written T&D strategy, where most of them are in Croatia and Serbia. There are statistically significant associations between countries and T&D strategies (Chi square test=39.847; df=3; p<0.01).

Table 1: Existence of written HR training & development strategy in Balkan countries

		Existence of written HR training & development strategy		Total
		No	Yes	
CRANET member country	Bosnia and Herzegovina	59.6%	40.4%	100.0%
	Croatia	41.7%	58.3%	100.0%
	Serbia	31.1%	68.9%	100.0%
	Slovenia	67.3%	32.7%	100.0%
Total		**50.9%**	**49.1%**	100.0%

Source: Authors based on Cranet data 2022.

Table 2: Primary responsibility for major policy decisions on training and development in Balkan countries

		Primary responsibility for major policy decisions on training and development				Total
		Line Management	Line mgt. in consultation with HR dept.	HR dept. in consultation with line mgt.	HR Department	
CRANET member country	Bosnia and Herzegovina	40.4%	36.2%	17.0%	6.4%	100.0%
	Croatia	18.9%	36.8%	34.9%	9.4%	100.0%
	Serbia	17.0%	28.3%	39.6%	15.1%	100.0%
	Slovenia	19.0%	31.4%	39.9%	9.8%	100.0%
Total		**20.9%**	**32.5%**	**35.9%**	**10.7%**	100.0%

Source: Authors based on Cranet data 2022.

In the case of primary responsibility for T&D issues in a company, HR department works together with line managers and vice versa in more than 65% of organizations. In Bosnia and Herzegovina, line managers still hold the major responsibility in 40% of companies. There are statistically significant associations between countries and T&D responsibility (Chi square test=20.063; df=9; p<0.05).

The first step in the talent development process is to **assess training needs**. The questionnaire contained a question about whether the need for training is systematically assessed. In the vast majority (73.6%) of observed organizations, there is a systematic assessment of training needs. Only in Bosnia and Herzegovina there is less than 60% of organizations that perform need assessment for training. There are statistically significant associations between countries and systematic estimation of the need for training of employees (Chi square test=12.4316; df=3; p<0.01).

Table 3: Training need assessment in Balkan countries

		Systematic estimation of the need for training		Total
		No	Yes	
CRANET member country	Bosnia and Herzegovina	42.6%	57.4%	100.0%
	Croatia	27.7%	72.3%	100.0%
	Serbia	16.0%	84.0%	100.0%
	Slovenia	28.1%	71.9%	100.0%
Total		**26.4%**	**73.6%**	**100.0%**

Source: Authors based on Cranet data 2022.

Aside training need assessment, many organizations perform **training effectiveness evaluation**, i.e., whether training programs reach their goals and how much the costs of the training are, etc. Based on the data in table 2, 55% of all organizations in Balkan perform such kind of analysis, but in the case of Slovenia and Bosnia and Herzegovina, only, 35-43% of them perform it, while in Serbia and Croatia there are more than 60% of organizations that perform training evaluation. There are statistically significant associations between countries and systematic estimation of the training effectiveness (Chi square test=51.234; df=3; $p<0.005$).

Table 4: Training effectiveness assessment in Balkan countries

		Systematic evaluation of training effectiveness		Total
		No	Yes	
CRANET member country	Bosnia and Herzegovina	57.4%	42.6%	100.0%
	Croatia	39.3%	60.7%	100.0%
	Serbia	20.8%	79.2%	100.0%
	Slovenia	65.2%	34.8%	100.0%
Total		**45.1%**	**54.9%**	100.0%

Source: Authors based on Cranet data 2022.

The number of days that employees spend on training (training extensiveness) during the year indicates the extensiveness of the training. Table 5 shows those indicators.

Table 5: Average number of days spent on training for various categories of employees

CRANET member country		management/professionals	clerical/manual
Bosnia	Mean	10.64	5.89
	Std. Deviation	9.178	7.199
Croatia	Mean	6.68	5.38
	Std. Deviation	5.046	4.569
Serbia	Mean	11.17	7.90
	Std. Deviation	9.586	11.501
Slovenia	Mean	10.29	6.62
	Std. Deviation	16.917	12.504
Total	Mean	**9.73**	**6.60**
	Std. Deviation	12.082	10.227

Source: Authors based on Cranet data 2022.

In the analyzed organizations, employees spend an average of about 8 days on training. The extensiveness of the training is more pronounced for managers and professionals, who spend more than 9 days on various trainings. The obtained result can also be observed so that the talents spend about 65 hours a year on training, which is provided by the employer. Administrative and manual workers have the opportunity to develop their skills at trainings lasting about 7 days, that is, 56 hours a year. High standard deviation values indicate significant deviations of individual organizations from the average value. Differences between countries are not statistically significant.

The share of training costs in the total annual salary costs is an important indicator of the importance of training. In most of the analyzed organizations, the average share of training costs is 3.00% of annual costs related to employees' salaries, which speaks of the modest position of employee training in the observed companies. The higher the share of training costs, the more the organization invests in updating and developing the knowledge, skills and competencies of

its employees. The differences that appear between countries, based on the data in table 6, are statistically significant (ANOVA F=7.506; df=3,334; p<0.005).

Table 6: Percentage of annual payroll costs spent on training

CRANET member country	Mean	Minimum	Maximum	Range
Bosnia and Herzegovina	3.83	0	10	10
Croatia	2.24	0	10	10
Serbia	2.55	1	10	10
Slovenia	3.81	0	10	10
Total	**3.00**	**0**	**10**	**10**

Source: Authors based on Cranet data 2022.

The data on the **techniques used to evaluate the effectiveness of training** are shown in table 7.

Table 7: Techniques used to evaluate the effectiveness of training (%)

CRANET member country	Total number of days training	Meeting objectives in the plan	Reaction evaluation immediately after training	Job performance before and after training	Informal feedback from line managers	Informal feedback from employees	ROI
Bosnia and Herzegovina	19.4%	16.7%	16.7%	2.8%	25.0%	11.1%	0%
Croatia	41.6%	48.3%	42.7%	23.6%	47.2%	44.9%	5.6%
Serbia	40.6%	57.5%	46.2%	40.6%	57.5%	51.9%	10.4%
Slovenia	17.8%	22.4%	25.2%	11.2%	23.4%	22.4%	2.8%
Total	**31.4%**	**39.6%**	**35.5%**	**22.8%**	**40.5%**	**36.4%**	**5.6%**

Source: Authors based on Cranet data 2022.

In most observed organizations, non-financial methods are used to evaluate the effectiveness of employee training. The most frequently used techniques are: achieving the goals set in the training plan (48%), informal feedback or feedback from line managers (47%), and informal feedback or feedback from employees about the effectiveness of training (45%). It should be noted that the use of a financial indicator (return on investment) for measuring the effectiveness of training is still inadequately accepted by human resources experts in Serbia, it is applied only in 10% of the analyzed organizations, while in Bosnia and Herzegovina not a single organization in the sample applies ROI for training evaluation.
Table 8 presents the data on the used techniques for career management in companies in the sample.

Table 8: Techniques for development or career management (scale 0-3)

Techniques for career management	B and H	Croatia	Serbia	Slovenia	Total
Job enrichment	0.98	1.03	1.59	0.95	**1.16**
External training (off-the-job)	1.30	1.71	1.29	1.82	**1.58**
Training on-the-job	1.98	2.11	2.19	1.91	**2.05**
Developmental assignments/project	1.02	1.70	1.60	1.59	**1.55**
Formal networking schemes	0.28	0.68	1.06	0.87	**0.80**
Formal career plans	0.57	1.07	1.17	0.76	**0.94**
Assessment and development centres	0.28	0.57	0.91	0.45	**0.59**
Succession plans	0.32	0.95	1.11	0.95	**0.92**
Planned lateral move and/or job rotation	0.55	1.09	1.40	1.22	**1.15**
High flier schemes	0.34	1.36	0.94	0.98	**0.99**
International assignments	0.36	0.85	0.89	0.39	**0.65**
Coaching	0.55	0.86	1.08	0.81	**0.87**
Mentoring	1.28	1.69	1.47	1.63	**1.56**
E-learning and digital learning	0.94	1.61	1.46	1.33	**1.39**
Career counselling and/or workshop	0.85	0.75	1.14	0.63	**0.83**

Source: Authors based on Cranet data 2022.

From table 8 we can note that mostly used techniques for career development are training on the job and off the job, mentoring, and developmental assignments or project. Less used are development centres and international assignments. Companies from Bosnia and Herzegovina expressed low level of implementation of all techniques.

Since there were 15 potential techniques for career development ion the questionnaire, for the future analysis of correlations between observed variables, we performed a factor analysis in order to group large number of variables (techniques) into smaller number of factors (constructs). The Kaiser-Meyer-Olkin and Bartlett spherical tests were implemented to check if the sample is adequate for future analyses. The KMO is 0.937, and Bartlett's test of sphericity is 2174.346 (p<0.000). Both tests have confirmed that the data are suitable for factor analysis.

Table 9: Rotated Component Matrix

	Component	
	CDT1	CDT2
Formal networking schemes	.762	
Assessment and development centres	.731	
Formal career plans	.718	
Job enrichment	.699	
International assignments	.634	
Succession plans	.632	
High flier schemes	.626	
Career counselling and/or workshop	.596	
Planned lateral move and/or job rotation	.556	
Developmental assignments/project	.524	
Mentoring		.760
External training (off-the-job)		.709
E-learning and digital learning		.569
Training on-the-job		.564
Coaching		.524
Extraction Sums of Squared Loadings	*6.774*	*1.022*
% of Variance	*45.159*	*6.815*
Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.		

Source: Authors based on Cranet data 2022.

Table 9 presents the results of the factor analysis (rotated component matrix) for T&D techniques. Exploratory factor analysis (EFA) has identified 2 factors from the initial 15 variables, with an eigenvalue of 6.774 that describes 45.16% of the total variance for the first factor (CDT1), and an eigenvalue of 1.022 that describes 6.815% of the total variance for the second factor (CDT2). Mentoring, external training (off-the-job), e-learning and digital learning, training on-the-job, and coaching are grouped as CDT2, while the other variables created CDT1.

Final part of the analysis was the investigation of the correlations between the observed variables. Correlation analysis (Table 10) indicated that between certain variables there are statistically significant positive weak and medium correlations in the case of almost all indicators, especially in the case of training techniques CDT1, training techniques CDT2, and training budget, expressed as the percentage of the annual payroll costs spent on training, and days spent on training for all categories of employees. Also, there are positive correlations between training need assessment and training effectiveness evaluation and all indicators of training and development. Existence of written HR training & development strategy also shows positive correlations with almost all indicators of T&D in a company.

Table 10: Spearman's correlation analysis

Spearman's rho	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Do you systematically estimate the need for training of employees 1	1.000															
Percentage of annual payroll costs spent on training 2	.168**	1.000														
Days per year training for management/professionals 3	.216**	.323**	1.000													
Days per year training for clerical/manual 4	.176**	.234**	.637**	1.000												
Do you systematically evaluate the effectiveness of your training? 5	.451**	0.025	.197**	.246**	1.000											
Total number of days training 6	.297**	0.000	0.036	0.032	.596**	1.000										
Meeting objectives 7	.276**	-0.033	0.097	.164**	.669**	.507**	1.000									
Reaction evaluation immediately after training 8	.356**	0.074	.203**	.179**	.651**	.536**	.535**	1.000								
Job performance before and after training 9	.303**	0.037	.176**	.220**	.457**	.340**	.503**	.408**	1.000							

Informal feedback from line managers 10	.360**	-0.062	.159**	.153**	.689**	.531**	.587**	.607**	.427**	1.000						
Informal feedback from employees 11	.330**	-0.036	.116*	.105*	.627**	.550**	.537**	.603**	.402**	.821**	1.000					
ROI 12	.119*	-0.015	0.017	0.033	.214**	.168**	.237**	.211**	.298**	.208**	.208**	1.000				
CDT2 13	.343**	.183**	.272**	.230**	.327**	.341**	.318**	.439**	.272**	.324**	.362**	.117*	1.000			
CDT1 14	.408**	.145**	.263**	.214**	.378**	.330**	.444**	.447**	.403**	.335**	.376**	.210**	.727**	1.000		
Existence of written HR training & development strategy 15	.318**	0.049	.201**	.204**	.435**	.302**	.369**	.351**	.311**	.390**	.399**	.186**	.339**	.364**	1.000	
Primary responsibility for major policy decisions on T&D 16	.246**	.106*	.125*	.111*	.244**	.137**	.221**	.269**	.177**	.196**	.193**	0.054	.275**	.293**	.286**	1.000
**. Correlation is significant at the 0.01 level (2-tailed).																
*. Correlation is significant at the 0.05 level (2-tailed).																

Source: Authors based on Cranet data 2022.

CONCLUSIONS

Employee development, as an activity of human resources management, refers to the constant acquisition of new knowledge and skills, as well as new work and practical experience, that is, the application and verification of knowledge and skills in practice. In a society based on knowledge, continuous professional education should accompany the development of experts throughout their entire career. The training program should include steps like needs assessment, training plan, training implementation and training program evaluation. Many previous research found that T&D is related to individual and organizational success.

The results of the empirical research in this paper, based on the data from the Cranet survey conducted in 2021, show the current practice of talent development in four countries, Bosnia and Herzegovina, Croatia, Serbia, and Slovenia. In the observed organizations, training and talent development begins with an assessment of the need for training, where most of the companies are performing such assessment. Managers and professional workers have about 9 days of training per year, and companies invest about 3% of the total costs of employees to update their knowledge and competencies. About half of the observed companies have a T&D strategy in their HRM, while line managers in cooperation with HR managers are responsible for T&D issues and decisions in companies. In most observed organizations, non-financial methods are used to evaluate the effectiveness of employee training, such as the achievement of goals set in the training plan and informal feedback from line managers and employees about the effectiveness of training. Also, companies usually use training on the job and off the job, and mentoring and projects for employees' career development and training. The presented results of the Cranet research show that organizations in the Balkan region have realized the importance of building a society based on knowledge and in that spirit manage their talents, try to shape development activities according to the requirements of managers and experts. However, there is still significant space for improvement in the practice of talent development, especially in terms of evaluating the results of training and applying modern methods for the development of talent competencies.

Theoretical implications of the paper lie in the investigation of the T&D practices in Balkan region, four countries, based on standardized questionnaire which is used in more than 40 countries in the world. This research adds new insights to the comparative human resource management since it compares same practices and indicators in different countries, with different national cultures but, to some extent, similar economic and political past (all countries were under socialist regime as former Yugoslavia until the 1990s). Managerial implications are seen in presenting new results on T&D practice and activities and indicators for large and SME companies in mentioned region, so companies that are aware of these results, can try to implement some of the steps and techniques that are proved to be adequate for T&D programs, and they can plan their T&D practices according to mentioned ideas in theoretical part of the paper. Limitation of the research can be found in the sense that we did not include data on organizational performances as dependent variable, what would be helpful in investigation of the relation between T&D and results of companies. This is actually a proposition for future research. Besides, research of the same data from same countries in several research rounds would be beneficial for becoming familiar with development of T&D practices over time in different countries, which is also an interesting issue in comparative HRM.

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THE RELATIONSHIP BETWEEN WORK DESIGN AND JOB SATISFACTION AND ITS IMPLICATIONS FOR ROMANIAN COMPANIES

Abstract: The aim of this paper is to identify the work characteristics with the highest impact on job satisfaction across a wide range of occupations and positions within Romanian companies. The empirical research had been carried out within the Global Work Design Project initiated by the Academy of Management HR Division, based on the work design questionnaire (WDQ) developed by Morgeson and Humphrey (2006). The Romanian sample consists of 394 employees from 69 organizations In our paper we construct the model of the typical Romanian job (with the average values of work characteristics) and identify the features which lead to high job satisfaction. Our findings have implications on companies' HR strategies.

Keywords: work design, job satisfaction, employee turnover, Romania

1. INTRODUCTION

Job satisfaction is often defined as a positive emotional state that is derived from an individual's experience at work. It is associated with a range of positive outcomes such as increased motivation, engagement, commitment, performance and productivity, and it is also a relevant factor of turnover intentions. As such, it is important for organizations to take measures to ensure that employees are satisfied with their job roles. Work design is one such measure, as it refers to the way tasks, roles, responsibilities and activities are created, organized and structured in the workplace to achieve an organization's goals.

In 2021, altogether 42% of workers across the EU27 reported a high level of engagement at work, while in high-involvement organisations, where employees had more control over their work and felt more involved in decision-making processes, this percentage increased to 51% (Eurofound, 2022). Evidence shows that poor-quality work designs (characterized by low discretion and task complexity, sometimes combined with high timing constraints) continue to be prevalent even when new jobs are introduced. Workload and physical load had intensified, while cognitive demands and job discretion declined. In 2021, almost half of the workforce in the EU27 worked always or often at high intensity (high speed and tight deadlines) and almost a fifth of workers experienced emotionally disturbing situations. At the same time, around half of workers had the autonomy to change the order of their tasks or the speed of their work, and to determine their work methods (Eurofound, 2022).

The aim of this paper is to identify the work characteristics with the highest impact on job satisfaction across a wide range of occupations and positions within Romanian companies, based on data collected within the Global Work Design Project initiated by the Academy of Management HR Division.

The paper consists of four parts. In the first part of the authors present some of the main theoretical findings related to the impact of work design on job satisfaction, the second part of the research presents the methodology, results and discussion are given in the third part, while conclusions are presented in the last chapter of the paper.

2. THEORETICAL BACKGROUND

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The relationship between workers' happiness and productivity has been widely acknowledged (Wright & Cropanzano, 2000), and several studies focus on how organizations can ensure such happy and productive workers. Work design theory also hypothesizes a relationship between work design and job satisfaction (Morgeson & Humphrey, 2006).

Work design, defined as "the content and organization of one's work tasks, activities, relationships, and responsibilities" (Parker, 2014, p. 662), is a "key determinant of employee well-being, positive work attitudes, and job/organizational performance" (Parker, Van den Broeck & Holman, 2017, p. 267). Work design is created and sustained both by managers through formal decision-making processes, and by the employees themselves, through informal or social processes, but managerial choices have a key role (Parker, Morgeson & Johns et al., 2017).

The Job Characteristics Model (JCM) of Hackman and Oldham (1975, 1976) identifies five core job characteristics (skill variety, task identity, task significance, autonomy, and feedback from the job itself) that can create three psychological states of employees (experienced meaningfulness of work, experienced responsibility for the outcome of the work and knowledge of the actual results of the work activities) which lead to personal and work outcomes such as high internal work motivation, high satisfaction with the work, high quality work performance, low absenteeism and turnover.

Morgeson and Humphrey (2006) grouped work characteristics as follows: motivational work characteristics, including task characteristics (autonomy, task variety, task significance, task identity, feedback from job) and knowledge characteristics (job complexity, information processing, problem solving, skill variety, specialization), social characteristics (social support, interdependence, interaction outside the organization, feedback from others) and contextual characteristics (ergonomics, physical demands, work conditions and equipment use). Jobs within broad occupational categories would differ on certain work characteristics, i.e. knowledge characteristics and autonomy would be higher for jobs in professional occupations than jobs in nonprofessional occupations, while jobs in nonprofessional occupations would have higher levels of physical demands and less positive work conditions than jobs in professional occupations.

Individuals charged with designing or redesigning work may encounter several problems. If the jobs are already high on one of the motivational characteristics, additional increases are simply not feasible or will have negligible effects on satisfaction. The Work Design Questionnaire (WDQ) developed by Morgeson and Humphrey (2006) enables the assessment of different work characteristics, so a wide range of options can be considered to achieve different redesign goals. Other problems faced are the costs of increased training and compensation requirements, and the impossibility to change the task characteristics without producing job overload or too much complexity. The authors suggest that by enhancing social support, the work becomes more interesting to perform with lower training requirements.

Morgeson, Garza and Campion (2012) concluded that work characteristics impact various attitudinal, cognitive, behavioral and well-being outcomes. Autonomy, task identity, task significance, task variety and feedback from the job were found related to subjective performance; in addition, autonomy, task identity, feedback from the job and social support were negatively related to absenteeism.

According to Nielsen et al. (2017) employee well-being and performance may successfully be improved through interventions focused on building resources at individual level (self-efficacy, competence, hope, optimism, resilience and job crafting), at group level (social support, good interpersonal relationships between employees, teamwork), at the leader's level (good quality relationship between leader and employees, transformational leadership) and at the organisational level (the way work is organised, designed, and managed, autonomy and HR practices).

Zaharie, Kerekes & Osoian (2019) found a rather strong negative relationship between burnout and the turnover intentions and a moderate negative relationship between job satisfaction and the turnover intentions of the employees in the healthcare sector, while job satisfaction weakly moderates the relationship between burnout and turnover intentions.

The Gallup's engagement survey demonstrated that the relationship between engagement and work performance is substantial and highly generalizable across organizations. To improve employees' productivity managers can meet the following needs: job clarity, proper equipment and resources, work that aligns with one's talents, consistent feedback, being cared about as a person, encouragement received for one's development, interest for one's progress, opportunities to learn and grow, opinions being asked for and considered, an organizational mission which makes the job important, coworkers commitment to quality work and having a best friend at work (Gallup, 2020).

At opposite, high job demands combined with low decision latitude (also called as job strain), had been associated with an increased risk of cardiovascular disease and mental health issues. Other psychosocial work factors, such as long working hours, job insecurity, effort–reward imbalance, workplace bullying, organizational injustice, and work–family conflict also negatively influence employees' well-being (Niedhammer, Bertrais & Witt, 2021).

The Eurofound (2022) survey examined the following dimensions of job quality: physical and social environment (exposure to physical risks and demands, support from their colleagues and managers, intimidation, discrimination at work), job tasks (work intensity, emotionally disturbing situations, autonomy), organisational characteristics (ability to

influence decisions that were important for their work, involvement in improving work organisation, processes, and in setting work objectives), working time arrangements (flexibility, work at night, work in free time, short notice calls into work), job prospects (career advancement, opportunities for learning), and intrinsic job features (recognition, usefulness, opportunities to use one's knowledge and skills). An index of job quality was constructed by comparing the job demands (which affect workers negatively) and the job resources (which affect workers positively) of an individual.
The results show that in 2021 around 30% of EU workers were in strained jobs, where they experienced more job demands than job resources. Despite the changes workers experienced in their work due to the COVID-19 pandemic and the global crisis emerging afterwards, the link between job quality and the core indicators of the quality of working life remained unbroken: job quality is positively associated with well-being, good work–life balance, fewer work–life conflicts, better ability to make ends meet, better work engagement and greater trust within the workplace. Working conditions and quality of jobs influence the engagement of employees with their work: workers satisfied with their experience at work are also more likely to engage with their work. Autonomy to work leads to learning at work, increases creativity in the workplace and supports organisational performance, as it encourages workers to increase their discretionary effort (Eurofound, 2022).

3. METHODOLOGY

3.1. Questionnaire

The empirical research had been carried out within the Global Work Design Project initiated by the Academy of Management HR Division, based on the work design questionnaire (WDQ) developed by Morgeson and Humphrey (2006). There were four questionnaires developed altogether: respondent employees and their supervisors completed two questionnaires each, in two rounds. In the first round, employees had to complete a questionnaire referring to job autonomy, task variety, task significance, task identity, feedback from job, job complexity, information processing, problem solving, skill variety, skill specialization, social support, interdependence, interactions outside the organization, feedback from others, ergonomics, physical demands, work conditions and job satisfaction, while the supervisors completed a questionnaire related to the organization and to the performance of the respondent employees. The second round of questionnaires were administered two weeks after the first round. This time, the employees assessed items related to organizational culture, job satisfaction, turnover intentions and burnout, while the supervisors evaluated the employees' behavior and the organizational structure. Each construct was built of three items (statements) assessed on a 5-point scale (from 1 - strongly disagree to 5 - strongly agree).
To ensure international comparability of the Romanian data, the original English language questionnaires were adapted to Romanian in several steps. At first, members of the research team translated the questionnaire into Romanian, then other research team members checked the Romanian translation and sent the questionnaire to a professional translator to translate it back into English. Both the translated and back-translated questionnaires were sent for approval to the lead team and in the final step the issues raised by the lead team were resolved by a researcher who did not take part in the previous stages of translation.

3.2. Sample

The questionnaires were administered between November 2017 and September 2018. The sampling method used was convenience sampling. As data collection process implied a considerable effort from the respondent organizations, it was difficult to find organizations that would allow us to complete the whole procedure, so we used personal contacts in order to maximize response rate.
The Romanian sample consists of 394 employees from 69 organizations. Almost two third (64%) of respondents are women and 36% are men, and 70.2% are university graduates. Most of the respondents (39.5%) belong to the 20-29 years old age group, 27.9% are 30-39 years old, 18.5% are 40-49 years old and 14.1% are over 50 years of age. As regards the economic sector of the employing organization, 21.5% of the respondents work in healthcare and social assistance, 13.1% in professional, scientific and technical services, 11.0% in construction, 10.7% in manufacturing, 6.6%-6.6% in transportation and warehousing, retail trade and educational services, 18% in other services and 6.6% in other sectors.

3.2. Analysis strategy

In our paper we build up the model of the typical Romanian job (the average values of the work characteristics) and compare it with the ideal one (the average values of the work characteristics for the respondents with high job satisfaction, low turnover intention and low level of burnout). We also compare work characteristics of managerial and non-managerial positions. Furthermore, we test for the correlation between the level of job satisfaction (declared by the employees) and task performance (assessed by the supervisor).

4. RESULTS

To find out the characteristics of the typical Romanian job, we aggregated the items measuring the following constructs: job autonomy, task variety, task significance, task identity, feedback from job, job complexity, skill variety, social support, feedback from others and work conditions. Results can be seen in Table 1.

Table 1: Values of different work characteristics and the level job satisfaction, turnover and burnout

Construct measured	N	Minimum	Maximum	Mean	Std. Deviation
Job autonomy	389	1,00	5,00	3,3973	0,79511
Task variety	392	1,00	5,00	3,8584	0,95990
Task significance	392	1,00	5,00	3,5306	1,00987
Task identity	393	1,50	5,00	4,0305	0,82299
Feedback from job	392	1,00	5,00	3,8503	0,90983
Job complexity	393	1,00	5,00	2.6113	1.01622
Skill variety	392	1,00	5,00	3,8514	0,81980
Social support	389	1,40	5,00	4,0478	0,63723
Feedback from others	390	1.00	5.00	3.3726	0.93529
Work conditions	387	1,20	5,00	3,6765	0,81485
Job satisfaction average	393	1.00	5.00	4.1433	0.72257
Task performance	394	1,50	5,00	3,9239	0,79493
Turnover intention	393	1,00	5,00	2,6431	0,65735
Burnout	393	1,00	6,00	2,8514	1,05478
Helping behavior	394	1,50	6,00	4,5082	1,06160
Organisational loyalty	391	1,00	6,00	4,4249	1,08647

Source: Own research.

The job satisfaction of each respondent was calculated by averaging the items related to the job satisfaction construct for both rounds. The overall value of job satisfaction for the whole sample was 4.14 (on a scale from 1 to 5), which can be considered rather high.

The average turnover intention of the respondents was 2.64 (on a scale from 1 to 5), 80.4% of the respondents did not consider leaving the organization (values up to 3.00) and only 3.8% were ready to leave (values 4.00 to 5.00)

The average level of burnout was 2.85 (on a scale from 1 to 6), 63.1% of the respondents were extenuated occasionally or even less frequently (values up to 3.00), while 17.6% felt extenuated often or very often at work.

The task performance of the respondents was appreciated by their supervisors at the first round of questionnaires. The overall performance of the respondents was 3.92 (on a scale from 1 to 5); over half of the employees (55.1%) performed well (values 4.00 to 5.00) and only 17.3% of the employees performed at a low level (values up to 3.00) according to their supervisors.

The supervisors also appreciated that the employees have a rather supportive behavior towards their colleagues (in average 4.51 on a scale from 1 to 6) and they also show loyalty towards the organization they work for (in average 4.42 on a scale from 1 to 6).

Job satisfaction correlates significantly (at the 0.01 level) and positively with the following work characteristics:

- Job autonomy (Pearson correlation = 0.378)
- Task variety (Pearson correlation = 0.517)
- Task significance (Pearson correlation = 0.456)
- Task identity (Pearson correlation = 0.403)
- Feedback from job (Pearson correlation = 0.379)
- Skill variety (Pearson correlation = 0.469)
- Social support (Pearson correlation = 0.354)
- Feedback from others (Pearson correlation = 0.385)
- Work conditions (Pearson correlation = 0.145)

On the other hand, job satisfaction correlates significantly (at the 0.01 level) and negatively with job complexity (Pearson correlation = -0.229).

Our results (see Table 2) confirm previous findings about the positive relationship between job satisfaction and task performance (Pearson correlation = 0.265), moreover the results show that job satisfaction significantly (at the 0.01 level) and positively correlates with the respondents' readiness to help out colleagues at work (Pearson correlation = 0.345) and with the loyalty towards the organization (Pearson correlation = 0.468). Another important result for HR management is that job satisfaction correlates significantly (at the 0.01 level) and negatively with turnover intention (Pearson correlation = -0.292) and burnout (Pearson correlation = -0.167).

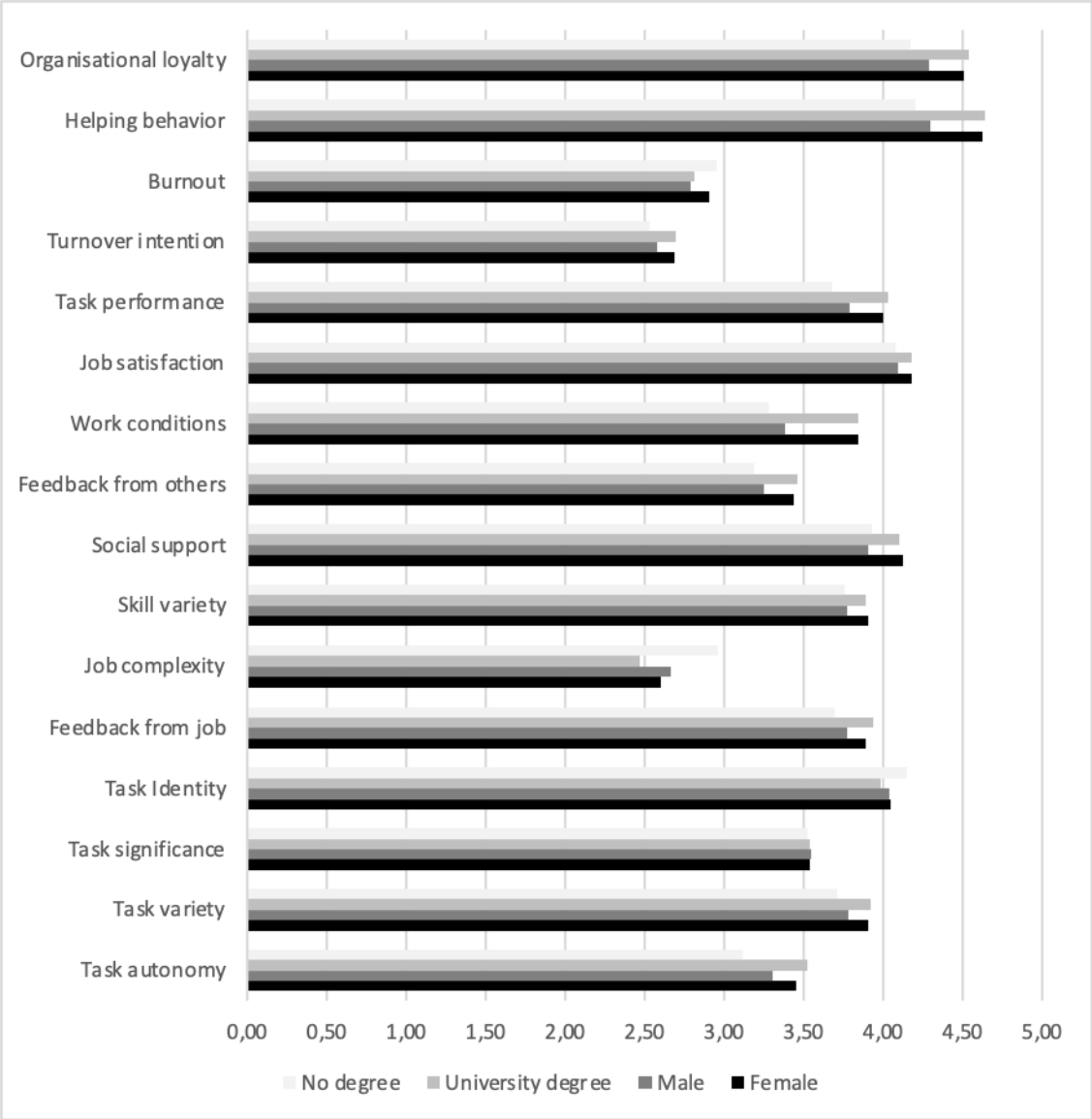
Table 2: Values and significance of the Pearson correlation coefficients of different work characteristics and job satisfaction

		Task performance	Turnover intention	Burnout	Helping behavior	Organisational loyalty
Job satisfaction	Pearson Correlation	.265(**)	-.292(**)	-.167(**)	.345(**)	.468(**)
	Sig. (2-tailed)	0,000	0,000	0,001	0,000	0,000
Task performance	Pearson Correlation	1	-0,009	0,016	.557(**)	.605(**)
	Sig. (2-tailed)		0,858	0,751	0,000	0,000
Turnover intention	Pearson Correlation		1	.339(**)	-.140(**)	-.159(**)
	Sig. (2-tailed)			0,000	0,006	0,002
Burnout	Pearson Correlation			1	-0,022	-0,013
	Sig. (2-tailed)				0,657	0,800
Helping behavior	Pearson Correlation				1	.748(**)
	Sig. (2-tailed)					0,000
Organisational loyalty	Pearson Correlation					1
	Sig. (2-tailed)					

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

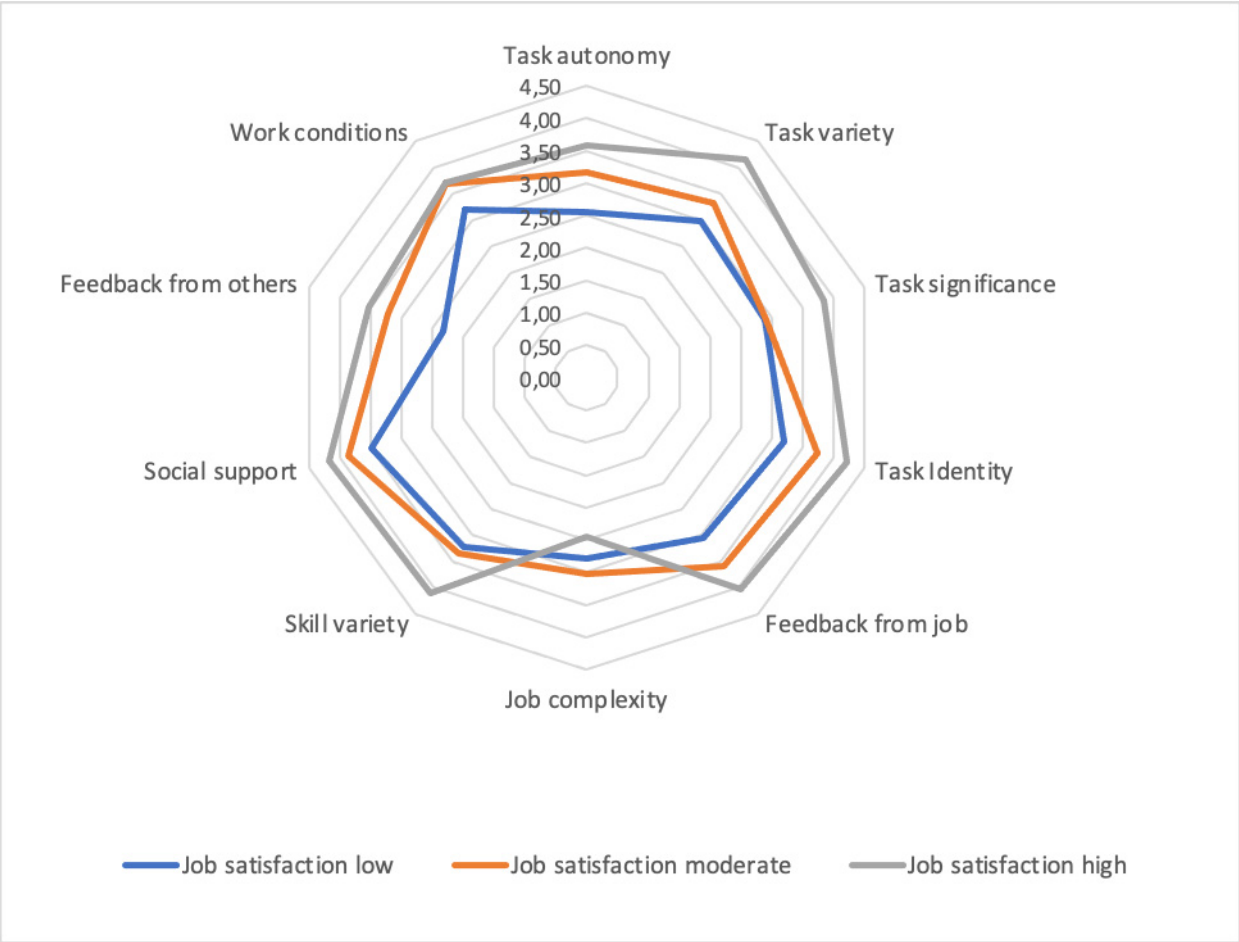
Source: Own research.



Picture 1: Values of work characteristics and elements of employee behavior, by gender and education

Source: Own research

For most of the studied constructs (Picture 1), gender differences are not significant, except that women perceive more social support (at the 0.01 level and better work conditions (at the 0.01 level). Supervisors consider that women perform better (at the 0.05 level) and are more ready to help their colleagues (at the 0.01 level).
University graduates have jobs which provide significantly higher task autonomy (at the 0.01 level) and more feedback (at the 0.05 level); they also perceive more feedback from others (at the 0.01 level) and more social support (at the 0.05 level), while those without university degree have to face significantly more complex jobs (at the 0.01 level). The supervisors appreciated that university graduates have significantly higher (at the 0.01 level) task performance, helping behavior and organizational loyalty than those without a degree. However, there is no significant difference between the job satisfaction averages of these two groups, and the turnover intention of university graduates is significantly higher (at the 0.05 level).
To identity the work characteristics which lead to high job satisfaction, we grouped the respondents into three groups: 263 respondents (67.0%) belong to the group of employees with high job satisfaction (at least 4.00, mean value 4.55), 104 respondents (26.4%) to the group of employees with moderate job satisfaction (3.00 to 3.99, mean value 3.56) and 26 respondents (6.6%) to the group of employees with low job satisfaction (1.00 to 2.99, mean value 2.38). The ANOVA test shows that all differences between the means are significant (at the 0.01 level), except the one regarding work conditions. We can see from Picture 2, that jobs which ensure high satisfaction have values over 4 (on a 1 to 5 scale) for task variety, task identity, feedback from job, skill variety and social support, and values over 3.5 for task autonomy, task significance and feedback from others, with job complexity is only 2.44.



Picture 2: Work characteristics of respondents with different levels of job satisfaction
Source: Own research

The benefits of high job satisfaction can be observed on Picture 3. Respondents belonging to the high job satisfaction group perform better, are more helpful and more loyal to the organization they work for, according to their supervisors. Moreover, the burnout level and turnover intention of those with high job satisfaction is lower. The ANOVA test demonstrates that all these differences are significant at the 0.01 level.

Picture 3: Performance and behavior of respondents with different levels of job satisfaction
Source: Own research

5. CONCLUSION

It is essential for organizations to understand the link between job satisfaction and work design in order to ensure that their employees are satisfied with their jobs. Studies have shown that work design plays an important role in job satisfaction, with aspects such as autonomy and job design having a strong influence on employees' satisfaction levels.
Our results confirm previous findings that job satisfaction correlates positively with job autonomy, task variety, significance and identity, feedback from the job, skill variety, social support, feedback from others, and work conditions. On the other hand, job satisfaction correlates negatively with job complexity.
Although there is no significant difference between the job satisfaction of the female and male respondents, women perceive more social support, benefit from better work conditions, but also perform better and are more ready to help their colleagues.
There is no significant difference between the job satisfactions of those with and without a university degree either, but the jobs of university graduates provide higher task autonomy, more feedback, and more social support, while those without university have to face complex jobs. Despite university graduates perform better, have higher levels of helping behavior and organizational loyalty, their turnover intention is significantly higher than of those without a degree.
An important result for HR management is that employees with high job satisfaction perform better, are more helpful and are more loyal to the organization they work for. Furthermore, the burnout level and turnover intention of those with high job satisfaction is lower. By taking measures to ensure that employees have control over their work and that their jobs are designed in a manner that offers a high degree of task variety and identity, organizations can increase the likelihood of job satisfaction and improved performance.
The limitation of the study is that women, university graduates and employees from healthcare are over-represented in our sample, therefore the job characterized by the mean values of the constructs can't be considered the "typical Romanian job". Still, the relationship between the work characteristics and job satisfaction, as well as between job satisfaction and performance, burnout and turnover are clearly demonstrated by our data and the managerial implications are valid. To reveal the implications of the COVID-19 pandemics, the research should be repeated in the coming years, but with a simplified methodology (only one round of questionnaires).

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Appendix: Values and significance of the Pearson correlation coefficients of different work characteristics and job satisfaction

		Variety	Signifi-cance	Identity	Feedback from job	Job complexity	Skill variety	Social support	Feedback from others	Work conditions	Job satisfaction
Autonomy	Pearson Corr.	.425(**)	.250(**)	.170(**)	.313(**)	-0,070	.302(**)	.260(**)	.334(**)	.229(**)	.378(**)
	Sig. (2-tailed)	0,000	0,000	0,001	0,000	0,166	0,000	0,000	0,000	0,000	0,000
Variety	Pearson Corr.	1	.492(**)	.163(**)	.301(**)	-.452(**)	.558(**)	.164(**)	.209(**)	-0,038	.517(**)
	Sig. (2-tailed)		0,000	0,001	0,000	0,000	0,000	0,001	0,000	0,453	0,000
Signifi-cance	Pearson Corr.		1	.418(**)	.335(**)	-.180(**)	.536(**)	.283(**)	.258(**)	0,032	.456(**)
	Sig. (2-tailed)			0,000	0,000	0,000	0,000	0,000	0,000	0,526	0,000
Identity	Pearson Corr.			1	.456(**)	.142(**)	.324(**)	.309(**)	.297(**)	.156(**)	.403(**)
	Sig. (2-tailed)				0,000	0,005	0,000	0,000	0,000	0,002	0,000
Feedback from job	Pearson Corr.				1	-.108(*)	.250(**)	.304(**)	.513(**)	.207(**)	.379(**)
	Sig. (2-tailed)					0,034	0,000	0,000	0,000	0,000	0,000
Job complexity	Pearson Corr.					1	-.307(**)	0,074	0,084	0,095	-.229(**)
	Sig. (2-tailed)						0,000	0,146	0,098	0,063	0,000
Skill variety	Pearson Corr.						1	.221(**)	.190(**)	0,012	.469(**)
	Sig. (2-tailed)							0,000	0,000	0,816	0,000
Social support	Pearson Corr.							1	.450(**)	.213(**)	.354(**)
	Sig. (2-tailed)								0,000	0,000	0,000
Feedback from others	Pearson Corr.								1	.250(**)	.385(**)
	Sig. (2-tailed)									0,000	0,000
Work conditions	Pearson Corr.									1	.145(**)
	Sig. (2-tailed)										0,004

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Source: Own research.

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THE ROLE OF TRAINING AND DEVELOPMENT IN DECISION-MAKING - BASED ON THE 2021/2022 CRANET SURVEY

Abstract: The training and development of human resources in companies and organisations is one of the key functions of HR: the conscious planning and organisation of this area is an important indicator of the functioning of an organisation (Karoliny et al., 2020).
The results of the related surveys not only provide a basis for comparison based on objective measurements, but also allow further lessons to be drawn, primarily with reference to Hungarian conditions. This is the purpose of the CRANET survey, which aims to gather information on EEM practices and their changes in different countries.
Within the questionnaire, the aspect of training and development appears in several sections. Within staff development, we have sought to demonstrate a statistically verifiable link between the sub-sections of the methods used for development and career management and the decision-makers responsible for training development: at the heart of our study was the assumption that it matters who is responsible for the main decisions: the less the manager makes decisions on training development issues, the more the organisation decides to use development and career management methods.

Keywords: CRANET, training and development, HR decision-making

1. INTRODUCTION

The empirical evidence provided by the Cranet network provides support to strengthen our understanding of the nature of strategic HRM, while the importance of the role of training and development in HR practices may also highlight regional differences and help identify the characteristics of HRM in the CEE region.
What aspects can be used to talk about HRM as a success factor for the company? It is not enough to highlight the importance of the role of training and development in the life of organisations today. On the one hand, "it is important for organisational success that training has an impact on the performance of the company", and on the other hand, "in order to achieve this, it is necessary to adapt training to the needs of the organisation and the needs of the (...) employees." (Poór et.al, 2018:223) More important, however, are the roles of managers and HR professionals: who are the people responsible for HR policies in an organisation and how they decide on the methods to be used for development or career management.
The CRANET survey includes all the questions that provide a rich and varied set of information to examine this important role.

2. THEORETICAL BACKGROUND

A company's conscious training development strategy or policy can offer a real and practical alternative with a wide range of training, and it also has an active role in many HR management issues: recruitment, talent management, a company's employer branding and onboarding strategy, and most recently, employee retention.
The role of managers and HR professionals as decision-makers can also be seen in studies and research on human resource management (HRM) and organisational training and development over the last x years.
In addition to HR professionals, senior management and all members of the management hierarchy play an important role in people management, while in many places the work of external service providers is used in the planning and execution of processes. In the past, mainly administrative tasks were emphasized, but in addition, the strategic support role is becoming more and more decisive. (Poór et al., 2018b)
From the fact that the HR department had to prove its necessity many times (Guest - King, 2004), through how the cooperation between the actors involved in various HR issues - be it professionals or the head of a specific organization - would be more effective (Ulrich –Brockbank, 2005), the research related to the topic increasingly covers the details, such as the definition of individual and team behaviors and results by leaders (Griffin - Parker 2007), or the importance of teamwork and the effectiveness of team building (Salas et al., 2008). Many current papers investigate the key role of training and development in career growth of employees (Khan – Bibi, 2022; Sugiarti, 2022; Park et al., 2022; Aruldoss, 2022).
Emphasizing the role of managers, Vallas already spoke in 2006 about the importance of the direction from which training and development "arrives": there are many limitations to the effectiveness of managerial initiatives if the employees do not have the authority, that is, their needs and ideas are not present taking into account, it can also affect workplace relations. After more than a decade, the changing role of HR is already in focus, including how the diverse range of training and development opportunities contributes to maintaining employee well-being (Kowalsky-Loretto, 2017). It is more and more important to plan, implement and execute HR practices (and for companies to interpret this as an investment, not as an expense) in such a way that it is most likely to increase the well-being of employees.
The study by Viitala and his co-authors (2020) examines the further changing role of HRM, and even more so, on the basis of which aspects it is possible to talk about HRM as a company's success factor. Here, training and development comes to the fore in such a way that it should be important not only from the point of view of employees, but also from the point of view of managers, because (mainly) the relatively weak HRM of SMEs can be traced back to managerial preferences.

2.1 The role of the CRANET survey in the mapping of Central and Eastern European characteristics

Other assumptions and empirical evidence serve as a basis for the growing influence, actors and supporters of HR (Poór et. al., 2018a), but Cranet's database helps to present the HR function and HR department in detail and covering all participating member countries in the organization his role within.
In this connection, Lazarova and her co-authors (2013), for example, identified an increase in the organizational status of HR professionals after a comprehensive Cranet survey, but failed to clearly confirm the increase in the strategic integration of HR.

The CRANET network not only sheds light on the importance of HRM contextuality (Dewettinck - Remue 2011), but also lays the foundation for comparisons that answer important connections within and between the HRM practices of specific regions.
Such a benchmark study presents, for example, the region-specific characteristics of HRM practice in the Central-Eastern European region. The analysis of Karoliny and his colleagues (2020) shows that the practices of Central and Eastern European organizations that rely on HR experts are less typical of other regions, and that the role of line management is decisive in the Central and Eastern European region.

3. METHODOLOGY

3.1. Data and sample

Data used for analysis are from the Cranet-network 2021 survey round. The so-called Cranet survey is the largest and most representative independent survey of HRM policies and practices worldwide. This is the largest international, non-profit HRM research network in the world, established in 1989.
The network brings together researchers from around 40 countries and plays a prominent role in examining the international development of HRM practices. This is now the ninth survey since 1989, which provides a large database

with the data of 6,460 respondents from 38 countries for further research and uses the following country grouping (Balogh-Karoliny-Poór, 2022):

- *Hungary (HUN)*
- *CEE without HUN - i.e., the 10 former socialist countries of Central and Eastern Europe without Hungary. (1. Bosnia and Herzegovina, 2. Croatia, 3. Estonia, 4. Latvia, 5. Lithuania, 6. Poland, 7. Romania, 8. Serbia, 9. Slovakia, 10. Slovenia)*
- *Europe without CEE - i.e. the 16 member countries of geographical Europe without CEE and HU. (1. Austria, 2. Belgium, 3. Cyprus, 4. Denmark, 5. Finland, 6. Germany, 7. Greece, 8. Iceland, 9. Israel, 10. Netherlands, 11. Norway, 12. Spain, 13 .Sweden, 14. Switzerland, 15. Turkey, 16. UK)*
- *Other non-European countries - i.e. the 10 countries of the continents beyond Europe. (1. Australia, 2. Brazil, 3. Canada, 4. China, 5. Japan, 6. Mexico, 7. Nepal, 8. USA, 9. Uzbekistan, 10. Venezuela)*

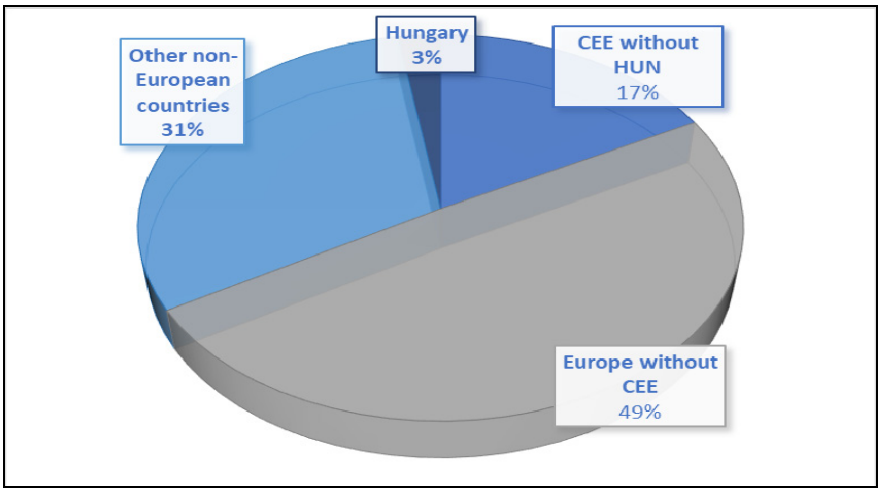

Figure 1: Proportion of organizations from the four regions in the Cranet 2021/2022 survey
Source: Own editing based on the Cranet 2021-2022 database

In relation to training and development, I analyzed the data from two chapters of the standardized questionnaire: the first part of the set of questions also asks who in the given organization is responsible for the policy issues of HR areas: the managers, the managers in consultation with the HR department, the HR department in consultation with the managers or specialists of the HR department. And the third part also deals with issues related to the areas of personnel development, more specifically, it is interested in the extent to which organizations use different methods for development or career management.
The frequency of use of the following methods can be answered in the questionnaire on a four-point scale: 1, Job enrichment 2, Off-the-job training 3, On-the-job training 4, Developmental assignments /projects 5, Formal network/relationship building program 6, Formal career plans 7, Evaluation and development center 8, Succession plans 9, Planned regional and/or job movements/rotation 10, High potentials programs 11, International assignments 12, Coaching 13, Mentoring 14, E-learning and digital learning 15, Career counseling.
Mainly in this section, Hungarian or even Central and Eastern European specificities can be highlighted: in the case of Hungary, for example, "the dominant decision-making mode is the decision taken by (top) managers independently (without prior consultation of HR professionals)." (Balogh et.al., 2022:36) These differences are also apparent when looking at the field of training and development, especially when compared to global or other country groups:

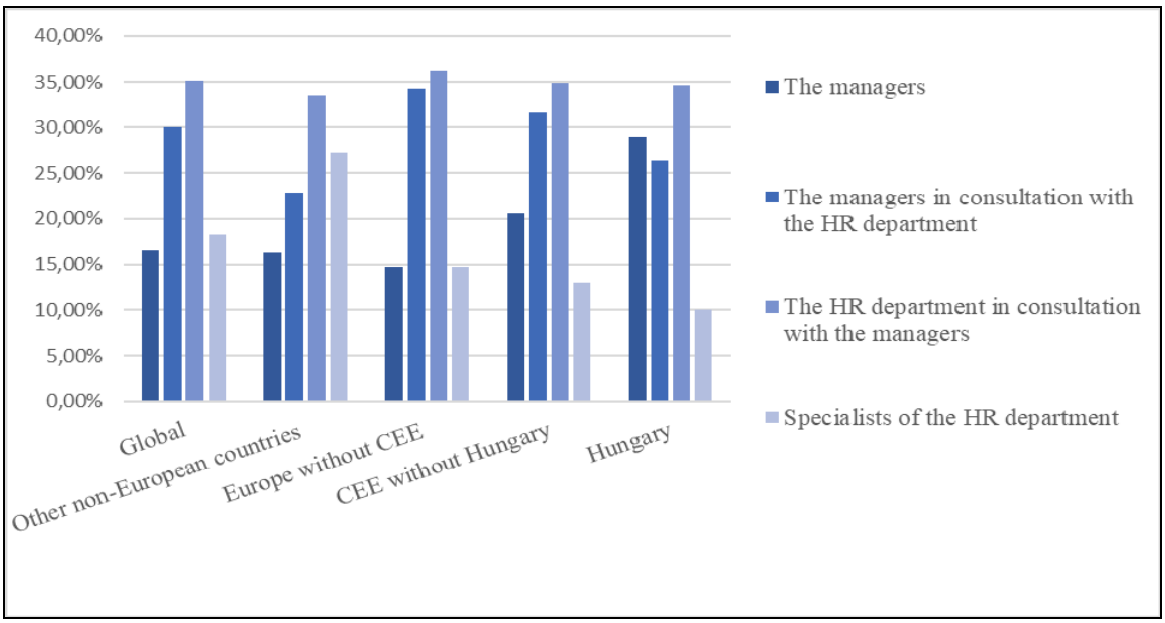

Figure 2: Decision-makers responsible for training and development policies in the Cranet 2021/2022 survey, in percentage

Source: Own editing based on the Cranet 2021-2022 database

Managers are the decision-makers in Hungary most of the time, while the HR department has the least say. The differences are "partly due to the fact that in our region - and thus in the Cranet sample - there is less proportion of larger organisations with typically higher levels of HR expertise and more advanced HR work." (Karoliny et.al., 2020:33)

3.2. Primary results

Among the methods used for development or career management in Hungary, e-learning and digital learning, on-the-job training, developmental assignments/projects and mentoring are the most common. (Figure 3) This broadly follows the global and other country group priorities, although with a lower weighted average. A fifth method worth mentioning is off-the-job training, which is included in the top four methods outside the global sample, in European countries without CEE, and in CEE countries (without Hungary).

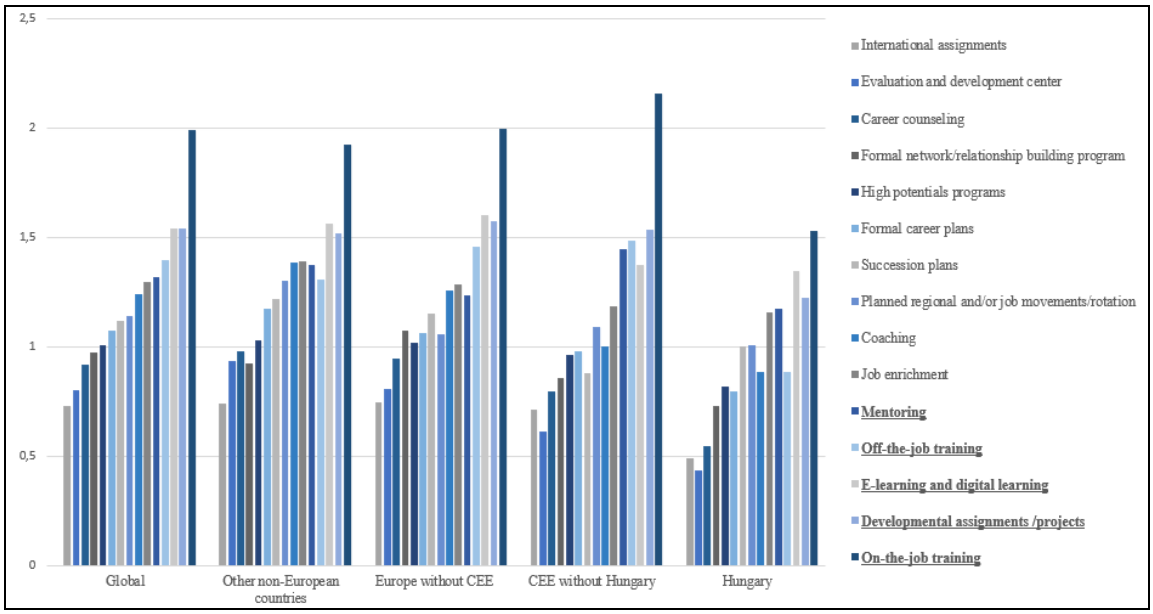

Figure 3: Ranking of the weighted average of methods used for development or career management in the Cranet 2021/2022 survey

Source: Own editing based on the Cranet 2021-2022 database

Compared to the previous surveys, a reorganization can be observed in the Hungarian and Eastern European labor markets. "The employers here are now faced with the fact that, in addition to salary increases, tools such as flexible employment, learning support or providing a pleasant working environment and innovative work tools have become a real holding force." (Karoliny et al., 2020:20)

3.3. The research method and the hypothesis

The data used from the CRANET database can be used not only for the use of descriptive statistics, but also for significance analyzes for measuring and checking the closeness of relationships (Chi-square test, calculation of Cramer's association coefficient values) and for drawing correspondence maps. I used the SPSS program for this. The tools used were suitable for checking and partially confirming the veracity of my starting hypothesis.
Using a different method to investigate the discrepancies observed on the basis of descriptive statistics, I analysed whether the significance of who and how training development decisions are made can be identified in terms of HR decision-making and its actors.

Hypothesis: The less exclusively managers make decisions on training-development issues, the more the organisation decides in favour of the methods used for development and career management, mainly five methods: e-learning and digital learning, on-the-job training, developmental assignments/projects, mentoring and off-the-job training.

3.4 Research results

The data in the first table show that in both the global and country group samples, decision making on training and development is significant for the five selected methods, i.e. there is a relationship between the selected criteria, with one exception: mentoring in Hungary with a p-value of 0.131 is well above the standard significance level of 0.05.
The closeness of the relationships between the criteria is weak according to the Cramer indicators. If a ranking were to be made between the country samples examined, Hungary, with a value above 0.2, would be ahead of the other country groups or even the global sample.

Table 1: Relationships between HR decision-making on training and development and the five methods used for development and career management in the global sample and the 4 country groupings

	1. off-the-job training				2. on-the-job training				3. Developmental assignments /projects			
	N	Chi-Square	Cramer	P value	N	Chi-Square	Cramer	P value	N	Chi-Square	Cramer	P value
Global	5260	138,628	0,094	<0,001	5351	114,067	0,084	<0,001	5241	81,497	0,072	<0,001
Other non-European countries	1655	44,607	0,095	<0,001	1714	58,295	0,106	<0,001	1663	35,985	0,085	<0,001
Europe without CEE	2455	25,665	0,059	0,002*	2481	51,021	0,083	<0,001	2442	29,756	0,064	<0,001
CEE without Hungary	993	96,921	0,180	<0,001	1000	34,024	0,106	<0,001	980	66,549	0,150	<0,001
Hungary	157	30,377	0,254	<0,001	156	26,971	0,240	0,001*	156	26,754	0,239	0,002*

	4. Mentoring				5. E-learning and digital learning			
	N	Chi-Square	Cramer	P value	N	Chi-Square	Cramer	P value
Global	5272	76,837	0,070	<0,001	5319	139,74104	0,0940	<0,001
Other non-European countries	1720	37,641	0,085	<0,001	1735	62,398	0,109	<0,001
Europe without CEE	2415	23,561	0,057	0,005	2450	27,302	0,061	0,001*
CEE without Hungary	980	33,730	0,107	<0,001	976	43,045	0,121	<0,001
Hungary	157	13,758	0,171	0,131	158	26,986	0,239	<0,001

Source: Own editing based on the Cranet 2021-2022 database

Based on the results of the cross-tabulations, correspondence maps can be used to graphically illustrate the most obvious relationships. In the maps, variables of similar nature are clustered close to each other, which makes it easier to understand and analyse the relationship between them. To perform the analysis, I used the Correspondence program (Analyze/Dimension Reduction/Correspondence Analysis) of the SPSS 27 software package. From each of the global sample and the four country groupings, I highlighted the most dominant pattern based on the strength of the Cramer indicators.

3.4.1. Global pattern

In the global sample, the closeness of the relationships between the variables is strongest for "E-learning and digital learning", based on the Cramer indicators: here the outputs of the two variables show a characteristic co-movement.

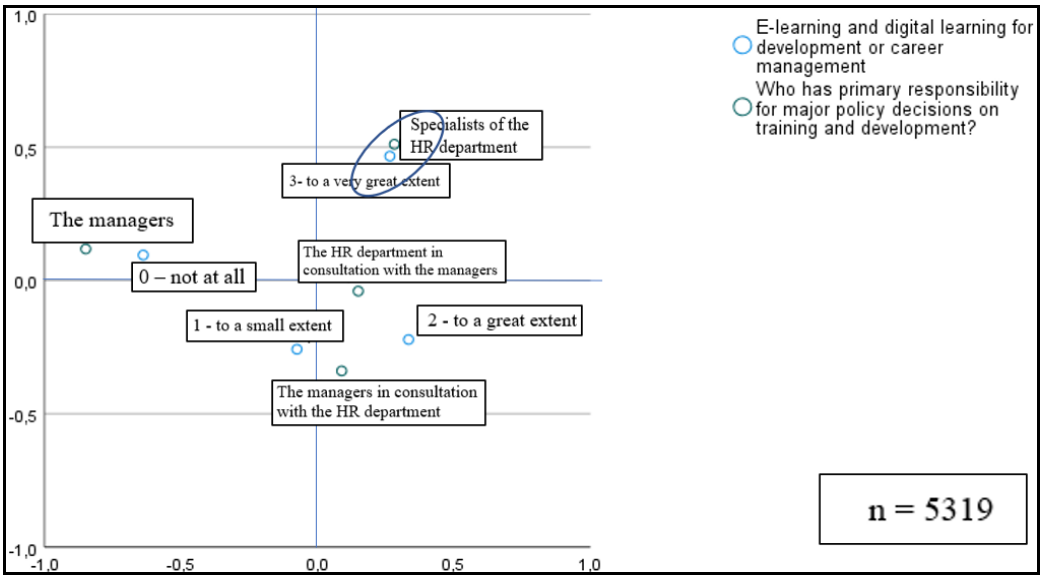

Figure 4: HR decision-making on training development and the relationship between e-learning and digital learning in a global sample
Source: Own editing based on the Cranet 2021-2022 database

The HR department can be said to be very much responsible decision-makers for E-learning/digital learning, but managerial decision-making associates with the category not at all.

3.4.2. Pattern of other non-European countries

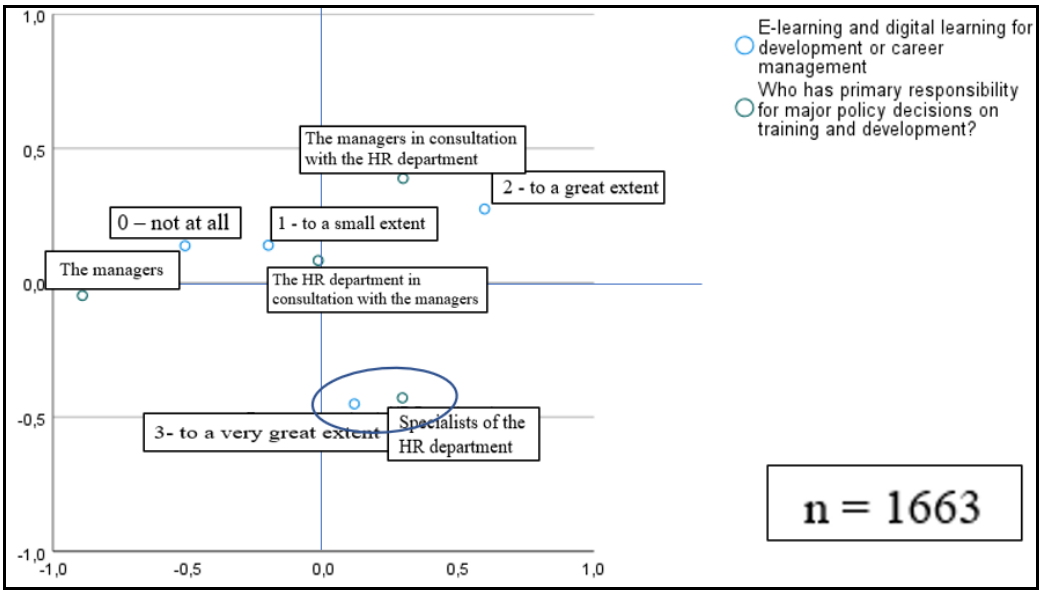

Figure 5: HR decision-making on training development and the relationship between e-learning and digital learning in a sample of “Other non-European countries”

Source: Own editing based on the Cranet 2021-2022 database

In other non-European countries have the specialists of the HR department also an important role in the same training and development method, like in the global sample: the HR managers are the main decision-makers for E-learning and digital learning.

3.4.3. Pattern of Europe without CEE (Central and Eastern European) countries

Cramer indicators were lowest in this group of countries, with on-the-job training standing out marginally from the others with an indicator of 0.083.

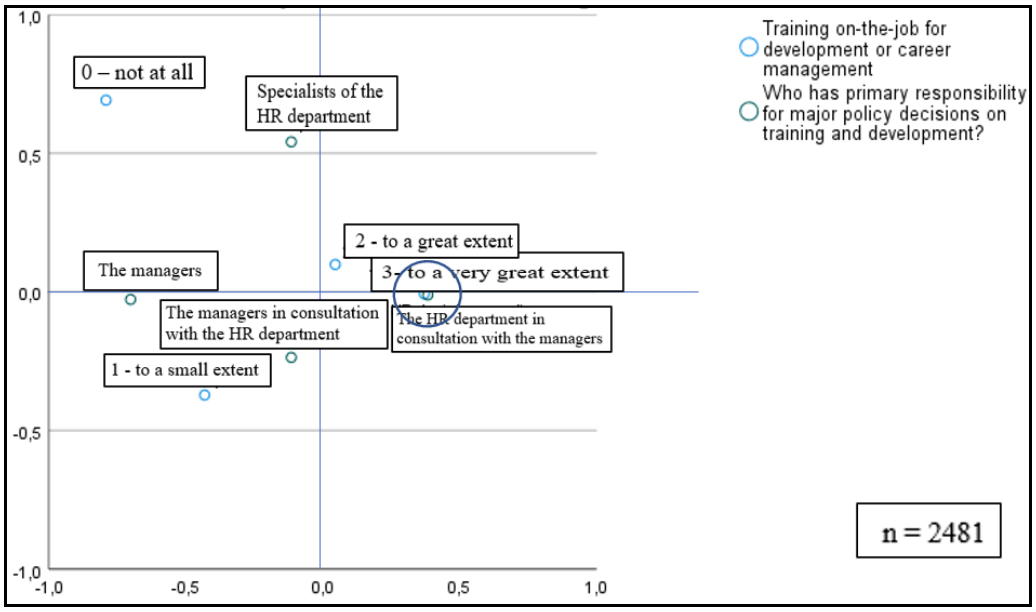

Figure 6: HR decision-making on training development and the relationship between on-the-job training in a sample of "Europe without CEE"
Source: Own editing based on the Cranet 2021-2022 database

For the 16 European countries in the country group, collective consultation was the guiding factor in the decision to provide on-the-job training, and by the largest margin.

3.4.4. CEE (Central and Eastern European) countries without Hungary

For the 10 former socialist countries, the Cramer indicator is higher for off-the-job training (0.18).

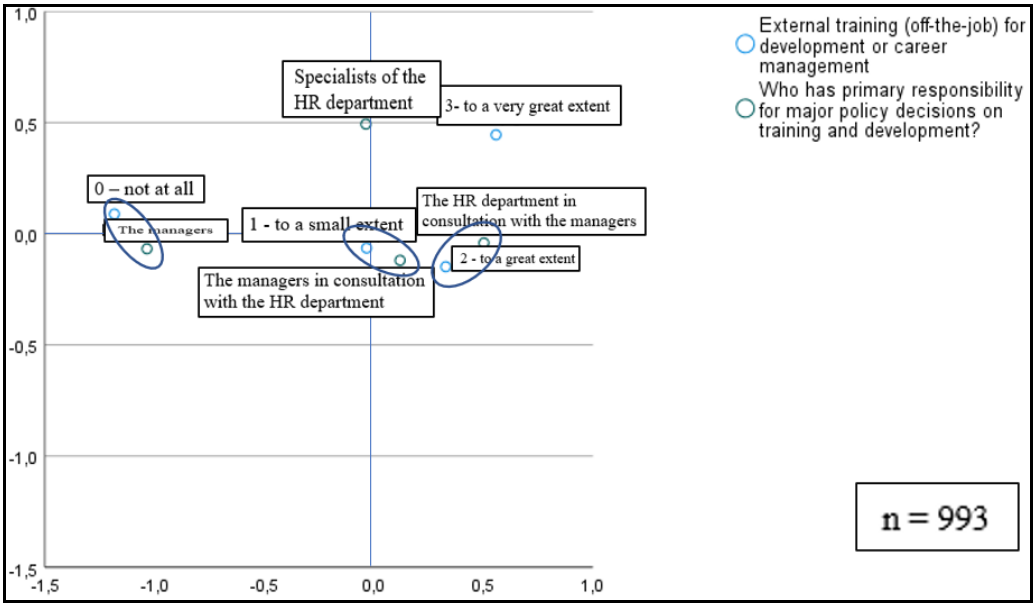

Figure 7: HR decision-making on training development and the relationship between off-the-job training in a sample of "CEE countries without Hungary"

Source: Own editing based on the Cranet 2021-2022 database

In terms of associations, there are three common co-occurrences: the HR department, if not the largest, is largely involved with management in making decisions on off-the-job training, management involvement is only slightly with HR managers, while only managers have no decision-making role at all.

3.4.4. Hungary

Hungary has the highest Cramer coefficient, including 0.254 for off-the-job training, which is also the highest in the closeness of the relationships between the criteria.

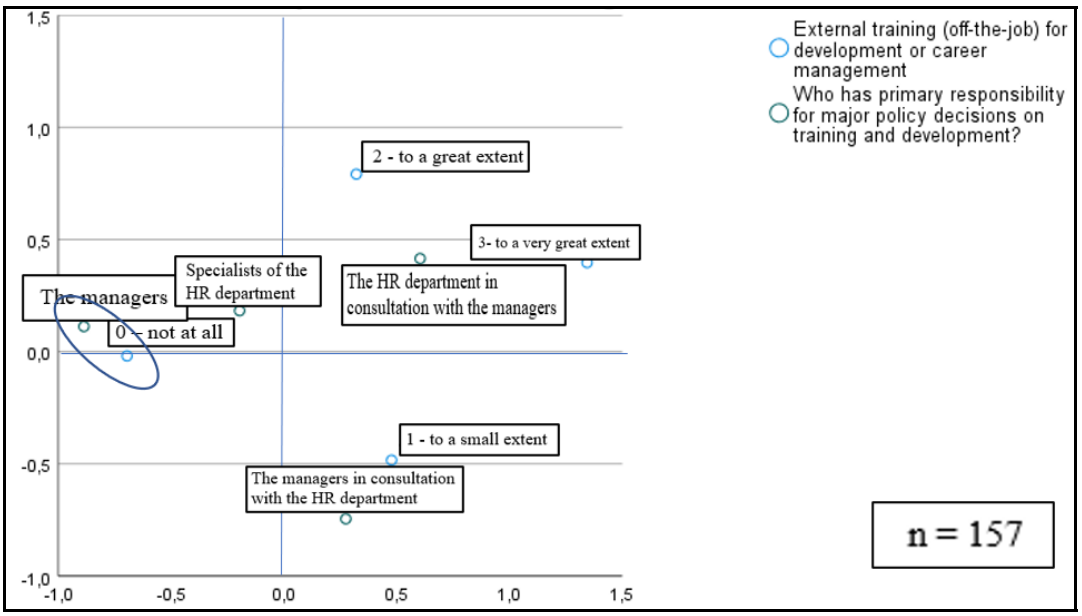

Figure 8: HR decision-making on training development and the relationship between off-the-job training in a sample of Hungary

Source: Own editing based on the Cranet 2021-2022 database

What is most obvious is that the decision making of managers is not decisive at all, and there is no strong association between the other criteria.

4. CONCLUSION

On the basis of the initial hypothesis, we tried to investigate and support with statistical methods that the less exclusively managers make decisions on training and development issues, the more the organisation decides in favour of development and career management methods, mainly five methods: e-learning and digital learning, on-the-job training, developmental assignments/projects, mentoring and off-the-job training.

As described in the findings, there is a significant level of decision making related to training development for the five selected methods, i.e., there is a relationship between the selected criteria, with only one exception (mentoring in Hungary).

The correspondence maps gave a particular colour to the data presented in the descriptive statistics: Even in the case of Hungary, it was shown that, at least for the selected methods used for development or career management, the managerial decision is not decisive in the decision-making process for training development. In addition, based on the different groupings, it was possible to identify relationships that were spectacularly co-associated, and these have been illustrated in the figures.

As a limitation for our research, we can state that the reasons of the findings can be various in the different countries and regions. There are many cultural, social, historical influencing factors in the background that cannot be analyzed in frame of CRANET questionnaire. Some other general issues could be segmented in specific fields as well, e.g., the sectoral impact or the size of the company. The managers can have other roles and power in different firms. The influence of the HR experts and other decision-makers can be heterogenous, so in the future research direction we have to analyze these impacts in order to form a clearer picture.

Our practical implication is that the managers can be more aware in connection with decision-making in training & development and career programs, if they realize our findings. The managers take many other (e.g., financial) questions into consideration, but our results can show them, that their role sometimes can hinder the development of colleagues

and other partners in the decision-making process can play a moderating role in this issue. So, the managers can take advices of HR managers in training and development questions with greater emphasis and share the control and power with experts who are in charge of these special themes.

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MEETING THE CHALLENGE OF AN AGEING WORKFORCE: THE ROLE OF HRM

Abstract: The proportion of older people in our societies is increasing fast due to low birth rates, ageing baby boomers and rising life expectancy. By 2060 in EU countries, 29% of people will be over 65. Countries need to adapt their economic planning including social services, pension and health systems to an older and potentially shrinking population, a phenomenon often called the "Silver Tsunami". One of the solutions offered is "active ageing" which means helping people stay in charge of their own lives for as long as possible while providing them with opportunities to contribute to society and the economy. At the same time, when people retire, organizations can lose talent, skills and experience which is difficult to replace. The situation has worsened following the Covid-19 Pandemic resulting in many vacancies which HR Departments are trying to fill. Some organizations are addressing this problem by inviting and utilizing retired employees, taking advantage of their accumulated knowledge and experience. Appropriately designed age inclusive projects, flexible working arrangements, recognition of their potential to act as mentors can help in meeting the organizational challenge of a shrinking workforce while also contributing to society's demand for active ageing.
In view of the above, this paper has gathered information from a number of HR managers in Greece, in an attempt to identify practices and measures taken to meet the challenge of a shrinking workforce. Practices identified fall within age diversity and age management efforts which seem to be still of minor concern among Greek companies. However, it is generally acknowledged that taking advantage of skills and experiences of older workers can benefit organizations while also contributing to their active ageing and leading the way to a more inclusive society.

Keywords: ageing workforce; diversity management; retired employees; active ageing; inclusive society

1. INTRODUCTION

Europe and the western world are facing a demographic situation where births are shrinking while people live longer. The proportion of people over 65 will reach 29% by 2060 meaning that while now Europe has four working age adults for every dependent by 2060 it will have only two. Europeans are living longer than ever before and demographic ageing means that the proportion of people of working age in the EU is shrinking. In 2019 people aged 55 years and more were 33,6% with projections about this age group reaching 45,9 % by 2050 (Eurostat 2023).
At the same time while a 2.1 fertility rate is necessary for generational replacement, the E.U. fertility rate is around 1.53 per woman with great disparities ranging from 1.83 for France to 1.3 for Greece, Spain and Portugal and 1.13 for Malta. These changes mean that EU countries need to change their economic, labor market, social services, pension and health systems for an older population (Eurostat 2021).
One of the solutions offered is active ageing which means helping people stay in charge of their own lives for as long as possible while providing them with opportunities for employment thus contributing to the economy and society. Businesses and organizations need to prepare for a workforce that is increasingly older and age diverse. Some are getting the message and are inviting retired employees to continue offering their services by introducing milder forms of

employment. HR Departments are designing diversity and age management programs to help older employees participate in employment thus meeting labor shortages or offer opportunities for volunteer work in order to enhance their active ageing, and help them serve as examples for a more inclusive society. This paper will examine the role HRM can play in this direction and its actual involvement in Greek companies.

2. RESEARCH ABOUT AGEING AND RETIREMENT

Starting in the 60's three major psychosocial theories describing ageing were developed. The Disengagement theory of ageing states that ageing is an inevitable mutual withdrawal resulting in decreased interaction between older persons and other members of their social system. The authors (Cumming et al. 1961) received strong criticism as their theory comes against the other two theories that followed. The Activity theory proposes that successful ageing occurs when people stay active and maintain social interactions something which delays the ageing process and enhances the quality of life (Havinghurst, 1961). The author who developed this theory received criticism for overlooking inequalities in health and economics. The Continuity theory states that older adults will usually maintain the same activities, behaviors and relationships as they did earlier in their lives. In order to maintain this continuity of lifestyle, they adopt strategies that are connected to their past experiences. (Atchley, 1999) The author implies that this sense of continuity contributes to well-being in later life. Time has shown that both activity and continuity theories better explain what enables adults to adjust to retirement and extension of employment is definitely a very important alternative.
While social scientists and health specialists examined ageing, researchers in organizational theory looked into how age and retirement impacted on the workforce. Early retirement which was encouraged by legislation in certain countries lost its legitimacy due to the shrinking population after 2000. In the EU measures to encourage older employees to remain in the workforce were introduced. Researchers looking for reasons urging people to retire, found that besides health and work/family reasons which were more frequent among the female population, (Adams et al. 2002,) withdrawal attitudes were seen as coping responses to age-related stigmatization as older workers are wrongly perceived as less competent and less motivated than their younger colleagues (Chiu et al. 2001). A study conducted in Belgium showed that when individuals categorized themselves as older workers, they were more likely to engage in conflict with younger colleagues to gain age-related benefits (Desmette & Gaillard, 2008). However, social recognition of the positive role of older workers and positive intergenerational attitudes prevailing in companies encouraged decisions to stay. Today due to labor shortages companies are considering these general findings and are introducing human resource policies to retain their employees for the benefit of organizations, their employees and society in general.

3. ACTIVE AGEING, SILVER ECONOMY AND THE SILVER TSUNAMI

Over the past years, the concept of active ageing is gaining popularity as an answer to maintaining the health, the social involvement and the labor shortages of our shrinking and ageing population (European Commission 2019). Active Ageing is defined as the process of optimizing opportunities for health, social participation and security in order to enhance quality of life as people age (World Health Organization 2002). The E.C. and W.H.O. promote the idea of longer activity with a higher retirement age and working practices adapted to the age of the employee. Increased longevity together with declining birth rates have reversed the population pyramid. In 2018 the 65's surpassed the under-fives for the first time in the history of humanity.
This is also affecting the economy of the future which has been labeled the Silver Economy (European Commission 2019). The Silver Economy includes all these economic activities, products and services designed to meet the needs of older people. Sectors as diverse as health, banking, social security, housing, leisure and tourism are facing the challenge of serving a population whose characteristics are more free time, demand for products and services adapted to their needs, more health care services. More age-friendly digital devices will be required together with opportunities for training in new skills and new professionals and caretakers must be recruited and trained.
This unprecedented increase in older people is often referred to under the term Silver Tsunami. As we all know a tsunami is a large wave that results in vast destruction and mass casualties. It is therefore preferable to use the term Silver Wave because a tsunami reminds us of a catastrophic phenomenon and longevity has many positive aspects.
By planning ahead and training people for longer careers, by using innovative technology, by removing negative stereotypes about older people, by providing them with opportunities to stay active, we can take advantage of what the silver economy has to offer and help people live longer but better lives.

4. AGEING WORKFORCE AND THE ROLE OF HRM

Initiatives by HRM to meet needs of different employee categories often rely on the principles of sustainable HRM which include two main goals: a) emphasis on the role of HR in developing an economically, socially and ecologically sustainable organization (Ehnert, Harry, & Zink, 2014) and b) implementation of HRM practices which ensure satisfactory long lasting organizational and people performance (Cohen, Taylor, & Muller-Camen, 2012).

Furthermore, practices about meeting the challenge of an ageing workforce fall within Programs of Diversity and Inclusion with special emphasis on the Age Component. Starting in the 90s Diversity Management has appeared as an important issue in corporate practice following and adding to the Equal Opportunities approach which is based on legislation and compliance (Agocs & Burr, 1966). Diversity includes differences such as gender, ethnicity, race. age, religion or sexual orientation which if managed effectively can have very positive results for the company. Diversity management is considered as part of strategic HRM and a source of competitive advantage adding to better communication, talent acquisition, creative thinking, innovation, better cooperation and inclusion (Vranacova, et al., 2021). Age is one of the main pillars of Diversity due to the current demographic situation which requires effective use of human capital with an emphasis on age management (Egdell, et al, 2018) since at present four different employee generations co-exist in the workplace with different values and work attitudes (Starecek, et al., 2021).

Age management is wrongly associated with ageing employees alone, since the concept includes all age groups (Walker, A., 2005). The oldest group is the Baby boomers (born between 1940 and 1960), with high work commitment, work ethic and respect for authority. Most of them are retiring, often with negative consequences for organizations who cannot replace their experience and skills. The second age group is Generation X born between1961-1980. They place more emphasis on work/life balance and team work and are familiar with modern technology. Next comes Generation Y born between 1981-1995. Members of this generation require quick feedback for their performance and rewards for their achievements. The last generation to enter the workforce is generation Z born after 1996. They are independent and very familiar with modern technologies, change jobs easily and like multi-tasking.

The first important step for HR is to recognize differences among age groups and promote intergenerational cooperation through joint projects and teamwork, thus promoting the idea of an inclusive culture. Also, to avoid discrimination based on age either for younger employees who lack experience or for older job seekers by setting age limits.

However, the most crucial area is that of handling experienced and talented employees who are about to retire but whose physical condition still allows them to continue working for the organization. These employees will need to be retrained, offered flexible working arrangements such as semi- retirement or part-time work together with conditions that allow them to meet their work/life balance needs. Research shows that the actual productivity decline perceived by employers is more a stereotype than a reality and that if lifelong training opportunities are offered to employees, their retirement age can be delayed (Posthuma & Campion, 2009). An important element in retirement decisions is the lack of inclusion felt by older employees who often feel unwanted. By giving them the opportunity to act as mentors, or to participate in CSR programs as volunteers they can help younger employees and also feel valued for their contribution. A useful technique for intergenerational cooperation is reverse mentoring where younger employees serve as mentors to older ones in digital skills. Also, events to acknowledge the contribution of older workers and rewards for long years of loyalty can boost older workers morale and encourage them to stay. The literature describes several examples of large companies such as BMW, AUDI, and DEUTSCHE BAHN who have successfully adapted their policies to retain retired workers (Chand, 2017) These companies have taken a holistic approach to ageing workers by making ergonomic adjustments (adjustable work benches, magnifying glasses etc.), team adjustments (intergenerational teams) and training adjustments (lifelong training without age limit). Having presented the advantages and ways for retaining older employees described in the literature we conducted interviews with a number of 20 HR managers working in Greece to get an idea about ways in which they handle age diversity in their companies.

5. HR PRACTICES FOR AGEING WORKFORCE IN GREEK FIRMS

Respondents were chosen from companies who had already signed the diversity charter in Greece and were familiar with guidelines and benefits of diversity. The focus of the interview questions was on age diversity and relevant practices applied in their organizations. The findings are as follows:

When asked about the importance attached to various pillars of diversity, it was evident that gender, ethnicity and disability come before age in terms of importance and that the main concern of companies is not to be accused for age discrimination rather than proactively face the challenge of age. All respondents mentioned that they are very careful not to mention age when announcing job openings but they admitted that younger candidates are more favored.

When asked about lifelong training, re-skilling and up-skilling offered to employees, the majority responded that older workers are not very much interested and that retraining is mostly for younger employees and not for those approaching retirement.

When asked about labor shortages they admitted that they were facing problems mainly in low level entry jobs and in technical jobs where they are trying to retain some employees. Some older skilled employees in technical jobs get their pension and continue to work as external collaborators for a few years while serving as mentors for younger

technicians. Given the rise in the cost of living, almost everyone is interested to extend employment beyond retirement. However not all employees can respond to changing and increasing job requirements.
When asked about talent management efforts, some very good examples of placement schemes for young graduates entering the job market where mentioned. It is normal for companies to place emphasis on attracting young talent but not on older workers given the fact that until recently older employees were given incentives to retire early. It is a fact that when someone becomes redundant at the age around 50, it is very difficult to get satisfactory employment since most available jobs are either for manual workers or for entry-level posts.
When asked about efforts to change working conditions in order to accommodate older employees, it seems that flexible working hours, or part-time employment is the main measure applied and all respondents agreed on the importance of work continuation to enhance active ageing. However very few respondents mentioned formal policies for older worker and arrangements are made informally on a personal basis.
When asked about opportunities for intergenerational cooperation, almost all respondents mentioned various CSR and volunteering events in which employees were invited to participate and where some older workers were quite active. Also, corporate events organized for different occasions (holidays, celebrations, awards) presented good chances for social interaction and inclusion. The participation rate of older workers in these events however depended on the general culture of the organization and some respondents mentioned that older employees were reluctant to participate.
The general impression from this preliminary set of interviews was that old age is still an underestimated component of diversity management, since the majority of initiatives focus on gender diversity, young recruits and very few on disability. However, all respondents were familiar with the demographic trends and had in mind to deal with the issue of retaining older employees mainly through re-skilling and up-skilling programs which they all considered very important and through encouraging them to act as mentors and train their successors. Finally, all respondents admitted that the human capital possessed by older employees was very important not only in terms of skills but also in attitudes and that greater attention should be given in the future to intergenerational cooperation.

6. CONCLUSIONS

In view of the demographic challenges facing our society, organizations with the assistance of HR can promote the idea of age diversity by showing how intergenerational collaboration, lifelong learning and transfer of accumulated knowledge and experience can help society. By introducing initiatives to retain older skilled employees, HR can participate in active ageing efforts which can prove beneficial for the organization, help communities and improve employee wellbeing, showing the way towards an inclusive society where age-related stereotypes have no place and collaboration rather than conflict is the norm.
Greek companies are aware of the need to improve their relevant practices which include re-skilling and up-skilling, opportunities for intergenerational collaboration and inclusion, participation in CSR and volunteer programs, flexible working patterns, mentoring and reverse mentoring and events to acknowledge the loyalty and contribution of older employees.
However, from a series of interviews with HR Managers from companies active in Diversity and Inclusion, it was evident that age is still a somehow neglected aspect of Diversity with sporadic efforts to face the changing demographic situation. It is our belief that by providing opportunities to older employees for retraining, by encouraging intergenerational collaboration, by organizing mentoring and reverse mentoring practices, HR Managers can establish age management and assist their organizations in taking advantage of the experience and skills of an ageing workforce.

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HOW CAN BUSINESS EDUCATION DEVELOP ETHICAL PROFESSIONALS FOR EMPLOYERS?

Abstract: The implementation of any strategy needs professionals acting ethically, to meet the expectations of the society. To investigate how business educators can ensure that graduates will become ethical professionals, key instructors of an international business Bachelor programme at a Hungarian university were interviewed, since the link between professional ethics education and such undergraduate programmes was found as an under-researched topic. Our thematic content analysis revealed a non-systematic approach and a variety of practices concerning professional ethics education. The obtained results of our qualitative exploratory study, visualised by a word cloud and contrasted with Rest's Four Component Model, could support curriculum developers in integrating professional ethics into international business Bachelor programme, as well as provide opportunities for staff development programmes and further comparative research, both at national and international level.

Keywords: ethics education, international business education, professional ethics, curriculum development

1. INTRODUCTION

The emergence of ethics was one of the key developments in international business in the past 50 years, as per the reviewing of the academic literature by Kolk (2016). As for the most recent approaches, the ethical operation of the firms doing business across borders is viewed as a cornerstone of the international business system recommended by researchers, such as Chandler. According to him (2020), the central component of a "conscious capitalist system" is the values-based firm: business success is correlated highly with ethical behaviour. A corporation's strategy, which aims to achieve long-term business success, is supported by the appropriate behaviour of its people, and its moral contributions to society (Weiss 2014). Good strategy must encompass moral concerns, and the engagement of stakeholders also must be integral to a firm's strategy (Sonenshein 2009; Noland and Philips 2010). Some researchers even suggest a paradigm shift in business strategy, regarding the consideration of ethical issues (see Pirson and Lawrence 2010). The arguments include that unethical behaviour leads to loss of trust, tarnished corporate reputation, financial penalties and fines, as well as conviction and sentencing of corporate executives and employees (Ardichvili et al. 2012).

Organisations are advised to hire ethical people and to focus on moral characteristics, not just technical skills during recruitment (Bello 2012), as corporate ethics and financial performance are linked (Chun et al. 2013) and hiring the right people and keeping them leads to organisational stability, growth, and revenue (Cloutier et al. 2015). New hires are recommended to be evaluated for alignment of corporate and personal values and desired behaviours (Ardichvili et al. 2012), as the integration of both personal and professional ethics is important for integrity and success (Knapp et al. 2013).

Corporate leaders are expected to serve as role models to their employees (Bello 2012), as the leaders' ethical decision-making promote ethical behaviour internally (Thiel et al. 2012). Ethical leadership influence employee job satisfaction

and psychological well-being (Avey, Wernsing and Palanski 2012; Kalshoven and Boon 2012). Achieving the trust of their employees positively influences corporate social performance and individual behaviour, too (Hansen et al. 2011). Ethical thinking and behaviour can be learned, and this learning process is also expected to form an important part of organizational learning, with an ethical training for employees on all levels (Ardichvili and Jondle 2009). One of the most important tasks of leaders is to guide internal professionals and focus them on the mission and values of the company (Weiss 2014).

Since many employees and leaders of international companies have a business degree, our research focuses on how business education, more specifically an undergraduate degree programme focusing on international business, can develop the identity of future ethical professionals (see Falender and Shafranske 2007; Ametrano 2014) for such employers. First, we provide with a brief overview of the possible aims of, and solutions related professional ethics education in the academic literature. Then we present the context of our research: an exploratory study into how key instructors of an international business Bachelor programme at a Hungarian higher education institution see professional ethics education. We briefly summarise the previous step, where the definition of professional ethics education and the identification of the professions relevant for an international business Bachelor programme were discussed, as the results will be presented in detail in a forthcoming Hungarian publication. Then we look at their current practices, and at what they think about the ideal way of teaching professional ethics, with visual illustration of the key findings. Our conclusions at the end of this paper compare the answers with the academic literature and suggest ideas for curriculum and staff development.

2. PROFESSIONAL ETHICS EDUCATION

Individuals wishing to have a career in a profession need special education in the profession's unique ethical problems and the approaches to solving them (Trevino 1992). Concerning professional ethics in general, there is no consensus about the definition of professional ethics (Fox, Lonne and McDonald, 2001), but most of the proposed definitions in the academic literature refer to the appropriate behaviour of the member of a given profession (Poon and Hoxley, 2010). This appropriate behaviour was examined by researchers and evidence was found that it can be taught and developed over a lifetime of practice (Lesser et al. 2010). Regarding teaching of professional ethics, academic sources refer to two main approaches:

- the "code-centred", narrow approach, which focuses on the knowledge and application of the rules of the profession, and
- the broad approach, which includes the narrow one but goes beyond it, and considers the context and character of the professional (Bagnall 1998, Banks 2008).

As for the narrow approach, where ethics education focuses only on the knowledge and application of the rules of the profession, researchers found that such learning is insufficient for becoming an ethical professional (Holmes 2015). This finding raises the question what the relevant aims of professional ethics education can be, when educators would like to go beyond knowledge and application of the rules of the profession. The development of a professional identity is recommended to be a very important objective of higher education (Cruess, Cruess and Steinert, 2019), and Rest's Four Component Model (FCM) suggested four inter-related aims for such professional ethics education, which could address the elements of the broad approach:

- moral awareness – supporting learners to be able to recognise ethical problems,
- moral reasoning – supporting learners to be able to formulate a morally defensible action,
- moral motivation – supporting learners to be committed to act ethically, and
- moral implementation – supporting learners to have the courage to implement the right action (Bebeau, Rest and Narvaez 1999).

According to Rest's colleagues, led by Bebeau, these four components can be regarded as capacities to be developed, and they found evidence of the development of these inter-related moral capacities. Their research also led to a set of recommendations for educators, in relationship with methods and techniques of an effective professional ethics education programme. They recommended a pervasive approach to professional ethics during a formal learning programme, such as an international business Bachelor programme: further to a separate ethics course, ethical issues are also recommended to be addressed in various compulsory, programme-specific courses. This would also include experiential learning elements, such as internships or simulations (Bebeau and Monson 2008). An integrated approach to assessment of professional ethics within and across the formal learning programme was also recommended by researchers, as well as the importance of the continuous preparation of the instructors for this integrated approach and the institutional "milieu", meaning the ethical operations of all units of the higher education institution. (Bebeau and Monson 2008; Nucci 2001; Yazdani and Imanipour 2016; Wright 1995). Regarding this ethical milieu, an interesting recent development is the emergence of the need for being compliant with export control regimes in academia, which also poses new ethical challenges the employees of higher education institutions involved in internationalisation need to be prepared for (see Andrási, Csekő and Budai 2022; Csekő and Juhász, 2022).

Those who focused specifically on effective business ethics education unsurprisingly had very similar findings. Researchers found evidence of learning (although not a concluding one, see e.g. Jewe, 2008), showing that business ethics education have a positive influence on moral behaviour (Lau, 2010; May, Luth and Schwoerer, 2014). The

recommended aim of business ethics education is in line with the broad approach: developing professional identity of future business practitioners, not just teaching the relevant rules and their application. These researchers also recommended a holistic, integrated business ethics education with a separate course on business ethics, the integration of business ethics into various other courses, extracurricular events, involvement of business practitioners as guest speakers, using case studies, as well as experiential and action learning projects (Chavan and Carter 2018; Maclagan 2012; Swanson and Fisher 2009; Swanson and Fisher 2010; Tello et al. 2013). Overall, researchers argued that higher education institutions delivering business programmes have the power and the responsibility to deliver effective business ethics education with an impact on the society: going beyond supporting the learning of better ethical decision making, rather to build a better world (Acevedo 2013, Floyd et al. 2013, Giacalone and Promislo 2013). This is also in line with the expectations of the international accreditation bodies, such as the AACSB (see e.g. Andrási, Körtvési and Szegedi 2022).

3. RESEARCH METHODS

Concerning our research methodology, it is in line with the constructivist research paradigm: we are exploring experiences, perceptions, and opinions of individuals regarding professional ethics education in an international business Bachelor programme. Our aim is not to verify a hypothesis, but to better understand these 'constructs' (Walliman 2011).

We used a qualitative methodology to conduct our research, as we looked for correlations and drew conclusions. The main advantages of in-depth interview research are that it is much more detailed than a questionnaire and allows for a more in-depth exploration of the interviewee's views, and, as with a questionnaire, there is no external pressure, no outsider present during the interview, and therefore the interviewee can open up more easily and is more likely to give honest answers (Malhotra, 2009).

There are different forms of interview depending on how structured it is. Based on this, there are structured, semi-structured and unstructured interviews (Berg and Lune, 2012). To the purpose of this research, the semi-structured interview was found appropriate, as it aims at a thorough understanding of the individual perspectives of the interviewees and requires a detailed information gathering. We collected new data by the semi-structured interviews regarding existing practices, which were not investigated before, as well as explored the interviewees' thoughts and beliefs about professional ethics education in the context of an international business Bachelor programme. Our interviews were typically 35-40 minutes in duration. The interviewees were identified based on the nature of the topic as senior lecturers in various subject areas of the international business Bachelor programme. In total, 10 people were interviewed, who teach across the curriculum and have extensive experience in designing and delivering courses belonging to the international business Bachelor programme. The interviews were recorded on live video, thus preserving some of the personal nature of the conversation, allowing us to see each other and each other's reactions. The characteristics of semi-structured in-depth interviews were considered throughout the process. The interviews were in Hungarian, and we translated the answers into English for the article.

After data cleaning, the research corpus formed the basis for the content analysis phase. The interviews were conducted based on an interview schedule, which allowed for a uniform processing of the information. Content analysis according to Krippendorff (2018) is a complex technique through which the researcher interprets and evaluates not only the text but also the context of the text. It involves systematically categorizing and interpreting the content of communication to identify patterns, themes, and meanings. Content analysis can provide insight into people's attitudes, beliefs, and behaviours, which was the best interpretation for our current exploratory study. This enabled the exploration and identification of factors relevant to the research based on the narratives. We identified keywords and common elements in the answers, and afterwards, according to these, we also identified the main themes relevant for grouping the current practices and the methods and techniques deemed ideal by the respondents for teaching professional ethics in an international business Bachelor programme. Finally, we chose Rest's FCM for benchmarking the answers to see how current and proposed practices can lead to development of ethical professionals: whilst the model is not widely accepted, there are relevant empirical evidence and good practices of using it in academic programmes (see Hamilton, Monson and Organ 2012, Regan and Sachs 2016).

4. RESULTS AND DISCUSSION

Our research project focuses on teaching professional ethics during an international business Bachelor programme, which is an under-researched topic. We found no academic sources focusing on teaching professional ethics specifically such undergraduate programmes, as researchers rather dealt with postgraduate international business and management programmes and the tendency of using group projects related to CSR and sustainability during these programmes (see Christensen et al.,2007); or argued for teaching contemporary business ethics problems in international context (see Hurn, 2008; and Kline, 2010), which indicate that international business programmes would need to prepare for ethical conduct in a variety of business-related professions. To fill a gap in the academic literature concerning teaching

professional ethics during an international business Bachelor programme, we started an exploratory research project, interviewing senior key instructors of such programme at a Hungarian university. Our interviews focused on two dual elements: the basic terminology (the definition of professional ethics and the identification of the relevant professions), and the teaching practices (the existing practices and the identification of the 'ideal' ones).

Concerning the first dual element related to the basic terminology, we asked for the interviewees' opinion on the definition of professional ethics, and on the specific professions the International Business undergraduate programme prepares the students for. The reason of this element was that there is no consensus in the academic sources concerning the definition of professional ethics (see section 2 earlier), and that there is a gap in the literature regarding teaching professional ethics in international business Bachelor programmes, as mentioned above. The answers of the interviewees showed that there is no consensus about the definition of professional ethics among these faculty members either, as both the narrow and the broad approach were represented in the answers. A variety of professions were also mentioned as the ones the international business Bachelor programme prepares the students for, without any consensus here either. The answers related to this first element were discussed in a forthcoming Hungarian paper, concluding that programme directors would need a thorough analysis of the related professions, followed by discussions with the faculty members to have a common understanding of the ethical issues related to professions the international business Bachelor programme prepares the students for (Andrási and Czeglédi, 2023 forthcoming).

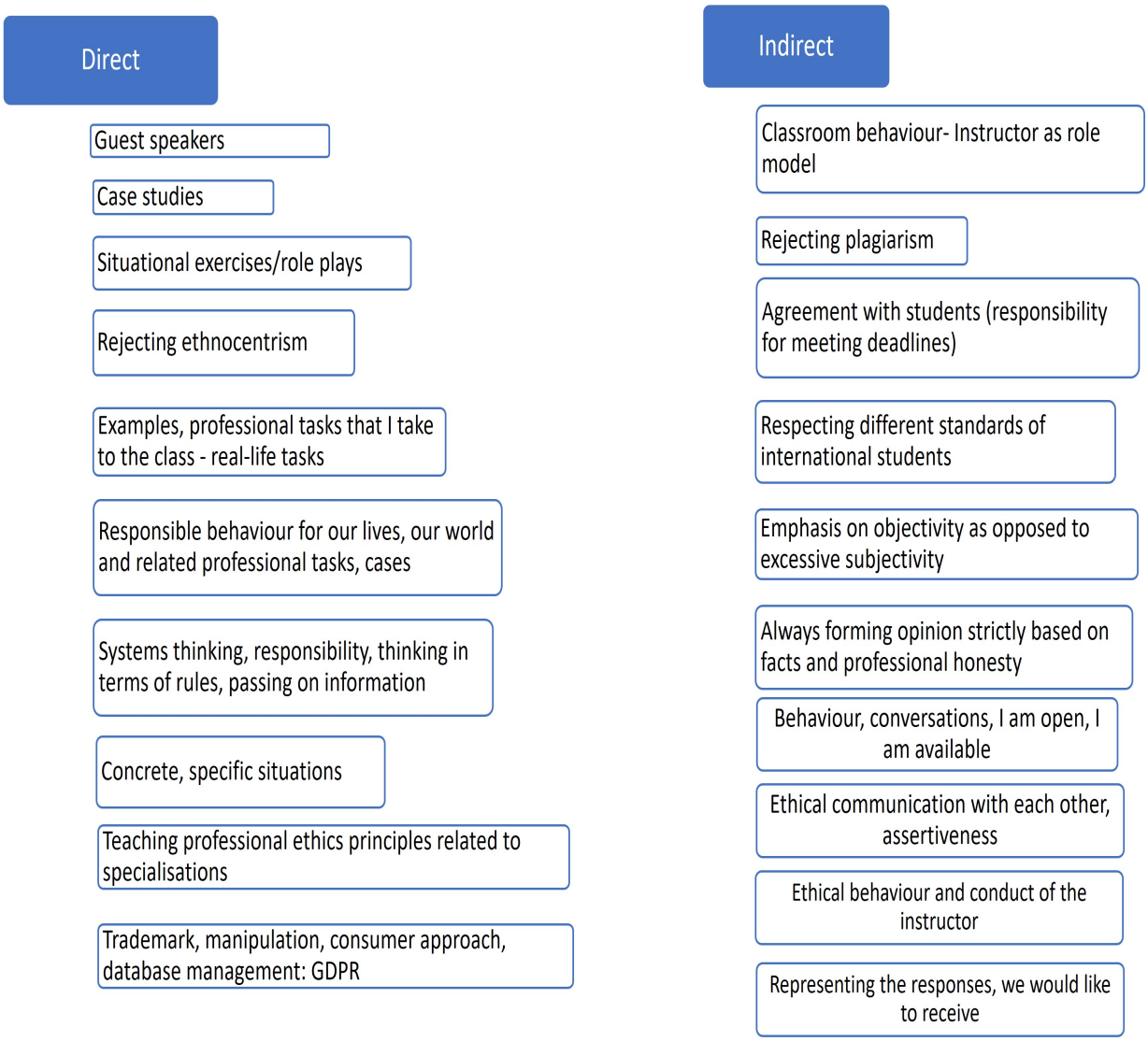
As for the second dual element related to the teaching of professional ethics, we inquired about current solutions of the faculty members, what they identified as their current relevant teaching methods and practices. Finally, we asked about their opinion on what would be the 'best' way to teach professional ethics during an international business Bachelor programme. The analysis of their answers is detailed in the next sections.

4.1. Current practices of key instructors

The current practices of the senior faculty members teaching across the international business Bachelor programme could be divided into two groups, as per their focus (see the key expressions of the responses appearing in groups in Picture 1 below). One group is the way of transferring knowledge directly to the students by various methods and techniques. Many interviewees mentioned the use of case studies, inviting guest speakers, using real life examples and role plays, and reference to professional norms for knowledge transfer (Interview 1, Interview 6, Interview 7, Interview 8, Interview 9). Discussion of specific topics related to the very course from ethical perspective, such as ethnocentric approach in marketing (Interview 7), manipulation of customers and usage of data (Interview 10) also belong to the area of direct knowledge transfer.

The indirect group is rather about how the instructor as role model can represent professional conduct and ethical behaviour by ways of communication, openness, consistently applying academic rigour regarding referencing and meeting deadlines. All ten interviewees referred to these indirect ways, and one of them specifically mentioned the importance of considering multiculturalism in the classroom because of the diversity of the students (Interview 3). According to the experiences of our interviewees such combination of direct and indirect ways provides better and more effective learning experience for the student, helping them in interiorising the proper behaviour for their future career.

It is apparent from the answers that every interviewee has developed their own solutions for teaching professional ethics: some of them focused on transferring knowledge related to ethical rules of one or more professions, and all of them referred to solutions related to representing professional conduct in the classroom. According to their own experiences, as well as to anecdotal evidence related to formal or informal feedback of the students, these solutions of theirs work well, could even be regarded as 'good practices'. These answers evidently show a non-systemic approach to professional ethics education, there is no sign of an integrated approach at programme level, as suggested by researchers. There is no common understanding of what works well, and there are no concerted efforts on individual or group planning, nor on sharing experiences: there is room for improvement, in terms of staff development. Collecting and discussing good practices, trying out solutions of others, or even developing a formal training on this topic are all opportunities for developing the faculty members' understanding and delivery of professional ethics-related methods and techniques. Staff development was eventually mentioned as an important element of the 'ideal' way of teaching professional ethics (see the next section).



Picture 1: Direct and indirect ways of teaching professional ethics
Source: Own research (Infographic)

4.2. Ideas for teaching professional ethics within an international business bachelor programme

Our interviewees were also asked about their opinion on the 'ideal' way of teaching professional ethics within an international business Bachelor programme. The responses are displayed in a word cloud, where the most frequently mentioned key expressions appear in larger fonts (see Picture 2 below). It is apparent from the word cloud that the most frequently mentioned methods and techniques as ideal ones for teaching professional ethics are simulations, case studies and projects (Interview 1, Interview 2, Interview 3, Interview 6, Interview 7, Interview 10), highlighting the support for an applied, problem-based, and practice-oriented approach to teach professional ethics. The use of codes of ethics of relevant professions (Interview 2, Interview 4, Interview 10) and classes with small groups (Interview 3, Interview 5, Interview 7) also related to such approach. Two interviewees referred to the importance of integrating professional ethics into every course of the academic programme (Interview 1, Interview 4, Interview 5). Some respondents referred to short trips and excursions (Interview 1, Interview 10), the use of traditional tests and quizzes (Interview 10), as well as the need for professional development of instructors in this regard (Interview 6). One interviewee also referred to non-cognitive elements such as emotional intelligence and "making the good things part of our soul" (Interview 9).
Like in the case of the existing practices above, the ideas for teaching professional ethics as 'ideal' solutions also varied. The integrated approach, expressed as infusing international business courses with topics related to professional ethics, appears among the ideas, in line with the suggestions of researchers. Experiential learning, as suggested by Bebeau and others (see section 2), is highlighted as an important teaching method: the link with future employers in the format of real-life case studies, as well as exposing students to real-life situations via simulations are the most frequently mentioned ideas. Regarding the Four Component Model described in Section 2 earlier, ideas such as the trips or the projects are helpful in motivating the students to do, and in providing them with opportunities for implementing the

‘right thing’. The reference to the relevant professions confirms the need for identifying the professions the international business Bachelor programme prepares the students for. Finally, as mentioned at the end of the previous section, formal staff development supporting professional ethics education within the programme is described as a desired element of an ‘ideal’ situation.

Picture 2: The interpretation of the ideal to teach professional ethics in higher education
Source: Own research (Wordart)

5. CONCLUSION

As the title of this paper shows, our research focused on how business education, most specifically international business Bachelor programmes can develop ethical professionals for employers. Graduates of these academic programmes will become members of various professions, as well as employees, and later leaders at various organisations. As per our literature review, their conduct is key in achieving the strategic goals of their employer, and the development of their professional identity is an important task of higher education. Due to the gap in the academic literature on teaching professional ethics within international business Bachelor programmes, exploratory in-depth interviews were conducted with senior faculty members teaching across such an academic programme at a Hungarian higher education institution. Based on the qualitative analysis of the interviewees' responses, we found recurring patterns that helped us to identify the main characteristics of existing practices, and to compare the interviewees’ opinion on the ‘ideal’ way of teaching professional ethics with recommendations of researchers.

Based on the results of this research, we can conclude that current practices can be grouped into direct and indirect methods and techniques: the direct ones are about transferring knowledge related to professional ethics, while the indirect ways support students in the interiorisation of behaviour necessary for being successful in international business life. The various current practices mentioned by the interviewees can be linked with the components of the FCM, as the aims of their practices are about the development of moral awareness, reasoning, moral motivation, and moral implementation. However, no systematic approach or aligned pedagogic solutions were found in this regard, just individual practices based on the faculty members’ own experiences. Therefore, our first main recommendation for programme directors and curriculum developers is to collect information about the existing practices, followed by sharing and discussing the results with faculty members to identify good practices and to encourage the usage of them.

The opinions on the ‘ideal’ way of teaching echoed the recommendations of researchers summarised in our literature review: professional ethics need to be integrated into the courses of the academic programme with a practical approach, using experiential learning elements to ensure the development of both cognitive and non-cognitive elements, forming an ethical professional identity. Our second recommendation is that programme directors and curriculum developers would need to look at their own programmes from such a holistic perspective and ensure alignment of course and programme outcomes with ethical expectations. Finally, formalised internal professional development focusing on the best practices is the third recommendation, which is also in line with both the recommendations of researchers and the interviewees’ opinions.

Our exploratory investigation supports many recommendations of the researchers, as the interviewees’ practices and ideas are in line with the suggested integrated approach. The international business Bachelor programmes may contribute well to ethical conduct of future members of various business professions, who, as employees and leaders at business organisations, are key to achieving strategic goals of these organisations.

The authors of this paper received very positive feedback from the interviewees, encouraging them to continue this research with comparative approach: further interviews are planned with instructors of other similar programmes, possibly in other countries, too. Sharing the respective practices among faculty members and using them for professional development seem to be way forward to develop ethical professionals for employers within international business Bachelor programmes.p

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WHAT SOFT SKILLS CAN BE DEVELOPED IN A MENTOR? - THE FIRST EXPERIENCES OF A MENTORING PROGRAMME

Abstract: The study presents the results -focusing on the mentors- of a mentoring programme launched at the Faculty of International Management and Business at Budapest Business School. The basic aim of the programme was to provide a support programme for foreign students, who have recently been enrolled in the faculty as the number of foreign students has increased significantly. The project involved not only mentored students, but also students who volunteered as mentors to help their foreign counterparts integrate. From the start, the authors conducted two surveys, one with the mentored students and one with the mentors. The aim of the survey was to find out what the participants' expectations were at the start of the project. Whose skills will develop, what skills are expected to be developed in the project, what motivational factors play a role in getting someone to participate in such a project. The authors' unhidden aim is to repeat the research every six months and every year to monitor changes. The first studies were quantitative surveys, and the mentors' side of the story is that they believe that the programme can make a positive difference to their soft skills and help them to become better mentors.

Keywords: mentoring, soft skill development, university

1. INTRODUCTION

The BEE Mentor Programme started its operation in September 2022. The program is open to all foreign students who come to study at Budapest Business School and want to become mentees. The present paper discusses the results of a research conducted at the Faculty of International Management and Business of the Budapest Business School, University of Applied Sciences. The mentors of the incoming students are the more experienced Hungarian and foreign students.

There are 3 divisions in the programme. The first division is Administration and Orientation division. The mentors 'main tasks involve organizing and managing the mentor-mentee couples and helping students with the different digital platforms of the university. The second division is the Mid-semester Activities division, where mentors focus on organizing cultural and social events for the international students with the aim to allow them to learn more about the Hungarian culture. The Marketing and Communication Division is responsible for managing all BEE Mentorship social accounts, posting events, news, answering questions/messages and adding new students to the group.

At present the program has 175 members, out of which 39 are mentors (75% of them are Hungarian mentors, 25% of them are foreign mentors), 6 supporters and 130 mentees. The mentees are from 40 different countries. All the mentees have a delegated mentor. One mentor usually has 2-4 mentees. The mentor-mentee couples were paired after careful research and their common work is supported and guided by the three head-mentos of the divisions. The head-mentors were also selected after a very thorough process and are continuously supported by the leaders of the program. The BEE Mentor Programme of the Faculty of International Management and Business is run and guided by three lecturers of the Department of Languages for International Business.

2. LITERATURE BACKGROUND

It is without doubt that possessing certain skill sets is inevitable for current students, who are the future employees of the labor market. They should have a very thorough knowledge of soft skills. The possession of relevant soft skills is as important if not more important than possessing hard skills when selecting the ideal employee for a given position. On the supply side of the labor market are current university students who wish to prepare themselves for being hired for a good job. In a survey (PWC, 2022), young Hungarian workforce was asked about his preference in work. In line with the findings of Global Talent Trends October 2022 the top four priorities of candidates were compensation and benefits, work and personal life balance, flexible work arrangements and upskilling (opportunities to learn new, highly desired skills). On the other (demand) side of the labor market are employers who are eager to find candidates with strong soft skills. Top skills employers are looking for are dependability, teamwork/collaboration, problem-solving and flexibility according to a survey of 3100 recruiters from eight countries US, Canada, UK, Germany, France, Italy, Sweden and the Netherlands (Monster, 2022). Wiley Education Services recently surveyed over 600 human resources and learning and development professionals and found in their 2021 report, that soft skills which are the hardest to fill now at companies are critical thinking, communication, creativity and analytical skills (Wiley, 2021). Heller and Kessler in their study asked employers, to rate their summer employees on overall quality, and found that communication skills and dependability are the skills which most impress employers (Heller-Kessler, 2022). Soft skills predict success in life so programs that enhance soft skills are important (Heckman et al., 2012). What are soft skills and how can a mentorship program help student to improve their soft skills to meet employers' expectations?

Soft skills are non-technical, personal, and social skills that among others determine a person's ability to fit in, be motivated, be manageable and be creative in a workplace. To be effective at our workplaces, there are further soft skills which are necessary, such as: ability to work in a team, good communication (e.g.: to the point speaking, good presentation, interpretation of non-verbal signals), good organisational skills, flexibility (e.g. openness to new ideas, adaptability to rapidly changing circumstances, willingness to develop), good work capacity, perseverance, love of work, emotional intelligence (e.g. self-awareness, attention, positive attitude), creativity (unique perspectives, new ideas) and ability to think logically. According to Lepeley, human and social challenges cannot be solved only with hard skills (Lepeley, 2021); soft skills are inevitable. Soft skills cannot easily be acquired, they are typically learned over time by individuals as they gain more experience in their jobs as appropriate (Rasli et al., 2020). The McKinsey study (2020) predicts that as automation transforms the skills, companies' need and demand for creativity will rise sharply by 2030 and accordingly different soft skills will be required to be possessed, such as: creativity persuasion, collaboration, adaptability, and time management.

Collecting and studying the results of research dealing with the necessity of soft skills on today's labour market, it can clearly be stated that providing soft skills training and courses for university students should be obvious.

According to the OECD's Future of Education and Skills 2030 project, "skills" are defined as the abilities needed or given to conduct a process and to use knowledge responsibly. The OECD Learning Compass distinguishes three diverse groups of these skills:

1. cognitive and metacognitive skills, such as critical thinking, creative planning, 'learning to learn' and self-regulation,
2. social and emotional skills, such as empathy, cooperation, and responsibility
3. practical and physical skills, such as using of ICT tools.

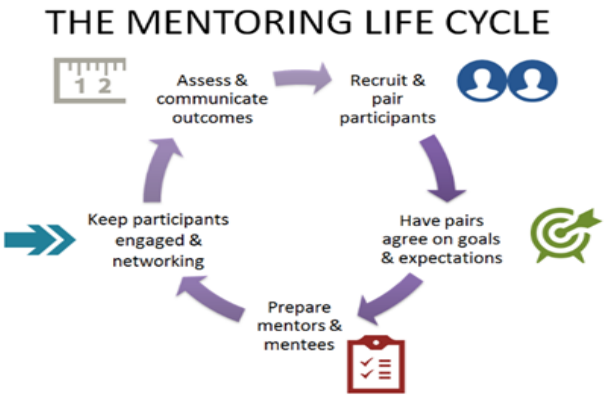
Soft skills can be transferred and developed well within the framework of a mentoring program. The mentoring system is not new in Hungary, it has started to spread rapidly by having more international companies in Hungary and because of this, mentoring practice has become an important part of the system of career development. The establishment of a corporate culture is highly supported, where knowledge is value and where knowledge-transfer is considered important.

A study of Bencsik-Juhász-Kovács in 2014 focused on examining the openness of the respondents regarding their knowledge-sharing and their results showed that the knowledge-sharing willingness was quite average, and the respondents of the questionnaire did not really like the idea to share their practical knowledge with others. They were less interest-centred and expectation-oriented with their friends, acquaintances and with strangers in return of their knowledge-sharing than with acquaintances of formal relationships. (Bencsik-Juhász-Kovács, 2014).

Increasingly Hungarian companies and universities realize the benefits of mentoring practice, which will support the professional and personal development of the futures employees on the labour market. It is important to note that within the frame of the BEE Mentor Programme, great emphasis is put on the process of mentoring the mentors. According to the study of Bakányi, Kováts, Lázár (2008), the concept of mentoring mentors can be defined along 7 dimensions, which are the following: nature of the problem, for who help is important, the values underlying the assistance, the nature of the assistance, the organisational context of the support, the formality of the support, the professionalism of the mentor.

As for the types of mentoring, Byrne (1991) was among the first to group mentoring in three quite simple, but noticeably clear categories. The three types are: traditional mentoring (mentors are people who use their knowledge, power, and status to assist their mentored and assist their careers), professional mentoring (it is established by the proposal of the leader) and formal mentoring (this institutionalized mentoring makes mentoring a standard part of management practice). Globalization and quick technological development helped reversed mentoring be popular.

Harvey et al. (2009) wrote that university graduates have high knowledge of IT studies and web-based technologies, therefore they are willing and very enthusiastic to share their knowledge with others.
Mentoring can have benefits to the mentee, such as getting a clear view about his own career and personal goals, helping him to get a better understanding of the organisation's culture and unspoken rules, providing networking contact, getting access to added resources, getting the opportunity to develop new skills, which will inevitably increase self-confidence and develop interpersonal skills. In the mentoring process, the mentor will also benefit from the common work by facing new challenges, having the opportunity to see the corporation from a distinct perspective, which will encourage him to share his knowledge and consequently his interpersonal skill set will be strengthened as he will be exposed to innovative ideas and methods.
To support intercultural interactions and friendships, many institutions worldwide have developed peer-pairing programs to match international students with domestic students for substantial interaction outside the classroom (Jiali L, 2013).
Peer-to-Peer (P2P) mentoring is a process where two people of similar ages, with similar experience levels work together to help each other grow. The relationship is less formal than a traditional mentoring relationship yet structured so that it's mutually beneficial. Both parties should feel like they are getting something out of it. Mentoring by peers can provide education, recreation, and support, inspire, and motivate them with innovative ideas and help them step out of their comfort zone. Most peer mentors are selected for their sensitivity, self-confidence, social skills, and reliability (Bozeman & Feeney, 2007)
Figure 1 depicts the mentoring life cycle, which shows that after having the mentor-mentee pairs, the most important task is to list the common goals and be engaged in the implementation process together. Communication is a vital issue throughout the whole project, starting from the recruiting process and finishing with the assessment of the tasks.



Picture 1: The mentoring cycle
Source: : https://www.apqc.org

Pairing up international and Hungarian students to form a mentor-mentee couple will inevitably have benefits for both and for the university as well. What can be the added value of the P2P Mentor Programme?
1. As foreign students provide an immense talent pool, they will contribute to the success of the performance and judgement of the university from academic and from cultural aspects as well.
2. With the help and support of the Hungarian mentors, the foreign mentees will gain a deeper understanding and interpretation of the local culture with its own unwritten rules.
3. Foreign students are an important source of cultural, educational, social diversity and diversity should be valued as a very precious asset.
4. Hungarian students would be more exposed to cultural, social etc differences with the presence of foreign students; therefore they will have the opportunity to develop their interpersonal skills with creating new networks, which would be beneficial mutually (developing empathy, openness etc. with different intercultural interactions)
5. The increased awareness of using English and other common foreign languages will lead to the development of international friendships and later it might be an important social, cultural, political, and economic knowledge source for these students when they enter labour market.
6. Informal and off-campus contacts and relationships (study groups, preparation for exams) between Hungarian and foreign might have significant impact on student learning and personal development and development of their cognitive skills.
7. Moreover, with increased cultural sensitivities and skills needed to work effectively with people from different backgrounds, domestic students (in our case: Hungarian students) could well have a competitive advantage in the marketplace in an increasingly interconnected, globalized world (Jiali L., 2013).

The simple fact of having international students on campus does not mean that there are going to be a lot more international interactions, it will not automatically lead to developing skills-sets or performing better on international market or having more acquaintances, but with the help and structured support of the mentoring programme, the presence of incoming foreign students can easily be turned into a precious leverage of the university.

3. METHODS

In September 2022, the Faculty of International Management and Business at BBS launched its mentoring programme, of which main goal was to support the foreign students to successfully familiarise themselves with Hungarian cultural characteristics, be it gastronomy, literature, arts, current political situation, geographical features, etc., and to help them to integrate as quickly and successfully as possible into the system of a higher education institution that has one of the largest number of students in Hungary. This means not only learning the administrative rules, but also providing opportunities to get involved in the students' daily life, to learn about educational opportunities, to communicate in different forums, to have direct contact with other students, to catch up on certain skills, etc.

The researchers were involved at the start of the programme and were looking at the expectations and development opportunities of the participants during the research. This paper presents the results of the first quantitative survey. This research was conducted before the launch of the programme and focused specifically on expectations and motivational factors. Who will start the programme, why and with what expectations? Two questionnaire surveys were conducted during this phase of the research. One questionnaire asked the mentees, and another asked the mentors. This paper presents some of the results for the mentors.

In the study, the mentors were selected from upper-year students already studying at the university, who spoke a foreign language well and volunteered to collaborate with a foreign student for several years from the start of their studies. The application for the mentoring role was voluntary, so there was no obligation as a barrier to the mentors. Before the programme started, the mentors met in the summer to get to know each other and the tutors coordinating the programme. At the beginning of September, the authors contacted the mentors by e-mail with the aim of having them fill in the questionnaire they had prepared. 36 mentors applied for the programme, of which 30 completed the questionnaire, giving a response rate of 84%. Respondents were asked to answer the questions on a web-based interface. The researchers used questions of their own design and deliberately did not use questions previously used in other researchers' research.

The questions in the questionnaire consisted of situational questions. The essence of this method is that it uses skill-based questions. Through example situations, the candidate selects the most appropriate answer for the given situation from the given answers. STAR questions are commonly used by professionals in job interviews. STAR stands for situation, task, action, and result. This method is particularly useful for competency-based assessments. The researchers turned to this option because, in the first instance, the authors were interested in what soft skills the mentors felt they had at the start of the programme that they would like to strengthen. To identify and select the soft skills, the authors worked with the social interaction and methodological group of skills from the 36 soft skills identified by the Skill Match project (skillsmatch.eu, 2022). The Skill Match's project aims to develop a European-wide assessment and learning guidance technology to help users match their skills to the needs of the labour market. In this project, 36 key soft skills in four categories are included. These categories are self-image and worldview, context and performance-related, peer interaction, and methodological, intuitive, and lateral thinking. With their questions, the researchers focused on nine soft skills (coaching, networking, ethical behaviour, negotiation skills, leadership, motivating others, communication, respect for diversity, teamwork skills). These skills fall into the social interaction and methodological group. These skills were chosen in the initial phase of the research because they are especially important for a mentor and because changes in these skills can be observed in a brief period.

The structure of the questions in the questionnaire is summarised in the first table:

Table 1: Structure of the questions

Specification of the sample	Soft skill expectations of the participants	Assessment of situations
Gender Age Nationality Work experience Reason for applying for the programme	Which soft skills do respondents feel strong in? Which soft skills do they think will be strengthened during mentoring?	Assessment of given situations

Source: Own table

In the survey, 30 mentors responded, and their responses were evaluated using univariate and multivariate methods: frequency and mean tests, ANOVA, etc. using SPSS version 28. This paper presents some of the results, presenting a simple picture of the mentors' expectations and competences.

4. RESULTS

26.7% of respondents were male and 73.3% were female. By continent, 80% were European, 13.3% Asian, 3.3% African American. The average age was 22.4 years. 46.7% of respondents were under 20 years old and 53.3% were between 21 and 30 years old. In terms of previous work experience, 10.0% had never worked in a job, while nearly 40.00% had been employed for more than a year in some type of job. The survey asked why respondents had applied for the mentoring programme in the first place. Table 2 summarises the responses:

Table 2: Reasons for applying for the programme (N,%)

Reasons	N	%
I wanted to test myself.	11	7.3%
Because of language learning.	15	10.0%
I'm interested in other people; I like to meet people.	27	18.0%
To improve my soft skills.	15	10.0%
I can make contacts.	14	9.3%
I can meet people from other cultures.	22	14.7%
I want to help others.	23	15.3%
I have had positive experiences with mentoring before.	6	4.0%
I have friends in the program, and I wanted to be with them.	6	4.0%
I liked the call about the program.	7	4.7%
Because of the 2 credits.	1	0.7%
Because of the money.	3	2.0%
Other	0	0.0%

Source: Own table

The results of the table show that most people chose the project because of the opportunity to meet other people. Equally popular reasons were the opportunity to gain experience about cultures and to help others. Language practice and development and strengthening soft skills came second in the list of reasons, showing that students were not necessarily motivated by the learning reasons for the project. The least motivating factors were the potential financial support and the credits that could be counted towards their studies. These latter two factors, in the researchers' view, may only be a short-term source of motivation for applicants. It could be said that the soft motivational factors were stronger than the hard factors on this issue.

The authors evaluated and found no differences in the priority of reasons based on age or gender using the Chi-square test. The study also looked at how respondents rated their own soft skills and which skills they expected to change during the programme. For both questions, they were asked to rate the skills and their changes on a five-point scale. A one was not at all strong, while a five was completely strong. The third table summarises the mean and standard deviation values for the skills and their development:

Table 3: What do you think your soft skills are and what do you expect to improve? (average, standard deviation)

Skills	How strong are their soft skills?		How will their soft skills change during the programme?	
	Mean	Std. Deviation	Mean	Std. Deviation
Coaching	3.53	0.776	4.27	0.740
Networking	3.37	0.718	4.43	0.679
Ethical behaviour	4.30	0.837	4.37	0.718
Negotiation skills	3.63	0.765	4.13	0.819
Leadership	3.60	0.675	4.27	0.691
Motivating others	3.93	0.828	4.33	0.758
Communication	4.27	0.740	4.73	0.583
Respecting diversity	4.67	0.606	4.67	0.606
Teamwork skills	4.50	0.820	4.73	0.580

Source: Own table

When it comes to teamwork, tolerance and ethical behavior, the respondents think they can rely on these skills with confidence. They rated themselves as relatively weaker in coaching and networking. The low value of the standard deviations indicates that the sample was homogeneous in these respects. In terms of development, participants did not

expect to be stronger for tolerance alone but did for the other skills. Strong improvements are expected for the skills rated as weak. Here again, the authors could expect low standard deviation values, which means that the respondents had similar opinions. The correlation tests show that with the development of coaching, communication (r:.650), tolerance (r:.666) and teamwork (r:.730) will be strengthened. The development of negotiation skills will have a positive effect on leadership (r:605) and the ability to motivate others (r:592). The strengthening of communication will have a positive effect on tolerance(r:812) and teamwork (r:899). The research investigates whether there are differences in perceptions of soft skills by gender, continent, and age. The independent samples T test shows that women and men have different opinions about coaching (t: -1.804 sig.: 0.019 $p<0.05$), and women felt stronger on this issue (mean:3.68) than men (mean:3.13). There were no differences in perceptions by continent. Respondents did not disagree by age on tolerance (F: 5.686 sig.: 0.24 $p<0.05$) and motivation of others (8.713 sig.:0.006 $p<0.05$). In both cases, those younger than 20 years felt stronger (motivation of others mean: 4.36, tolerance mean: 4.93).
The following table and figure try to give some nuance to what is shown in Table 3.

Table 4: Initial and target scores for mentors by skills

Ranking before mentoring	Ranking after mentoring	Skills	Score before mentoring	Score after mentoring	Improvement (after-before)	Improvement % ((before+after)/2)
1	3	Respecting diversity	4.67	4.67	0.00	0
2	1-2	Teamwork skills	4.50	4.73	0.23	5
3	5	Ethical behaviour	4.30	4.37	0.07	2
4	1-2	Communication	4.27	4.73	0.46	10
5	6	Motivating others	3.93	4.33	0.40	10
6	9	Negotiation skills	3.63	4.13	0.50	13
7	7-8	Leadership	3.60	4.27	0.67	17
8	7-8	Coaching	3.53	4.27	0.74	19
9	4	Networking	3.37	4.43	1.06	27
variance			**0.47**	**0.22**		
average			**3.98**	**4.44**		
relative st. deviation			**0.12**	**0.05**		

Source: Own table

We first look at the starting point averages, which are expected to increase from 3.98 to 4.44. In addition to the increase, skills also become more harmonious as the variance of skill scores decreases from 0.47 to 0.22 (and their relative variance decreases from 0.12 to 0.05). The average mentor therefore expects not only to increase his skills in all areas, but also to become more balanced in his skills.
Does the ranking of their skills change? Here we see significant changes (left columns of the table) We see a worsening ranking shift - at least 2 ranking drops - for Respecting diversity (from 1st to 3rd), Ethical behaviour (from 3rd to 5th), Negotiation skills (from 6th to 9th). While we see strong improvements - at least 2 ranks - in Communication (from 4th to 1-2), and Networking. In fact, the average mentor wants to increase his/her power skills: building a stronger network through better communication, while willingly sacrificing those skills that are more for the public good: respecting diversity, ethical behaviour, negotiation skills. In short, the average mentor develops each of these skills to become a more harmonious and powerful individual.
The next question is whether there is a generalizable rule for the process of improvement. We can measure this by dividing the improvement by the average of the before and after skills. This is the last column. Figure 1 shows that overall, the lower the value of the initial skill, the more it improved, but this relationship is not 100%. The negative slope curve [relative improvement=1.06-0.68×ln (before skill)], which shows a trend of 9 points, shows a multiplicity of R2=0.86.
The above is also supported by the data in Table 5. Networking shows the relational potential of the mentor, this should be developed even if it requires an investment of energy. Mentor, if not contacted by the mentored, 90% of the time actively responds, visits or calls. If the mentor has a toothache, he/she (53.3%) takes him/her to the dentist. If they have learning problems, (36.7%) teach or find someone to teach them themselves.
In brief, mentoring is a win/win situation, while helping the mentee to 1) develop his/her own skills to 2) become a stronger individual, 3) better communicator and networker, 4) improve in all aspects of his/her scores but also have a much more balanced skill vector, 5) reduce (strive to reduce) the relative variance of his/her skills to less than half (from 0.12 to 0.05).

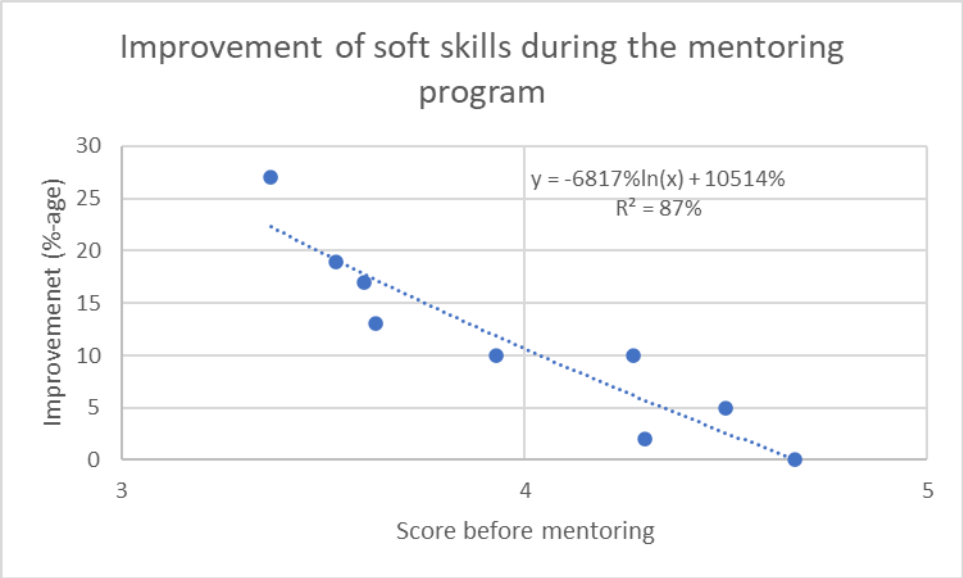


Figure 1: Improvement of skills to the average of before and after in the order of the before mentoring score of the skills
Source: Own figure

The authors have also formulated different situations in which the importance of certain soft skills has been approached. Table four shows the situations built around two soft skills and the frequency of responses. The two skills were coaching and networking. It is precisely those in which respondents gave themselves weaker ratings that the authors have now chosen for analysis.

Table 5: How do you respond to the given situations? (%)

Situation	Answers	Valid Percent
Coaching: Your mentee asks you for advice on where to buy special spices. What do you say?	I am trying to find it on the internet.	23.3
	I offer him to go shopping with him.	56.7
	I will post his question in the BEE Mentor FB group.	20.0
Coaching: You see that your mentee is not well oriented in Budapest traffic. What do you do?	I will show him the GPS and we'll find two streets on it.	6.7
	Download some apps and let us try to get to know Budapest together.	50.0
	We will do several test trips together to make him aware of the difficulties.	43.3
Coaching: You see that your mentee is having problems using the university's Neptun system and enrolling to courses. What do you do?	I will give him a description of the Neptun system and if he has any questions, I will answer them.	23.3
	We enter the system together and I watch him explore it.	16.7
	We log in together and I help him to take the subjects.	60.0
Networking: One or more of your mentees have not communicated with you for a week or two. What do you do?	He will look for me if he needs me.	6.7
	I ask around in the Facebook group to see who knows about it.	3.3
	I will contact him in person or by phone.	90.0
Networking It is Sunday afternoon. Your mentee calls to say he has a toothache. What do you do?	I will talk to his roommate, and we can figure out how we can help him.	10.0
	I am writing to the BEE Mentor FB group for advice.	23.3
	I will tell him to take painkillers	13.3
	I call a dentist on duty and take my mentored partner there.	53.3
Networking: Do you follow the academic progress of your	I will ask him how he is learning.	20.0

mentee?	We sit down to discuss his grades and I encourage him to study harder if he has a failing grade in something.	16.7
	We develop effective ways to learn.	26.7
	I put him in touch with people who can help him if he has a problem, or I can teach him.	36.7

Source: Own table

In most cases, there are responses that show that mentors are prepared for the tasks and try to help their mentees in the most optimal way. Of course, not everyone is yet sure of the best solution, but in all cases the majority are willing to cooperate strongly.
In the area of coaching, there were some responses where the authors felt that mentors still had some learning to do. This was, for example, the reaction of mentors in managing the Neptun system when they did not learn about the system together with the mentees.
The authors examined whether there were differences by gender, continent, and age in the responses to specific situations. The Chi-square test confirmed that no differences could be identified for these variables.

5. CONCLUSION

This study summarises the first experiences of a mentoring programme.
Several amazing events have been implemented so far for the mentees, such as visiting Ludwig Museum in Budapest. Ludwig Museum – Museum of Contemporary Art has a selected and dynamically expanding collection. Its collection includes artworks from the sixties until today, some of them are always on display. Furthermore, the mentors and the mentees visited the National Museum in Budapest on 15 March, when the Hungarian mentors detailed what we celebrate on this national day: the Revolution of 1848 and today it symbolizes national independence and democracy. Other great events have also been organized so far, such as board game night, quiz game and a trip to Tata Castle.
The paper shows that the volunteers start the programme with more or less strong soft skills that are necessary to be good mentors, they certainly have expectations for development, and all interviewees believe that their soft skills will change in a positive direction during the project. The researchers have now taken the first steps of their investigations. Their aim is to assess both the mentors and mentees perceive changes in their own skills in the long run. It is the desired aim of the programme that researchers and programme participants expect these skills to develop.

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LEAN-GREEN MANUFACTURING TO SUSTAIN ENVIRONMENTALLY FRIENDLY INDUSTRY: A REVIEW

Abstract: The increase in greenhouse gas emissions has worsened the global warming condition in the world day by day. One of the biggest contributors to greenhouse gas emissions is the manufacturing industry. Carbon dioxide is produced as a byproduct of the manufacturing industry. To reduce greenhouse gas emissions, it is important for the company to focus on how to manage waste in non-value-added operations. This study reviewed the literature on the integration of Lean and Green Manufacturing to sustain an environmentally friendly and efficient process. A total of 24 out of 107 papers were reviewed in this study. The implementation, differences, similarities, synergies, advantages, impacts, and barriers of Lean and Green Manufacturing were used as inclusion criteria. The findings of this study showed that Lean and Green Manufacturing integration can eliminate operational and environmental waste effectively, which in the end will increase productivity while reducing global warming impact.

Keywords: Gas emissions, Global warming, Greenhouse, Lean-green manufacturing, Waste.

1. INTRODUCTION

Greenhouse gas emissions worsened the global warming condition in the world. The biggest contributors to greenhouse gas emissions are energy consumption, agriculture, and the manufacturing industry (Ge & Friedrich, 2020). Greenhouse gas emissions will continue to happen and worsen the global warming condition if the players in the manufacturing industry do not take any action to reduce the byproduct of the industry. This might happen because of a lack of awareness from the companies regarding the issue. Even when the companies already are aware of greenhouse gas emissions and try to sustain the environment, they might not know how to reduce the emissions. Many of the manufacturing processes are inefficient and contribute a large portion to greenhouse gas emissions (Lamb et al., 2021).

Adapting green manufacturing processes to manufacturing operations could reduce the emissions released into the atmosphere (Singh et al., 2022). However, implementing green manufacturing itself is not enough since this method will only reduce waste during the production process (Pathak et al., 2021). If we take a look at the manufacturing process closer, we will find that waste could happen even outside of the production process, which is called non-value-added activities. Non-value-added activities are all activities consuming time or cost but will not give any profit to the company, i.e., unnecessary movement of materials and unnecessary movement of employees. To reduce or even eliminate waste from non-value-added activities, lean manufacturing can be adapted to the operations of the manufacturing industry.

The purpose of integrating lean manufacturing and green manufacturing is to get the full advantage of eliminating waste in the manufacturing process. The integration of lean and green manufacturing not only will increase the performance of the company but also sustain the environment (Hallam & Contreras, 2016a). The aim of this study is to review past literature related to lean and green manufacturing integration in eliminating waste (Garza-Reyes, 2015; Cherrafi et al., 2016; Tiwari & Tiwari, 2016; Siegel et al., 2019; Leong et al., 2019) and increasing value-added (Cherrafi et al., 2016; Hallam & Contreras, 2016a; Tiwari & Tiwar, 2016; Abreu et al., 2017; Inman & Green, 2018). In addition, this study also provides suggestions for future research on lean-green manufacturing based on the findings of the review.

2. METHODS

This study reviewed the impact of the application of lean-green manufacturing on environmental sustainability. The reviewed articles were obtained from the research databases such as Scopus, Web of Science, JSTOR, ERIC, ScienceDirect, and IEEE Xplore. The keywords used to obtain the articles were "Lean and Green Manufacturing", "Integration of Lean-Green Manufacturing", "Lean-Green Manufacturing", and "Application of Lean-Green Manufacturing". Then the collected articles were screened based on the title, abstract, and year of publication. The limitation for the year of publication was set from 2015 to 2022. A total of 107 articles were collected and there were 56 articles found to be relevant to the inclusion criteria. The implementation, differences, similarities, synergies, advantages, impacts, and barriers of Lean and Green Manufacturing were used as inclusion criteria. There were 21 out of 56 articles that specifically discussed the integration of lean and green manufacturing.

3. RESULTS AND DISCUSSION

3.1. Lean-Green Manufacturing

Lean and green manufacturing integration is a way to improve the production process while sustaining the environment. Lean manufacturing was developed by Toyota to eliminate seven wastes in the production process. The seven wastes to be eliminated are defective products, over-processing, waiting time, overproduction, inventory, transportation, and unnecessary movement. Whereas green manufacturing is used to eliminate green wastes such as the consumption of energy, water, and resources (Chiet et al., 2019) to sustain the environment. Integrating the concepts of lean and green manufacturing can maximize waste elimination and increase the efficiency of the production process (Bhasin, 2015). Lean and green manufacturing basically have the same purpose, which is enhancing product quality while reducing operational costs (Hallam & Contreras, 2016a). In addition, both lean and green manufacturing are aiming to produce zero-defect products (Tiwari & Tiwari, 2016).

The common goals between lean and green manufacturing make them possible to be integrated since they can work synchronously to increase efficiency and effectiveness in the manufacturing process (Tiwari and Tiwari, 2016). Further, lean-green manufacturing is an effective method to improve performance while reducing production costs by eliminating waste and non-value-added activities (Garza-Reyes, 2015). Lean-green manufacturing can achieve a sustainable manufacturing system due to its four dimensions, namely, quality, delivery, cost, and environment with a focus on eliminating waste and increasing performance (Pampanelli et al., 2015; Abualfaraa, 2020).

3.2. Lean-Green Manufacturing to Increase Value-Added

Lean and green manufacturing are integrated by manufacturing companies to increase value-added in the production processes. The increase in value-added can be achieved by reducing production costs and time, minimizing waste, and improving the quality and efficiency of the process. If the company is able to implement lean-green manufacturing consistently, an increase in the value-added process along with a decrease in production costs can be obtained (Hallam & Contreras, 2016b). From its initial purpose, green manufacturing intents to eliminate waste to the environment by minimizing the usage of natural resources. In addition, green manufacturing also aims for zero-defect products (Tiwari & Tiwari, 2016). Similarly, lean manufacturing is used to eliminate the seven wastes to improve the performance of the production process (Inman & Green, 2018). The implementation of lean manufacturing in companies with a green manufacturing approach could sustainably minimize overproduction, unnecessary movement, and waiting time that in the end will increase the value-added processes (Cherrafi et al., 2016).

Lean-green manufacturing can also be applied to supply chain management in order to reduce operational and environmental wastes which will result in better competitiveness in the global market (Abren et al., 2017). Lean-green manufacturing could minimize the total cost and increase the efficiency of the supply chain processes from the raw materials until the products reach the customers. Additionally, lean-green manufacturing could reduce the lead time of the processes, improve the culture of the organization, and improve the social position of the company (Abren et al., 2017). This is because lean-green manufacturing will reduce the cost of production and inventory, shorten the production cycle and lead time, reduce the delivery time, and improve the safety of the employees.

3.3. Lean-Green Manufacturing to Sustain the Environment

The integration of lean and green manufacturing also aims to minimize waste to the environment. Japan implemented lean-green manufacturing by developing machines with low-carbon emissions (Leong et al., 2019). These machines are able to reduce greenhouse gas emissions in Japan and also reduce the total production costs. The implementation of lean-green manufacturing will be able to minimize the global warming condition that is harmful to the environment and natural resources (Garza-Reyes, 2015; Cherrafi et al., 2016). Lean-green manufacturing has been proven to minimize any kind of production waste efficiently (Tiwari & Tiwari, 2016). Not only beneficial to the environment and production process,

but the employees will also get the benefit of a better and healthy working environment. A healthy and safe working environment itself could be obtained by improving employee awareness, training, and standardized assessment (Siegel et al., 2019).

3.4. Barriers to Implement Lean-Green Manufacturing

Despite its advantages, lean-green manufacturing may not be able to be implemented easily. This is because there are barriers that make the implementation more difficult. The implementation of lean-green manufacturing requires a large amount of financial investment with no guarantee it will be successful (Chiet et al, 2019). Not only financial barriers but the implementation of lean-green manufacturing might also be restricted by the capability of the stakeholder and the company. When the involved employees are not capable enough, it will be difficult to effectively lean-green manufacturing (Leon et al., 2019). Similarly, it will also be difficult when the company is not ready for the change using lean-green manufacturing concepts (Abren et al., 2017). Other than the internal factors from the company, external factors can also be a barrier to lean-green manufacturing implementation. Lean-green manufacturing will not achieve sustainability by itself due to contingency factors such as organizational culture, financial capability, employee involvement, leadership commitment, and suitable organizational structure (Bhattacharya et al., 2019). The next barrier is the behavior of lean-green manufacturing that may not be able to support the sustainability pillars, namely, environment, social, and economy (Abualfaraa et al., 2019). Thus, another method is required to achieve the sustainability pillars.

3.5. Lean-Green Manufacturing Implementation

The company must be able to put more attention to the barriers to lean-green manufacturing implementation to determine the root causes of the barriers. It is important to identify the root causes of the barriers in order to come up with strategies to overcome the obstacles. If the obstacles can be tackled, the advantages of lean-green manufacturing in increasing value-added and sustaining the environment can be obtained. In addition, it is important to use a suitable performance measurement system to check the successfulness of the implementation of lean-green manufacturing. The performance measurement should be designed based on the company's condition because the successful implementation in one company is not a guarantee that it will be successful in all companies. If the company does not use the proper performance measurement, it is going to be difficult to measure the performance of lean-green manufacturing in increasing value-added and sustaining the environment. A generic measurement cannot be used to judge the performance of lean-green manufacturing in a company since even the same businesses may have different processes. Poor understanding of how the production system and how to measure the performance of lean-green manufacturing is one of the causes of the failure in the implementation of lean-green manufacturing. According to Abualfaraa et al. (2020), the proper method and parameters to evaluate the success of the implementation of lean-green manufacturing are still lacking. Future studies developing a suitable method and parameters to measure the performance of lean-green manufacturing based on the company's specific operation would support the success of implementing lean-green manufacturing.

4. CONCLUSION

From the articles reviewed, it can be concluded that implementing lean-green manufacturing increased value-added in the production process and brought a positive impact on environmental sustainability. Lean manufacturing complements green manufacturing to reduce not only operational waste but also environmental waste effectively. Further, lean-green manufacturing could minimize the total production cost and increase the efficiency of the production process. Although the integration of lean and green manufacturing brings a lot of advantages, it is not that simple to implement this method. The company needs to have good preparation such as a large amount of financial investment, organizational readiness, advanced technology, and the involvement of capable employees. Otherwise, there is no guarantee the implementation of lean-green manufacturing will be successful. In addition to that, it is also important to have a proper measurement method to evaluate the performance of lean-green manufacturing. This study provides evidence from the literature review that lean-green manufacturing could give a positive impact on the production process while sustaining the environment. This study also presents the possible barrier to the implementation of lean-green manufacturing along with how to overcome it. Future research evaluating lean-green manufacturing should focus on the specific industry since each industry has its own characteristics.

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IMPLEMENTATION OF SWOT ANALYSIS AND QUANTITATIVE STRATEGIC PLANNING MATRIX ON A LOW-COST PRIVATE SCHOOL

Abstract: A newly established private school has to face various challenges since it has to compete with the existing public and private schools. Competing with other schools will not be easy since parents and students would prefer schools that have been around for a longer time with good reputations. This study aimed to formulate strategies for a low-cost newly established private school using SWOT analysis to understand the strengths, weaknesses, opportunities, and threats using the Internal Factors Evaluation (IFE) and External Factors Evaluation (EFE) Matrices. The internal-external matrix along with the SWOT matrix could determine the strategies to match the school's position internally and externally. Then, the quantitative strategic planning matrix (QSPM) evaluated the score of the strategies and the priority was on the strategies with the highest score. From the result of the study, it can be concluded that advertising the school using various social media and building the crucial facilities first can be used for market penetration and product development.

Keywords: Market penetration, Product development, QSPM, Strategy, SWOT.

1. INTRODUCTION

Education is an essential aspect of modern society in Indonesia. Although the Indonesian government provides free 9-year education through public schools for the citizens, many parents prefer to enroll their children in private schools. This might be caused by the perception that the quality of education in public schools is only at a minimum standard due to limited funding (Hendajany, 2016). As a result, private schools are inevitably on the rise in Indonesia. Since good quality education is in high demand in Indonesia, many foundations grab this opportunity to build new private schools. However, joining the competition can be challenging for low-cost newly established private schools. Most parents will opt for private schools that have been established for a longer time because they already have a good reputation for providing quality education. The difficulty of striving in the competition leaves the low-cost newly established private schools with very few students. With a little number of students enrolled in the program, the school will have difficulty covering the expenses to offer the best education. In addition, further advanced development will be difficult to be done (Heyneman & Stern, 2014).

Strategic management can be used by private schools in order to survive in the competition (Abdolshah et al., 2017). Internal and external factors should be taken into consideration in developing the strategies because the strategies will depend on the capabilities of the institutions and the limitations of the external environment (Ansoff et al., 2019). Other than that, in choosing a strategy, not all the designed strategies can be implemented at the same time. The school may have limitations in terms of time, cost, and resources that are available or constrained. Therefore, private schools need to know their strengths and weaknesses along with the opportunities and threats that may affect decision-making (Fahim et al., 2021). Then, the most effective strategies can be developed by considering those analyses.

The objective of this study is to identify the optimum strategy for a low-cost newly established private Islamic school in Indonesia to increase its competitiveness. The quantitative strategic planning matrix (QSPM) can be used to choose the best strategy for the decision-making process since it can effectively assess both internal and external changes (Leliga et al., 2019). After identifying the internal and external factors of the organization using SWOT (strengths, weaknesses, opportunities, threats) analysis, the significant factors and most favorable strategies will be selected. The QSPM is powerful because it examines the set of strategies sequentially or simultaneously, has no limit on the number of strategies to be evaluated, and integrates internal and external factors before the decision-making stage (David & David, 2015).
This paper is structured as follows: section 2 describes the methods of collecting and processing data. Section 3 explains the findings of the study and discusses the alternative strategies. In this section, the findings in each step of data processing are explained and analyzed. Moreover, a discussion of each finding in the study is also presented. Finally, section 4 concludes the paper.

2. LITERATURE REVIEW

Developing suitable strategies for an organization requires a thorough analysis from the inside and outside of the organization. In this study, the development of the strategies is done by using internal factors evaluation matrix (IFEM), external factors evaluation matrix (EFEM), internal-external matrix (IEM), strength-weakness-opportunity-threat (SWOT) analysis, and quantitative strategic planning matrix (QSPM).

2.1. Internal Factors Evaluation Matrix

The internal factors evaluation matrix (IFEM) can be used to identify the internal factors of an organization that consists of strengths and weaknesses. Each internal factor has a weight that will subsequently be graded according to how important they are to the organization. The importance of each internal component is determined by the score. The assessment of the internal factors is based on the organization's capability in managing operations and resources (management), finance (financing its needs), production and operations (implementing production and operations plans), research and development (developing innovations for the growth of the organization), and management information system to communicate with employees throughout the overall systems (David & David, 2015).

2.2. External Factors Evaluation Matrix

The external factors evaluation matrix (EFEM) is similar to the IFEM, except for the factors being assessed. In this matrix, the external factors that consist of opportunities and threats are assessed. These factors should be identified by using microenvironment and macroenvironment analyses (Kotler & Armstrong, 2012). Microenvironment factors can have a positive or negative impact on the organization's ability in creating values such as the customers, competitors, and the public. While macroenvironment factors include the broader-social factors that can affect the microenvironment factors such as demography, economy, technology, politics, culture, and nature (Kotler & Armstrong, 2012).

2.3. Internal-External Matrix

This matrix is useful to position the organization based on the scores of its IFEM and EFEM. There are three main categories in the IEM, namely: 1) grow and build; 2) hold and maintain; and 3) harvest and divest. The suitable strategies for the grow and build category are intensive (market penetration, market development, and product development) and integration (backward, forward, and horizontal integrations) strategies. The intensive strategies are also suitable for the hold and maintain category. As for the harvest and divest category, the suitable strategies are either diversification or liquidation (Hasibuan & Amela, 2019).

2.4. SWOT Analysis

SWOT analysis is an effective tool for strategic planning (Benzaghta et al., 2021). The goal of a SWOT analysis is to maximize an organization's strengths and opportunities while minimizing its weaknesses and threats. The steps of constructing the SWOT matrix are: 1) compile a list of opportunities and external threats of the company as well as the company's internal strengths and weaknesses; 2) formulate strength-opportunity (SO) strategies to maximize internal strengths and gain external opportunities; 3) formulate weakness-opportunity (WO) strategies to use external opportunities to minimize internal weaknesses; 4) formulate strength-threat (ST) strategies to reduce the impact of external threats by using internal strengths; and 5) formulate weakness-threat (WT) strategies as defensive strategies to reduce weaknesses and external threats.

2.5. Quantitative Strategic Planning Matrix

After listing the possible strategies to be implemented, the next step is to decide which strategies should be prioritized using the QSPM. This method can choose the strategies optimally by quantifying the strategies and considering the internal and external and external factors (Leliga et al., 2019). In the first column of the matrix, all the external and internal factors are listed based on their categories (strength, weakness, opportunity, and threats). Weighted scores for each factor are inserted in the second column. The next columns of QSPM include a variety of strategies, which are WO, ST, WT and SO that are obtained from the SWOT matrix. Each column of strategies is divided into two sub-columns. Sub-columns columns contain the attractiveness score (AS) and the total attractiveness score (TAS). The ratings of AS are determined based on the attractiveness of a strategy relative to the factors obtained (Gupta et al., 2015). The rating of AS ranges from 1 to 4 with 1 (not interesting/not suitable for the corresponding factor), 2 (slightly interesting/slightly suitable for the corresponding factor), 3 (interesting enough/suitable enough for the corresponding factor), and 4 (very interesting/very suitable for the corresponding factor). TAS is obtained by multiplying AS with the weighted score of the internal and external factors.

3. METHODOLOGY

The data collection was done by conducting interviews and administering questionnaires to the head of the foundation, the principal of the school, and the head of administration considering their knowledge of the school's operation and development. In addition, a total of 152 parents in the neighborhood (52 of them were the parents of the students enrolled in this school) participated by filling out the questionnaire through Google Forms. The questionnaire includes the demographic data of the participants and five indicators, namely the effectiveness of advertisement, trends of advertising media, school selection criteria, perceived quality of the private school in the study, and perceived competitiveness of the school in the study.

The collected data were then used to formulate the strategy matrices. The qualitative data from the interviews were utilized to identify the internal and external factors that will affect strategic decision-making. Additionally, qualitative data was also used to build the SWOT analysis. Whereas the quantitative data from the questionnaire were used for the internal factors evaluation matrix (IFEM), external factors evaluation matrix (EFEM), internal-external matrix (IEM), and QSPM.

4. RESULTS AND DISCUSSION

The IFEM was used to quantify the strengths and weaknesses of the school in order to identify the significance level of a factor in strategic decision-making. The rating of the factors can be 4 (major strength), 3 (minor strength), 2 (minor weakness), or 1 (major weakness). The weight and rating of the factors were based on the questionnaire filled out by the top management of the school. The most important strength of this private school is that it offers complete and exclusive facilities with a weight of 0.0863. Whereas the most serious weakness is that the building and facilities are still in progress with a weight of 0.065. Table 1 shows the results of the IFEM. From the table, it can be seen that the top management rated all but one strength factor with 4.00, this means the top management considers most of their strengths as their major strength that will contribute to the success of the school. Similarly, the top management rated all weaknesses with 2.00, meaning that the top management considers all of their weaknesses as minor weaknesses and will not be difficult to overcome them in developing the school.

The EFEM was used to quantify the opportunities and threats of the school to see how significant these factors are in strategic decision-making and how well the school responds to the identified factors. The rating of the factor is 4 if the organization's response to that factor is excellent or very good, 3 if the organization's response is good or above average, 2 if the organization's response is ordinary or just average, and 1 if the organization's response is poor or below average. The most important opportunity of this school is high public interest with a weight of 0.086. At the same time, the rating for that factor is 3.67, which means that the response of the school management to this main opportunity is almost excellent or above average. It shows that the school is aware of its best opportunity and responds to it very well. Meanwhile, the largest weight for the threats is the fact that many prestigious Islamic schools are around the area with a weight of 0.083. However, the rating of this threat is 3.00, meaning that the school is aware of this threat and responds to it well by building exclusive facilities, offering competitive tuition fees, and hiring only the best teachers. The EFEM is shown in Table 2.

Table 1: Internal Factors Evaluation Matrix (IFEM)

Internal Factors	Weight	Rating	Weighted Score
Strengths			
Strong commitment of top management to establish the school as promised (S1)	0.084	4.00	0.336
Integration of the school with other businesses owned by the foundation (S2)	0.060	4.00	0.241
Complete and exclusive facilities offering (S3)	0.086	4.00	0.345
More affordable fee compared to competitors (S4)	0.071	3.67	0.261
Prioritization of religious programs while using international language as the communication means (S5)	0.083	4.00	0.333
Various extracurricular activities offering (S6)	0.059	4.00	0.234
High-quality teachers obtained from a tough selection process (S7)	0.083	4.00	0.333
High-quality learning tools and comfortable classes (S8)	0.077	4.00	0.307
Good management and healthy culture among employees (S9)	0.068	4.00	0.272
Weaknesses			
Management roles are not fully established (W1)	0.062	2.00	0.124
Usage of conventional advertising media (W2)	0.062	2.00	0.124
Building and facilities are still in progress (W3)	0.065	2.00	0.130
Extracurricular activities are not fully implemented (W4)	0.047	2.00	0.094
Not yet accredited (W5)	0.047	2.00	0.094
No external achievement from students and alumni (W6)	0.047	2.00	0.094
Total IFE Score			3.322

Table 2: External Factors Evaluation Matrix (EFEM)

External Factors	Weight	Rating	Weighted Score
Opportunities			
Strategic location (O1)	0.080	4.00	0.321
Good relationship with the local government (O2)	0.074	3.00	0.221
Majority of the citizens are Muslim (O3)	0.063	3.67	0.231
Good credit rating from the banks (O4)	0.074	3.00	0.221
High public interest in an Islamic school (O5)	0.086	3.67	0.313
Increasing usage of social media (O6)	0.076	3.00	0.228
Good customer satisfaction level (O7)	0.084	3.67	0.310
Threats			
Reduced income due to COVID-19 and natural disaster (T1)	0.080	2.67	0.214
Disturbed teaching and learning activities due to COVID-19 (T2)	0.068	3.00	0.205
Few numbers of student enrolled (T3)	0.081	1.33	0.108
Many prestigious Islamic schools around (T4)	0.083	3.00	0.250
Many branches of other Islamic schools (T5)	0.075	2.00	0.150
More advanced advertising media by other Islamic schools (T6)	0.076	2.00	0.152
Total EFE Score			2.924

The next step is to match the internal and external factors by using the IEM. Based on the IFE score, the school has a strong internal position and is able to take advantage of its strengths to overcome its weaknesses. On the other hand, the EFE score of the school shows that external factors have a medium impact on the school. In the IEM, the IFE and EFE scores are used as the x- and y-axis, as shown in Figure 1. The IE Matrix shows that Al Madinah Islamic School is positioned in region IV, which is categorized as Grow and Build zone (Hasibuan &Amela, 2019). Therefore, the suitable types of strategies include intensive strategies (market penetration, market development, and product development) and integration strategies (backward integration, forward integration, and horizontal integration).

Based on the result of IEM, market penetration and product development can be used as strategies to develop this low-cost private school. Market penetration strategy can be used to increase the school's marketing performance by improving the efforts for advertising and promoting the school to capture a larger market share. While product development strategy can be done by developing the facilities, learning programs, extracurricular, and other quality aspects of the school. Market development is not chosen because it is more related to developing or enlarging the market area. In fact, the school management decided to limit its market area around the neighborhood for the first three years. Therefore, enlarging the market to other cities is not reasonable for the current condition and market penetration is more critical to increase the reputation of the school in the current market. Besides that, the integration strategies are not chosen because it is simply

not possible, for now, to integrate the businesses with other external parties. At the same time, the school is under a foundation that owns other businesses. Therefore, integration with other external parties is not needed.

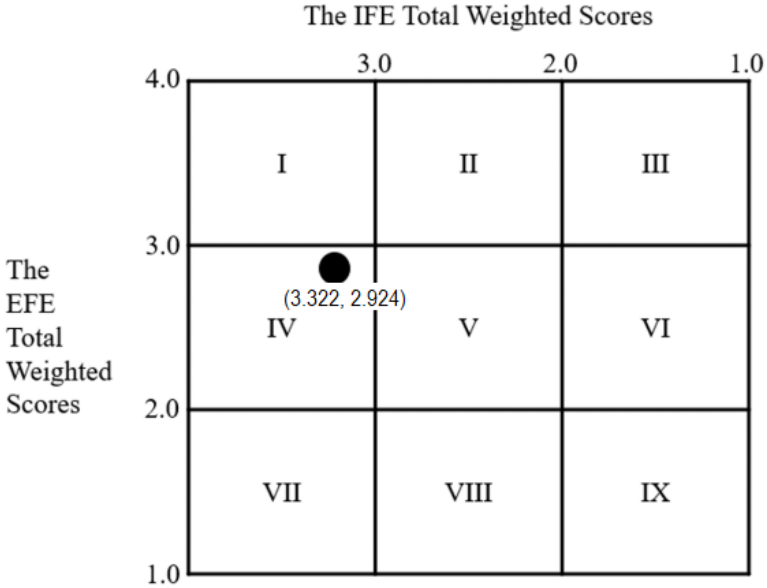

Figure 1: Internal-External Matrix (IEM)

For the SWOT analysis, the strategies were created as the result of the interviews with the top management. The strategies were designed based on the internal and external factors obtained from the discussion with the top management and the results of the questionnaire. As explained in the IEM, the strategies are divided into two sets, which are market penetration and product or school development. In the SWOT analysis shown in Table 3, strategies in the market penetration are symbolized as MP1-6 and for product development as PD1-7.

Table 3: SWOT Analysis

Symbol	Strength-Opportunity Strategies	Symbol	Weakness-Opportunity Strategy
MP1	Open several facilities (e.g., multipurpose hall, swimming pool, mini zoo) for public (S2, S3, O1, O5)	PD1	Develop software or application for school data management (W1, W3, O4)
MP2	Hold school open house for public (S2, S3, O1, O3, O5)	MP6	Advertise the school using various social media (W2, O5, O6)
MP3	Conduct community service program (S2, O3, O5)		
MP4	Provide shuttle car service for students (S2, O1, O5, O7)		
MP5	Produce products with the school brand (S1, S2, O4, O5)		
Symbol	**Strength-Opportunity Strategies**	**Symbol**	**Weakness-Opportunity Strategy**
PD2	Build the crucial facilities first (S1, S3, T3, T4)	PD5	Prepare and send the students to external competitions (W5, W6, T4, T3)
PD3	Provide international language training for students' preparation (S5, S7, T4)	PD6	Provide teachers and staff certification programs to prepare for accreditation (W5, T3, T4, T5)
PD4	Implement routine moral and religious programs for students and teachers (S1, S5, S7, T4)	PD7	Provide extra classes for students with low academic performance (W6, T4)

The market penetration strategies consist of the actions that can be taken to increase the marketing effort of the school through better advertisement and promotions. The strategies include open several facilities for the public, hold a school open house for the public, conduct a community service program, provide shuttle service for students, produce products with the school brand, and advertise the school using various social media. These strategies are expected to raise the awareness of the parents in the neighborhood of the existence of the school.

As for the product development strategies, the school can develop software or application for school data management, build the crucial facilities first, provide international language training as a students' preparation program, implement routine moral and religious programs for students and teachers, prepare and send the students to external competitions,

provide teachers and staff certification programs to prepare for accreditation, and provide extra classes for students with low academic performance. These strategies can be used to improve the quality of the school and the capability of the school to provide better services.

Table 4: QSPM Analysis

Priority	Strategies	Total TAS
Market Penetration Strategies		
1	Advertise the school using various social media	6.399
2	Hold school open house for the public	6.116
3	Open several facilities (e.g., multipurpose hall, swimming pool, mini zoo) for public	5.676
4	Provide shuttle car service for students	5.151
5	Produce products with the school brand	5.078
6	Conduct community service program	4.837
Product (School) Development Strategies		
1	Build the crucial facilities first	6.732
2	Prepare and send the students to external competitions	5.915
3	Provide teachers and staff certification programs to prepare for accreditation	5.883
4	Provide extra classes for students with low academic performance	5.627
5	Develop software or application for school data management	5.027
6	Implement routine moral and religious programs for students and teachers	4.951
7	Provide international language training for students' preparation	4.626

The QSPM analysis as presented in Table 4 shows that the highest TAS for market penetration strategies is on advertising the school using various social media. It means that to increase the marketing effort, the school can prioritize developing advertisements through social media first over other market penetration strategies. It can be done by creating Instagram, Facebook, and YouTube accounts because these social media are identified as the most used social media. After that, the school can start preparing the contents, posting the advertisement, and updating the students' activities actively and routinely. The update about the students' activities can be done after the government allows the school to be conducted face-to-face. This strategy can be done together with the current marketing strategies that were previously considered effective including promoting through other businesses of the foundation, spreading brochures, making banners, and developing a website.

For the product development strategy, the prioritized strategy is building the crucial facilities first with a TAS of 6.732. It means that it is essential for the school to finish the crucial facilities first before other facilities to both support the learning activities and increase competitiveness. The crucial facilities include the laboratories and sports or assembly field. It can be done by accelerating the process of building. If the process cannot be accelerated, the school can start preparing, planning, or choosing the type and vendor of the equipment so that they can quickly finish the facilities once the building is ready.

Due to the fact that the school is newly established, there was a lack of important data such as the financial data recorded in the system. Therefore, the suggested strategies from the analysis might not match the school's financial capability. Another limitation of this study is that this study only focused on determining effective strategies without considering their successful implementation. Future follow-up studies to see the effectiveness of the strategies will help the low-cost newly established private school in implementing effective strategies based on its financial capabilities.

5. CONCLUSION

This study evaluated the current internal and external factors of a low-cost newly established private school. The strengths, weaknesses, opportunities, and threats of the school were used to formulate strategies to increase its competitiveness. The internal factors evaluation matrix (IFEM) was created based on the views of the top management on their strengths and weaknesses. The external factors evaluation matrix (EFEM) was created based on the school's opportunities and threats. The internal-external matrix (IEM) was then built based on the IFEM and EFEM scores. Based on the results of the IEM, the school is categorized in the grow and build category and thus, intensive strategies, namely market penetration and product development were chosen. Then, a SWOT analysis was done to determine various possible strategies according to market penetration and product development strategies. Finally, the quantitative strategic planning matrix (QSPM) was used to analyze which strategies should be prioritized by the school. The TAS scores in QSPM showed that advertising the school using various social media is the best market penetration strategy. Whereas building the crucial facilities first is the best product development strategy. However, this study did not take into consideration the capabilities of the school to implement the strategies successfully. Future follow-up studies might help the school to make better strategies based on its financial and infrastructure capabilities.

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CONNECTING THE DOTS: HOW DOES LEAN THINKING CONTRIBUTE TO PROJECT MANAGEMENT?

Abstract: Lean Thinking (LT) is a philosophy that focuses on the development of initiatives to maximize customer value and minimize waste. LT was initially developed for manufacturing, but over the years its principles and tools have been adapted to other industrial sectors and functional areas, such as project management (PM).
Despite the potential benefits of linking LT to PM, there is limited literature examining the link between these topics when adapted to a variety of project contexts, still focusing on the execution of construction projects. Therefore, the proposed research aims to analyze the contribution of LT to minimizing waste in PM activities in order to increase project efficiency.
Having in mind the lack of research linking these two concepts (LT and PM), this research aims to review the literature related to LT and PM, and then conduct a bibliometric analysis to understand how this topic has grown over time. From the literature consulted lean thinking is proposed as a key aspect to support project managers in identifying the main waste originating in ongoing projects. The results will contribute to developing a conceptual model that aligns the LT tools and techniques with the PM practices. The proposed research aims to analyze the contribution of LT to minimizing waste in PM activities to increase project efficiency.

Keywords: Lean Thinking. Project Management. Lean Project Management. Efficiency.

1. INTRODUCTION

Lean Thinking (LT) is a philosophy that focuses on the development of initiatives to maximize customer value and minimize waste. This philosophy was initially developed for manufacturing, but its principles and tools have been adapted to other industrial sectors and functional areas, such as project management (PM). By eliminating waste in the work process, LT can create value and improve process efficiency (Anholon & Sano, 2016, pp. 1–4).
The principles and tools related to LT can therefore be applied to PM in order to improve the efficiency of the projects in different stages of application. The limited literature linking these approaches defends that the link between LT and PM, also known as Lean Project Management (LPM), can be a key strategy to improve project efficiency as it aims to manage and minimize waste and non-value-adding activities. Thus, when LT principles are applied in the project life cycle, it can contribute to support projects on minimizing waste in different phases of it (Oehmen et al., 2012).
This research aims to analyze the evolution of research into the contribution of LT to minimizing waste in PM activities in order to increase efficiency.

To achieve this purpose, the following specific objectives were addressed:

- To analyze the current literature on the topic of LT, PM, and the link between both;
- To identify the main industrial sectors that resort to LPM as a strategy to improve efficiency;
- To investigate the applicability of LPM as a strategy to improve efficiency in projects.

LT and its tools and techniques are already mature topics in the current literature, being commonly adopted in sectors such as manufacturing and construction as a means to minimize and increase efficiency in the work processes. However, the adaptation of LT to PM is a relatively new approach, which configures an opportunity for researchers investigating this topic. Within this context, this research aims to contribute to overcoming this gap in the literature.
This research is structured in four sections as follows: Section 2 introduces the theoretical background of concepts related to the research topic, such as PM, LT, and LPM; Section 3 presents the research methodology used in the study; Section 4 presents the obtained results with the analyses performed; and Section 5 summarizes the conclusions and points out further research directions.

2. THEORETICAL BACKGROUND

In this section, the theoretical background is discussed along with the three main concepts related to the research topic, namely Project Management, Lean Thinking, and Lean Project Management.

2.1. Project Management: an overview

PM refers to the business process that involves the application of knowledge, skills, tools, and techniques in order to manage the development of a unique product or service according to defined requirements, with a specific deadline, budget constraints, and established objectives that aim to satisfy the needs of stakeholders and achieve business value (Project Management Institute, 2021). PM is a widely applicable concept that encompasses a broad range of industries and sectors.
In the context of PM, it is essential to efficiently convert the project inputs into the expected outputs (Mishra, Sinha, Thirumalai, &Ven, 2020; Project Management Institute, 2021). According to Mishra et al., (2020) as PM enables the achievement of the pre-defined objectives associated with the project's output through the transformation of the inputs, this input-output transformation process is directly related to the project's efficiency. Frinsdorf, Zuo, &Xia (2014) state that in an efficient project all types of resources, such as human and physical resources are utilized in order to maximize the expected project outcomes within the planned schedule and budget. Liu & Cross (2016) defends that project efficiency is based on the application of efficiency-oriented measures that refers to the project team's ability to accomplish its objectives with minimal and optimal use of resources. According to Project Management Institute (2021), a project is efficient if its deliverables generate a positive output with the least amount number of input and effort needed. Therefore, it is possible to state that optimal resource management is crucial in achieving project efficiency, as it enables the optimal utilization of resources (Project Management Institute, 2017).

2.2. Lean Thinking: an overview

The first discussion of Lean originated in Japan in the late 1940s when Toyota Motor Company employees traveled to the United States to learn from the mass production system at Ford's plant and realized that this production system was loaded with waste. As a result of this experience, they developed the Toyota Production System (TPS), aiming to increase production efficiency and reduce costs by consistently eliminating all forms of waste, and activities that do not add value to the production process (Hines, Holweg, &Rich, 2004;Womack, Joes, &Roos, 1990).
Even though it system aimingd at TPS, there is no common definition of Lean. In fact, despite the existence of several studies on this topic, definitions of Lean methodology or its related concepts such as LT, Lean Production, or Lean Management vary according to the perspectives of the authors.
According to Rossini et al., (2022) Lean Production uses less of everything compared with mass production – half the human effort in the factory, half the manufacturing space, half the investment in tools, and half the engineering hours to develop a new product in half the time. Also, it requires keeping far less than half the needed inventory on site, results in many fewer defects and produces a greater and ever-growing variety of products.
Shah & Ward (2007) also defends Lean Management as a managerial system that integrates specific practices and techniques to reduce internal and external process variability.
The concept of LT is also defined by Pinto (2010) as a leadership and management philosophy that pursues the systematic elimination of waste, the identification, and creation of value, the continuous improvement of organizational processes, and quality management.
This research focuses on LT due to the fact that, as a philosophy, it is not directly applied to production systems, and it has a broader approach that can be easily adapted for different scenarios and contexts.

The key aspects of LT include the elimination of non-value-adding steps from the client's perspective (which can be configured as a type of waste) and the adoption of a continuous improvement mindset. The overall goal of it is to do more with less, by reducing unnecessary resources (Shah & Ward (2007); Jones & Womack, 2003). In the current literature, several have discussed the positive correlation between the implementation of LT and business efficiency (See (Anholon & Sano, 2016). The application of LT is based on a set of principles that focus on value creation and waste minimization: value, value stream, flow, pull, and perfection. By applying these principles organizations can specify a value, align and conduct value-creating actions in the best possible sequence without interruption and, consequently, execute them more efficiently (Jones & Womack, 2003).
Although LT originated in the manufacturing industry, it has evolved to be implemented in a variety of industries. LT began to place a greater emphasis on waste elimination, leading to a more strategic perspective and allowing it to be applied to diverse sectors and environments (Hines et al., 2004). It can be justified due to the fact that all systems have some type of waste, which needs to be eliminated to generate value (Mustafa & Bajjou, 2006).

2.3. Lean Project Management: an overview

As part of LM, according to Aziz (2012), LPM can be defined as the application of LT in the context of PM, in order to improve project productivity by focusing on creating value and minimizing and preventing waste (p.75). Erne (2012) defends that LPM primarily is an important strategy to eliminate non-value-adding activities while optimizing value-adding and supporting ones and it focuses on generating maximum value with minimum effort (p.85). According to Ballard & Howell (2003), LPM differs from traditional PM not only in terms of its objectives, but also in the organization of its phases, since the interactions between phases, and the involvement of stakeholders in each phase is a key aspect to be considered.
Also, Gabriel (1997) defends that the lean approach when applied to PM leads to project success as well as improves quality, and contributes to achieving time and budget constraints. The author also defends that LPM can support organizations to achieving a higher level of commitment and motivation from the project team. The Project Management Institute (2021) defends that tailoring project processes can lead to positive project outcomes and emphasizes the implementation of Lean Production techniques, such as Value Stream Mapping which aims to measure the ratio of value-adding activities and non-value-adding activities as a potential method for achieving project optimization.
Despite the potential benefits of linking LT to PM, in the current literature there is a limited number of studies in the literature that have examined the link between these topics when adapted to a variety of project contexts, still focusing on the execution of construction projects (Otegi-Olaso, Cruz-Villalón, Fuertes-Ardeo, &Aguilar-Fernández, 2016). For instance, Ballard & Howell (2003)developed a model for construction projects, drawing on theoretical insights from the lean production methodologies utilized in other industries. These authors consider projects as temporary production systems, which means that the systems are structured aiming to deliver the product maximizing value and minimizing waste, they can be considered lean projects.
The adaptation of LPM to other sectors, such as the Information and Technology sector, was also studied, although with less emphasis. In fact, through a case study conducted in 2011 (see Staats, Brunner, &Uptown, 2011) the results showed that when implementing lean practices in software projects can lead to benefits such as hypothesis-driven problem-solving, streamlined communication, simplified processes, and specified tasks and also concluded that "lean software projects perform better than non-lean software projects."

3. RESEARCH METHODOLOGY

In this section, the proposed research methodology is presented according to the methodology proposed by Saunders, Lewis, &Thornhill (2009). The authors defend that scientific research should be defined considering aspects such as philosophy, approach, choices, and strategy. Regarding philosophy, the study is based on epistemology and positivism due to the need for valid information for the research and because a part of this information will be acquired through empirical research.
The scope of the research addresses the link between LT and PM in an organizational environment. Therefore, it is possible to support the research methodology approach on the following research questions that are aligned with the objectives of this article:

- How has this topic been addressed in the literature?
- What are the main industrial sectors in which the topic is studied or implemented?

The purpose of defining this research question is to understand how this topic has been explored in the literature, what has already been accomplished, and also to investigate the existence of a literature gap in the adaptation of LT to IT PM. The research methodology is based on two sequential phases, namely conducting a bibliometric analysis of the literature and performing a literature review.

3.1. Bibliometric analysis of the literature

Aiming to better understand the link between LM and PM, a bibliometric analysis of the literature was performed in order to determine the state of the art regarding these two approaches.
To collect the relevant data needed for the bibliometric analysis, the Scopus database was queried. This search was conducted using a set of search terms related to the link between LT and PM. In this research, the Scopus database was used as the main source of data. In order to find the dataset that better fit the link between the two approaches, a set of terms was then combined into a query and applied to the Scopus database. To ensure the relevance of the collected data within the scope of this research, additional criteria were defined (see Figure 1). As a result of these screening processes, the final dataset is composed of 118 publications.
Figure 1 shows the data collection workflow based on the application of the defined exclusion criterion.

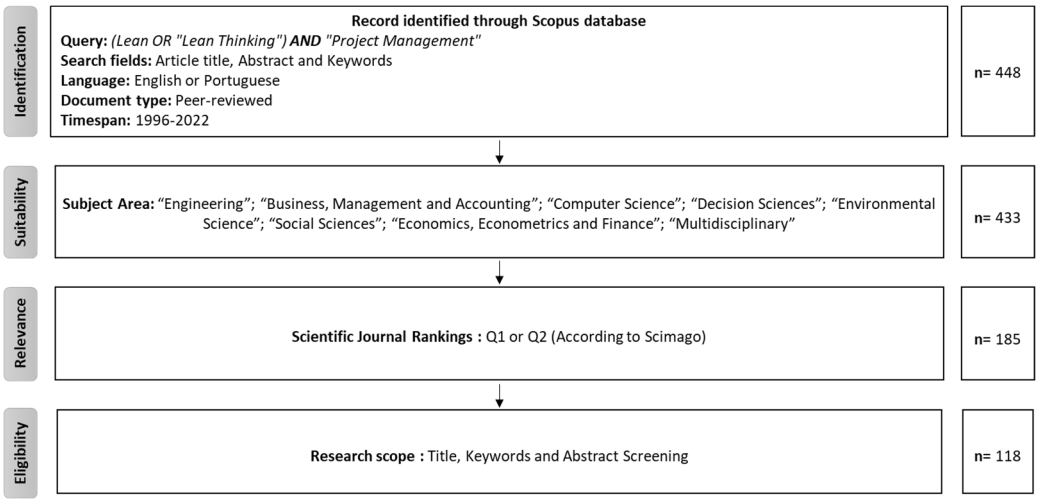

Figure 1: Data collection workflow.

This analysis was carried out with the open-source R-package bibliometrics and its web interface, biblioshiny. This bibliometrix R-package provides a set of tools for quantitative research in bibliometrics and scientometrics and supports a recommended workflow to perform bibliometric analyses (Belfiore, Cuccurullo, &Aria, 2022). The analysis of the collected data was based on the analysis of the scientific production, the trend topics, and the conceptual structure.

Based on the selected articles and on other relevant literature for the topic, the existing literature was reviewed and a content analysis was developed in order to better understand the research topic's theoretical background and also to find the answers to the above-defined research questions. An overview of the reviewed literature is presented in Section 2.

4. MAIN FINDINGS

4.1. Scientific Production

This section aimed to analyze the scientific production on the annual and country production for researches researchers focusing on connecting LM and PM The analysis of annual production helps to understand the theme's growth over time while analyzing country production provides insight into its global reach. By examining both types of production data, the study aims to comprehensively evaluate the theme's impact on a global scale and gain a more nuanced understanding of its evolution and contribution to scientific knowledge.
The annual scientific production analyses the number of publications produced per year. Figure 2 represents the growth of the annual scientific production of the collected data.

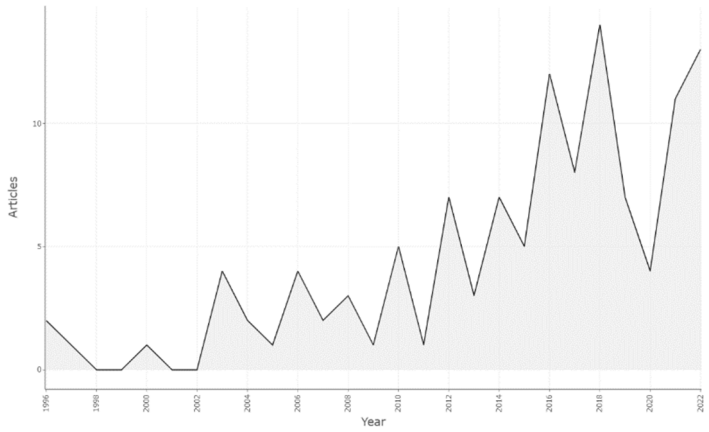

Figure 2: Annual Scientific Production.
Source: Bibliometrix

The results presented in Figure 2 show that the scientific production in the field showed peak production in 2016, 2018, 2021, and 2022, with 12, 14, 11, and 13 publications respectively. The years 1998 to 2002, had no published articles, while the number of annual publications ranged from one to eight in intervening years. After a considerable increase in publications since 2015, there was a sharp decline in 2020 but a significant rise between 2020 and 2022, indicating a growing interest in the link between LT and PM. Overall, the observed annual growth rate in publications was about 7.46%, which leads to the conclusion that, despite the fluctuations, the link between LT and PM has been increasingly explored in the literature over time.

4.1.2. Country scientific production

According to Belfiore et al., (2022), the Country Scientific Production measures the number of authors' appearances by country affiliations. Essentially, each article is credited to the countries of all its co-authors, resulting in the same article being counted as many times as there are authors involved.
In this research, for the topics selected the results to summarize the scientific production by country, and the most productive countries' production over time can be observed in Figure 3. In the figure, on the right side, the blue lines indicate those where research has been conducted, with darker shades reflecting higher levels of scientific output.

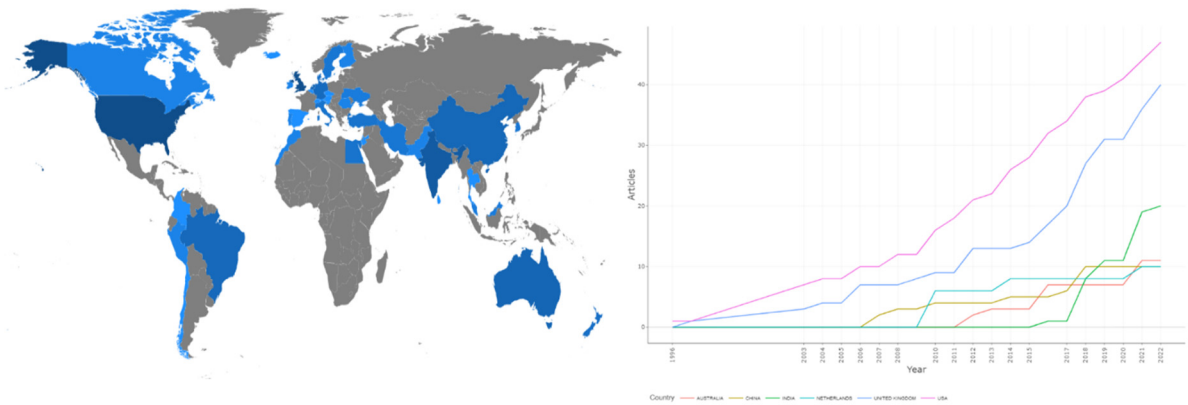

Figure 3: Country Scientific Production over time.
Source: Bibliometrix

The results also showed that by 2022, academic research devoted to linking the relationship between LT and PM has been conducted in over 40 countries, indicating that this topic remains a relatively specialized area of research. Based on the collected data, the countries that have made the greatest contributions to the literature on the link between LT and PM are the United States of America (47 authors collaborating), followed by the United Kingdom (40 authors), India (20 authors), Australia (11 authors), as well as China and the Netherlands (each with 10 authors).
The results indicate that all the analyzed countries have shown an overall increase in scientific production on the topic of the link between LT and PM, albeit at different times, which suggests that the link between LT and PM has garnered increasing interest and attention globally, as reflected in the growing body of research being produced.

4.2. Trend Topic

Regarding the trend topic analysis, it was conducted in order to visualize the temporal evolution of research topics related to the link between LT PM. Bibliometrix was used to create a trend topic graph that assigned each topic a year based on its distribution of occurrences over time. The graph is a scatter plot where each topic is displayed as a bubble proportional to its occurrence in the median year. From the Bibliometrix high-frequency word was extracted aiming to create a word co-occurrence matrix, and the median year was assigned to each topic based on its frequency distribution.
Figure 5 shows the temporal evolution of the research on the link between LT and PM. In the figure, the topics addressed by the research are indicated in blue bubbles with the size of the bubble being proportional to the topic occurrence in the median year.

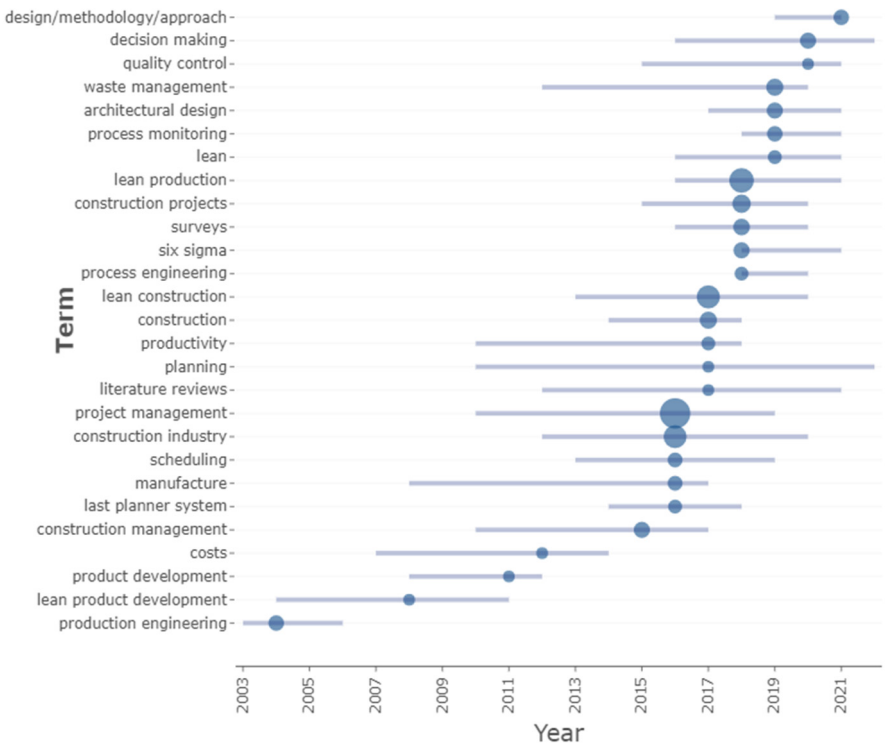

Figure 5: Trend Topics.
Source: Bibliometrix

The research topic that has been most frequently explored regarding the link between LT and PM was "project management". This topic was observed to have occurred with a frequency of 74 between the years 2010 and 2019.
Between 2013 and 2022, the prevailing research themes concerning the link between LT and PM are primarily associated with the construction industry. In fact, the topic of "lean construction" is ranked as the third most frequent topic of research during this period. In addition, over time it is possible to observe several other topics that relate to the link between LT and PM within the construction industry, such as "construction industry", "construction projects", "construction" and "construction management".
The production sector also shows relevance with "lean production" as the second most frequently occurring topic. Hence, it can be presumed that the predominant themes in the research on the link between LT and PM overtime are primarily linked to the construction industry. Additionally, there appears to be a lack of investigation into the application of these themes to other industries and sectors, providing an opportunity for future research.

4.3. Conceptual Structure: Thematic Evolution

In this paper, a conceptual model structure analysis was also performed. This analysis adopts a co-word network analysis and clustering approach to explore the relationship between keywords within the research topic and the content of the collected dataset (Donthu, Kumar, Mukherjee, Pandey, &Lim. 2021).
In bibliometric analysis, co-occurring keywords in a document can be analysed using a Louvain clustering algorithm to identify distinct themes within a particular field. This results in a thematic map that provides insights into the current state and future sustainability of the research field. The thematic map in this study was developed based on clusters of Keywords Plus and their interconnections to obtain themes characterized by density and centrality. The results showed

that centrality indicates the relevance of a theme in the research field, while density measures the cohesion between nodes and the theme's degree of development (Belfiore et al., 2022; Donthu et al., 2021).
Figure 6 summarizes the thematic map is divided into four quadrants based on the density and centrality of the clusters. The upper right quadrant (Q1) contains the motor themes that are highly relevant and well-developed. The upper left quadrant (Q2) has niche themes that are highly specialized but less relevant. The lower left quadrant (Q3) displays emerging or declining themes that are poorly developed and low relevant. The lower right quadrant (Q4) has basic underlying themes that are relevant but not well-developed. (Aria et al., 2020; Belfiore et al., 2022; Cahlik, 2000)
Each cluster in the thematic map represents a unique theme and is labelled with the most common word in that cluster. The size of each bubble indicates the relative frequency of the words within the cluster.

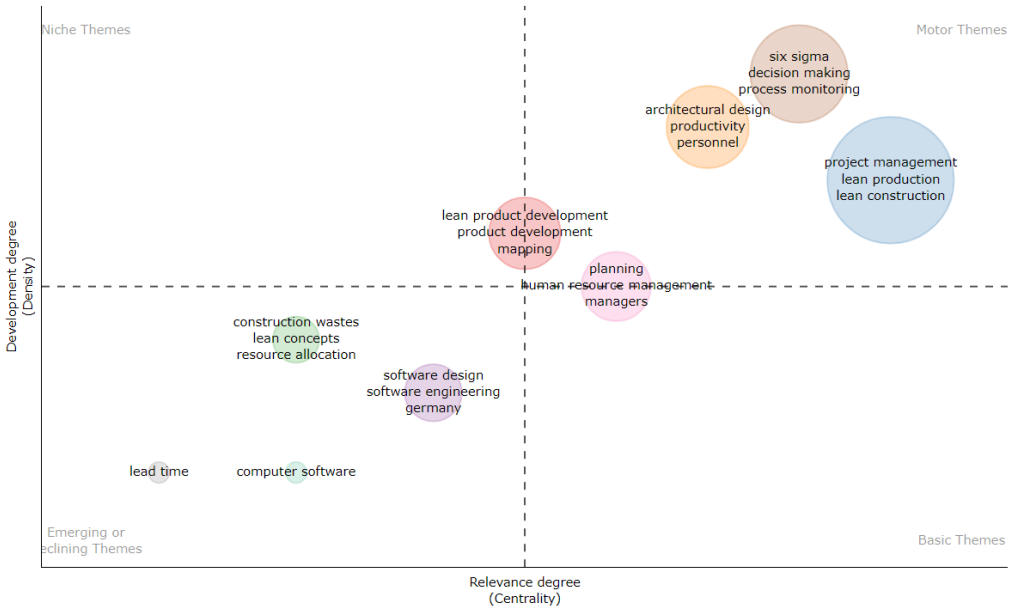

Figure 6: Thematic Map.
Source: Bibliometrix

Figure 6 presents the Thematic Map for the collected database, and for all the clusters identified, those that are most relevant to the research topics are related to:

- The construction area, with the themes “construction wastes” in Q3 and “lean construction” in Q1;
- The production area, with the theme “lean production” in Q1 and “lean product development” and “product development mapping” between Q1 and Q2;
- The IT area, with the themes “software design”, “software engineering” and “computer software” in Q3;
- The PM area, with the themes “project management” and “decision making” in Q1 and “planning” between Q1 and Q4.

Regarding the construction area, it is possible to conclude that “lean construction” is one of the main themes regarding the link between LT and PM. On the other hand, the theme “construction wastes”, which is mostly in line with LT adapted to PM as a way to minimize waste, was identified as emerging theme.
Concerning the production area, the theme “lean production” was also one of the motor themes regarding this research topic, and the themes “lean product development” and “product development mapping” are split between Q1 and Q2, which implies that it is not only is one of the main themes but also that it is a niche theme that presents a high level of development and specialization.
Figure 6 shows that themes related to software (an intrinsic concept to the IT area) are emerging themes, which shows that the link between LT and PM adapted to software design and engineering has been increasingly explored.
From the analysis developed, the results showed that for the themes directly related to the PM area, such as "project management" and "decision making" (a concept interrelated with PM) are also the major topics in this field of study. It can also be observed that the theme "planning" (directly related to PM) was the main study theme identified, and it is considered a foundational and transversal theme. In sum, the themes “project management”, “lean construction” and “lean production” remains the leading themes within the field.

5. CONCLUSIONS

This research seeks to investigate the current state of the art regarding the link between LT and PM. To this end, a bibliometric analysis of relevant research publications was conducted, with the goal of providing insight into the existing

literature on the research topic. Through data collection and the analysis of its scientific production, trend topics, and conceptual structure and several key pieces of information were drawn from this study.
The analysis showed a growing interest in the research topic, with a marked upsurge in the number of publications exploring the connection between LT and PM in recent times. However, the dominant research themes were found to be linked to the construction industry and the production sector, indicating a dearth of research regarding the applicability of this research topic to other industries and sectors. The limitations of the study include the restricted size of the collected database, and future investigations may aim to include other sources of equally valid data to obtain more precise findings. Overall, the study highlights an opportunity for researchers to investigate the applicability of the link between LT and PM to different industrial sectors and functional areas. In doing so, it can contribute to supporting projects and companies in maximizing efficiency through the minimization of waste during their activities.

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HOME OFFICE AND EMPLOYEE SATISFACTION DURING AND AFTER COVID

Abstract: The paper aims to demonstrate how employee satisfaction with the home office changed during and after Covid. The research question is how the home office's perception changed after the epidemic's end. The research had two parts. At first, during the examination, 600 Hungarian residents aged 18-64 who had ever worked at least for three months from home in home office were contacted with an online questionnaire. The survey took part at the end of the 3rd wave of the COVID pandemic, in May and June 2021. The second research phasis took part after Covid, in February and March 2022. During this research, we contacted 1000 Hungarian residents with an online questionnaire. The analyses found that employee satisfaction with the home office (satisfaction index) decreased, but the positive attitude increased. The research findings make it clear that the employees are open to the home office option, but they no longer see it as a reward but rather have higher expectations.

Keywords: Home office, Covid, employee satisfaction, atypical forms of employment.

1. INTORDUCTION

As an atypical form of work, the home office was present at a low level in Hungary before the pandemic. Still, during the epidemic, everyone became familiar with the concept of the home office, even those who did not work from home before. Even before the end of the epidemic, professionals began to be concerned about what forced work organization methods companies would keep and which techniques should be used in the future (Siklósi, 2021). From the perspective of employees, how employees experience working from home can significantly impact future work. If they were satisfied with it, they may be happy to work this way in the future, or they may have a direct need for this flexible way of working. Exploring employee satisfaction about the form of working at home provides essential information to employers since one of the means of retaining the attraction of talent can be to ensure this kind of flexibility for specific target groups (Venczel-Szakó, 2021).

Based on all these our research question is how the home office's perception changed after the epidemic's end.

The research had two parts. At first, during the examination, 600 Hungarian residents aged 18-64 who had ever worked at least for three months from home in home office were contacted with an online questionnaire. The survey took part at the end of the 3rd wave of the COVID pandemic, in May and June 2021. The level of satisfaction with working from home was measured in this phase in a sample of 600 persons who had at least 3 months of experience with home office. For the definition of satisfaction with home office an individual research framework and a satisfaction index (SI) were created, built on the factors identified during the exploration of the literature. The second research phasis took part after Covid, in February and March 2022. During this research, we contacted 1000 Hungarian residents with an online questionnaire. During the online representative survey, we asked both those who have home office experience and those who do not; the existence of home office experience was not a condition. We were also interested in the attitude of those who did not have home office experience.

In the first part of the study, the focus is on the factors impacting work satisfaction and home office characteristics based on relevant academic publications. This section is followed by the definition of the hypothesis, the description of the

research methodology, and testing of the hypothesis, the presentation of the findings together with their managerial implications, as well as the limits and future directions of research.

2. THE THEORETICAL FRAMEWORK OF THE RESEARCH

The frameworks of the research are set by the literature review of scientific theories making the focus of the research (home office, employee satisfaction), referring to the most recent research findings of these fields. On the basis of previous research findings, the theoretical concept of the paper is defined, and the hypotheses are stated.

2.1. Home office as atypical forms of employment

The concepts of remote work and home office are often taken as synonyms, with the interpretations blurred (Ásványi, Venczel-Szakó, Szabó-Bálint & Kuráth, 2021).
There are several conceptual approaches to telecommuting. The definitions cover the place of work, the use of communication tools, and the way control is controlled. In connection with teleworking, intellectual activity, the employee's independent task-solving, the existence of an employment relationship, the importance of availability, and the condition that the task can be entirely performed remotely (Jarjabka, 2010) are also highlighted. According to Blair-Loy & Wharton (2002), telecommuting means working from home for all or part of the work week. Ásvány et al. (2021), however, the description used in the definition of teleworking, according to which working in a place separate from the employer's premises or headquarters, does not necessarily mean only working from home but can also mean another place designated by the employer (in contrast to the home office, which refers to working from home means).
Work done at home (home office) is the form of remote work, work that takes place away from the site, during which the work is done from home using info-communication tools (Hárs, 2012), about this formulation, the home office is a subgroup of remote work.
After the crisis, the home office was added to the labour code in Hungary by expanding the teleworking rules to such an extent that they became suitable to cover regular home office as well. As a result of the amendment to the law, in addition to work performed exclusively outside the employer's premises, it is considered remote work if the employee performs his work partly at the workplace and partly outside it, for example, from home - i.e. the home office (Szabó, 2022).
As regards remote work and home office, it must be mentioned that this kind of working is not suitable for all life conditions and for all personalities (Devine, Taylor, L. & Haryett, 1997). According to Kowalski & Swanson (2005), successful telecommuting is not only an option but also a smart strategic business decision on the part of the company. According to Omondi and K'Obonyo (2018), the necessary conditions for flexible working are quality communication, a supportive organizational culture, favourable working conditions, supporting legislation, employee commitment, and appropriate demographic characteristics of employees (gender, age, education).
Beauregard, Basile & Canónic (2019), the success of telecommuting depends on the characteristics and nature of the work, the employee, and the characteristics of the employee's manager. Adequate technological support is also essential. For the successful application of telework, two areas must be prioritized, the selection and preparation of employees for telework and the management of telework.
The situation brought about by the coronavirus gave a considerable momentum to the penetration of remote work both at international level (Gibson, 2020; Eurofound, 2020; Caligiuri, Cieri, Minbaeva, Verbeke & Zimmermann, 2020; Kronblad, 2020) and in Hungary. Before the pandemic, remote work had been a curiosity in Hungary; the proportion of those working from home had remained below 5 per cent. According to the research of GKI this proportion grew to 20 per cent by early June 2000, which concerned approximately 800 thousand people (GKI, 2020). A survey carried out in March 2020 revealed that after the introduction of restrictive measures, only 27% of people did their work in a location other than their usual workplace (Ferencz, 2020). In November 2020, the proportion of those working in remote work or home office in Hungary was 8.2%, almost four times as much as one year before (KSH, 2020). Between February and April 2021 the proportion of those working in remote work or home office reached its peak: 5.7% of employees worked regularly and 7.3% of them occasionally in remote work or home office. In July–September 2021, the proportion of those employed in remote work or home office was 6.3%, 0.3 per cent above their proportion one year earlier (KSH, 2021). In July–September 2021, the proportion of those employed in remote work or home office was 6.3%, 0.3 per cent above their proportion one year earlier (KSH, 2021).
One year later, in July-September 2022, the proportion of those employed in remote work or home office was 7.0% (KSH, 2022). The proportion of people employed in remote work or home office therefore fell somewhat after the epidemic had subsided, but remained higher than before the epidemic. In a survey of 239 Hungarian workers in 2021 found that workers liked working from home and most of them would like to continue working in hybrid work arrangements (Jenei & Módosné Szalai, 2022). This finding may be related to the results of Niebuhr, Borle, Börner-Zobel, & Voleter-Mahlkencht (2022) survey of German workers and Kowalski, Aruldoss, Gurumurthy, & Parayitam (2022) findings that working from home increases job satisfaction, autonomy, work-life balance and that working from the office can increase stress levels. According to research by Pogácsás & Szepesi (2022), managers in the Hungarian SME sector who introduced home

offices during the epidemic were also satisfied with this type of working, as employees tended to work more hours than if they had been in the office, and office rents were reduced.
The number of those employed in remote work or home office has been increasd significantly not only in Hungary, but also in Europe and the rest of the world during the pandemic. According to Eurostat (2021), the share of home-based workers in the EU was 14.6% in 2019, rising to 20.9% in 2020 and 24.4% in 2021. Between 2019 and 2021, the share of home office or hybrid workers increased in all EU countries, with Ireland (from 20.3% to 40.6%) and the leading country, the Netherlands (from 39.7% to 57.6%), showing the largest increase. However, the share of people working in home offices or hybrid forms also increased severalfold in Bulgaria, which is in last place, from 1.1% to 6.5%, still the lowest in the EU. While in 2019 only four countries (the Netherlands, Sweden, Luxembourg and Finland) had a share of home-based or hybrid workers above 30%, by 2021 the share had risen to over 40% in all of these countries, with Ireland, Belgium, Denmark and France all having figures above 30%.

2.2. Employee satisfaction

There have been thousands of publications on the international level regarding the approach and definition of job satisfaction. However, satisfaction cannot be treated objectively; it may differ from individual to individual as to what causes satisfaction or dissatisfaction (Sipos, 2016).
Employee satisfaction is a significant organizational success factor and also an indicator of organizational efficiency. Satisfied employees can also be a competitive advantage for the organization (Ouedraogo & Leclerc, 2013; Izvercian, Potra & Ivascu, 2016). Dhamija, Gupta & Bag (2019) emphasize that, on the one hand, it is the employer's responsibility to ensure that the employees he employs "feel good" at the company and achieve their goals (for which they joined the organization). Satisfaction, commitment and a good workplace environment affect the performance of employees, competitiveness and the organization's effectiveness, so it also represents an economic advantage. Among dissatisfied employees, performance remains low, turnover increases, and it can lead to the loss of talent. According to Brunelle & Fortin (2021), taking labour market trends into account, the attitude of employees towards employers will change in the future, mainly due to the spread of atypical forms of employment. According to him, the motivational methods that promote employee engagement will fundamentally change and also differ among office workers and those working from home.
Locke (1976) describes satisfaction as a kind of feeling with which employees relate to their work. Vroom (1964) also formulates satisfaction as happiness that comes from work. Brief (1998) also links satisfaction to an internal state, a feeling. To interpret satisfaction, Shaffer & Harrison (1998) already includes needs and their satisfaction (or non-satisfaction) in the analysis. According to them, satisfaction is related to whether the needs that can be satisfied by work are satisfied or not. Greenberg & Baron (2000) considers satisfaction an intellectual, emotional and behavioural reaction that the individual triggers in relation to his work.
In the view of Noé (2004) and Becker & Kaerkes (2006), the combined effect of three groups of factors can be seen in the employees' satisfaction model:

- Conditions of satisfaction with work (recognition of work by society, career opportunities, physical conditions of work, recognition of abilities, appreciation of work performance, safety of work)
- Conditions of general satisfaction (family life, entertainment and sports facilities, housing conditions, position and function in society)
- Individual features (age, personality type, health condition, desires, endeavours).

Ineson, Benke & László (2013) say that trainings, skills development, working time, the diversity of work, and the safety of the workplace are factors contributing to satisfaction.
In Yang's (2010) view, satisfaction is impacted by role conflict, misunderstandability of possible roles, overburden, work and family conflict, burnout, socialisation, independence and autonomy.
Van Saane, Sluiter, Verbeek, & Frings-Dresen (2003) used a meta-analysis to define those work-related areas that have an effect on employees' satisfaction. These are the following:

- character of work (work that requires diverse skills, complexity of work, challenges posed by work of routine tasks),
- autonomy (individual responsibility, control over decisions made on work),
- career/development (personal growth and development, training or education),
- financial incentives (wage, fringe benefits),
- promotion (possibility of career-building or getting promoted),
- supervision (support by the superior, recognition and fair treatment),
- communication (consultancy possibilities, feedback),
- work relation with the colleagues,
- sensibility of the job,
- workload (subjective feeling or lack of time, monotony, social problems, personal conflicts or stress),
- strain by work (compulsory extra work, complexity of the job, uncertainty of the position, or emotional commitment).

Kozák & Sönperger (2019) draw attention to the fact that employing organizations also have a great responsibility to create a friendly workplace climate that encourages individual performance, with which they can contribute to the preservation of the mental health of their employees, which entails the increase in their self-esteem and self-efficacy.
The following factors influence the effectiveness of remote work and home office and its perceptible effects in the organization - such as retention, loyalty, turnover - is the work organized around individual or common interests, the degree of individual or collective responsibility, does one feel like a member of a cooperative community. Whether the employee himself should work as an employee or entrepreneur, whether the employee's personality matches the expectations of the job, individual characteristics (time management competencies, independence, age, career aspirations), the manager's attitude, and most importantly, the role of trust on the part of both parties. Usually, this type of atypical work works very well when the employee has more professional experience and special knowledge. At the same time, it is also important to emphasize that the relationship between the employee and the employer can be realized in many ways, and the effectiveness of the cooperation does not depend on the means (Venczel-Szakó, Balogh & Borgulya, 2021).
One of the essential aspects of workplace research is exploring employees' job satisfaction in connection with the study of teleworking (Pinsonneault & Boisvert, 2001). Initially, there was a general belief that telecommuting employees are more satisfied with their work, but later this was not substantiated with sufficient grounds (Bailey & Kurland, 2002; Morganson, Major, Oborn, Verive & Heelan, 2010). Golden and Veiga (2005) grasped the problem of the intensity of telework and examined the effect of the intensity of telework on job satisfaction among white-collar employees. According to their results, telework has a positive effect on job satisfaction up to a certain level. In contrast, beyond a certain point, it has a negative effect (the authors set the threshold at 15.1 hours per week). The authors hypothesized that for high-intensity remote workers, "the negative effect of increased isolation and decreased interactions with managers and colleagues probably negatively affects job satisfaction."
Gajendran & Harrison (2007) developed a theoretical framework for the impact of telework. He examined the relationship between working from home and perceived autonomy, work-family conflict, the quality of the relationship with the manager, the quality of the telecommuter-colleague relationship, job satisfaction, work performance, stress, and perceived career prospects. Based on their results, telecommuting had a beneficial effect on perceived autonomy and resulted in less work-family conflict.
According to this, we formulate the following hypothesis.

> *H1: Significant dicrease can be identified concerning satisfaction with working in home office over time.*

3. METHODOLOGY

The section focuses on the sampling methodology, the basic characteristics of the respondents and the applied statistical methodology.

3.1. Method of sampling

We conducted two online questionnaire surveys between May and June 2021, and February and March 2022 using random sampling based on preliminarily defined quotas (Table 1).
In the former case, 600 respondents, whilst in the latter one 1,000 respondents data was collected (of whom 540 are in one of the quotas, the rest still doesn't have any home office experience).

Table 1: Quotas used in the research

	Before the COVID pandemic, had worked in home office at least 1 day a week for at least half a year	**Before the COVID pandemic, had not worked in home office at least 1 day a week for at least half a year**
Since the start of COVID, has worked in home office at least 1 day a week for at least 3 months	QUOTA 1	QUOTA 2
Since the start of COVID, has not worked in home office at least 1 day a week for at least 3 months	QUOTA 3	QUOTA 4

Source: Own research

It is important to understand the differences alongside the quotas as well as the purpose of this distinction, which is intended to discover the satisfaction changes according to the hypothesis. As a result, we can identify home office-related satisfaction in four different categories, all with various backgrounds and experiences with the home office itself. As the initial fears related to Covid and the novelty of home office as a response, we expect to have lower levels of satisfaction in general.

3.2. Characteristics of the sample

The joint dataset has 1,140 respondents. 37% is part of Quota 1, 42% is in Quota 2, while for Quota 3 (5%) and Quota 4 (16%) relatively lower percentages can be seen. The genders are equally represented (as the majority of the respondents works, this meets the representativity criteria). The territorial distribution is balanced (with the dominance of Central Hungary), the family status is also well distributed (single 20%, married, 70%, divorced and widow, 10%), with 27% of respondents with children under 12 years old. The workplace size is also alongside the general characteristics as the SMEs represent 65% whilst the large companies 35%. Tertiary education background characterises 66% of the respondents, while 33% have a secondary education and only 1% at maximum primary education background. 34% is 35 years old or younger.

3.3. Description of the applied statistical methodology

The questionnaire consisted of 30 questions focusing on the different aspects of work-related satisfaction, all of them is measured on a 1-10 Likert scale. The factors identified are as follows:

- Home office work (11 elements)
- Communication (3 elements)
- Organisation integration (7 elements)
- Commitment (3 elements)
- Responsibility/autonomy (3 elements)
- Attitude (3 elements)

Naturally, we measure even the full satisfaction index, which is the mere sum of the subindices. This means that the minimum value is 30, whilst the maximum is 300 considering the full satisfaction index. We measure the change in the satisfaction levels with One-Way ANOVA, where those differences are considered statistically significant where Levene $p>0.05$ or Welch $p<=0.05$ and ANOVA $p<=0.05$ (Pituch & Stevens, 2015).

4. RESULTS AND DISCUSSION

The research was focused on demonstrating how employee satisfaction with the home office changed during and after Covid. The analyses found that general employee satisfaction with the home office (satisfaction index) decreased (caused by a decrease in communication, organisation integration and commitment), but the positive attitude and responsibility/autonomy increased. The research findings make it clear that the employees are open to the home office option, but they no longer see it as a reward but rather have higher expectations.

Looking in the details, it can be seen that for the significant cases, no opposite effect can be seen in any of the quotas. The least significant change occurred in Quota 3 and Quota 4 (partly probably due to their relatively smaller sizes). Interestingly, work-related satisfaction did not result in a significant change, while communication decreased slightly, but to a significant extent only in the case of Quota 1. It is also clear that satisfaction, in general, is the biggest in both cohorts for Quota 1, the lowest for Quota 4, while Quota 2 and Quota 3 are placed in the middle. In terms of decrease, Quota 3 faced the biggest drop, which might be caused by feeling excluded from the home office benefits after the pandemic. (Table 2)

As a result, Hypothesis 1 is *accepted*, as except for some minor satisfaction elements, the home-office-related, Covid-situated satisfaction decreased in one year.

Table 2. Home office-related satisfaction values, 2021-2022

		2021	2022	Levene	Welch	ANOVA	Sign.
Quota 1	Satisfaction Index	211	200	0.000	0.001	0.002	**
	Home office work	76	77	0.088	0.797	0.802	
	Communication	22	21	0.000	0.009	0.011	*
	Organisation integration	45	41	0.031	0.000	0.000	**
	Commitment	21	19	0.082	0.003	0.001	**
	Responsibility/Autonomy	23	24	0.166	0.134	0.099	
	Positive attitude	16	21	0.071	0.000	0.000	**
Quota 2	Satisfaction Index	199	186	0.000	0.000	0.000	**
	Home office work	72	72	0.000	0.563	0.569	
	Communication	22	21	0.032	0.622	0.624	
	Organisation integration	42	38	0.072	0.000	0.000	***
	Commitment	21	18	0.000	0.001	0.000	***
	Responsibility/Autonomy	20	23	0.043	0.001	0.001	**
	Positive attitude	15	19	0.137	0.000	0.000	***
Quota 3	Satisfaction Index	203	187	0.010	0.096	0.076	
	Home office work	74	71	0.044	0.560	0.543	
	Communication	22	21	0.895	0.292	0.319	
	Organisation integration	42	39	0.565	0.192	0.182	
	Commitment	23	19	0.452	0.091	0.122	
	Responsibility/Autonomy	21	21	0.547	0.628	0.623	
	Positive attitude	14	21	0.979	0.002	0.004	**
Quota 4	Satisfaction Index	183	178	0.512	0.338	0.328	
	Home office work	68	69	0.229	0.643	0.623	
	Communication	19	19	0.496	0.730	0.742	
	Organisation integration	39	39	0.454	0.877	0.882	
	Commitment	19	17	0.020	0.011	0.030	*
	Responsibility/Autonomy	19	21	0.118	0.063	0.087	
	Positive attitude	12	17	0.362	0.000	0.000	***
Total	Satisfaction Index	203	188	0.000	0.000	0.000	***
	Home office work	73	73	0.000	0.549	0.554	
	Communication	22	21	0.002	0.001	0.001	**
	Organisation integration	43	39	0.002	0.000	0.000	***
	Commitment	21	18	0.000	0.000	0.000	***
	Responsibility/Autonomy	21	23	0.029	0.004	0.003	**
	Positive attitude	15	19	0.273	0.000	0.000	***

* p<=0.05 ** p<=0.01 *** p<=0.001

Source: Own research

A limit of the research is that only the employees' side was analysed in the survey, and the opinions, experiences and top-down driven employee judgment of employers could not be identified. Also, it is clear that a lot of other elements influence the changes (such as the socio-demographic factors), which were not considered in this analysis. Furthermore, the satisfaction-related literature on the home office topic is scarce and index-creation validity should be further controlled by repeated surveys even in and outside Hungary.

We are planning to conduct the research on a regular (annual or biannual) basis to examine the change in the opinions and satisfaction concerning the home office of employees and employers as an effect (or irrespective of) the pandemic. Regular surveys, attitude surveys and the recording of tendencies may help us understand and map the future penetration of home office, the exploitation of the possibilities it offers, and the limitations of its use. We conducted this research in 2021 and 2022 but plan to continue in 2023.

Potential future research is to extend it to an international level with other countries both in and outside of Europe.

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REFRAMING TYPES OF UNCERTAINTY AS A STARTING POINT FOR EFFICIENT DECISION MAKING

Abstract:
Purpose: Mangerial decision-making situations are often confronted with uncertainty in terms of underlying causes and predictable effects. However, overlapping definitions and conflicting operationalization of the uncertainty construct make it difficult to deliberately face different types of unceratinby with specific decision-making strategies. The paper aims at delineating types of uncertainty along specific knowledge contexts to enable the choice of suitable strategies for specific decision-making situations.
Design/methodology/approach: In a literature review, concepts of (un)certainty based on (im)perfect information and objectively/ subjectively available configurations of knowledge are discussed and revised.
Findings: The paper develops a framework comprising differentiated states of available information and knowledge applicable to decision-making situations. To unburden the uncertainty concept from conflicting definitions and heterogeneous operationalization, the umbrella-term contingency is introduced. It overarches all states of (im)perfect information and various configurations of knowledge. Finally a framework is presented that delineates different levels of contingency by distinguishing between certainty, risk, uncertainty in the narrowest sense [i.n.s.], complexity, ambiguity/ equivocality and isotropy/ radical uncertainty.
Research limitations/implications: A holistic understanding how to deal with and solve contingency requires further research focusing on aligning levels of contingency with strategies for decision making (algorithms, causation, effectuation, bricolage, improvisation, trial & error) by taking types of knowledge and contextual factors (i.e., time, resources) into account.
Practical implications: Based on the findings, decision-making situations can be clarified in terms of their level of contingency and appropriate strategies to reduce contingency can be developed.

Keywords: uncertainty, decision making, knowledge, contingence

INTRODUCTION

Research on decision making under uncertainty has a long tradition among management scholars. Avenues have pointed out a rational perspective, that assumes perfect information available to decision makers (Ariely 2010; Kahneman and Tversky 1979; Tversky and Kahneman 1981). Others have rather focused on dealing with situational constraints (e.g. scarcity of resources and time) (Hmieleski and Corbett 2006; Shepherd et al. 2015) or heuristic strategies (e.g. effectuation) to tackle imperfect information (Dew et al. 2009; Sarasvathy 2001).
Knowledge thereby has been identified as a critical variable for dealing and conceptualizing uncertainty. Knowledge and experience of decision makers influence how they make decisions and realize business opportunities (Shepherd et al. 2015). It generally favors the identification of future states and outcomes in general (Shepherd and Patzelt 2018) and in special fields (e.g. identifying more financing opportunities) (Seghers et al. 2012). At organizational level, knowledge as

a bundle of intangible resources is considered as sustained and effective instrument for gaining and maintaining competitive advantages (Wiklund and Shepherd 2003) and in consequence knowledge represents "structures that people use to make assessments, judgments or decisions involving opportunity evaluation and venture creation and growth" (Mitchell et al. 2002, p. 97). Knowledge is declared to be the fundament of competencies whereas competences mean the ability to establish and repeat knowledge-based regular (not random) processes to achieve future market action and maintenance (Freiling 2008). In conclusion, knowledge and knowledge generating routines help dealing with uncertainty. However, the conceptualization of uncertainty remains inconsistent. Degrees and types of uncertainty are neither clearly distinct nor selectively defined, which makes it difficult to conclude specific (practical) solutions (i.e. decision-making strategies) from specific types of uncertainty. Aside to neglecting the role of individual decision makers, the ongoing debate has also not yet provided a concept incorporating a uniform understanding of acknowledged types of uncertainty (Sniazhko 2019). Several approaches have been undertaken to distinguish dimensions of uncertainty. Knight (1964 [1921]) first differentiates between risk and uncertainty (Knightian uncertainty), whereas both dimensions depend on knowledge about outcomes and probabilities. A similar but more specific approach is presented by Milliken (1987) who identify three types of uncertainty. State uncertainty reflects a decision makers inability to predict developments of the organization´s environment due environmental dynamism and complexity. Response uncertainty occurs when no specific actions are known to decision makers to tackle state uncertainty. And effect uncertainty is present if consequences of actions are unknown or unpredictable to decision makers. Subsequent research by Dequech (2011) adds another dimension to the typology of uncertainty by differentiating between lacks of information and lacks of operational ability. One side of the identified uncertainty scale is labeled also weak uncertainty similar to risk represented by knowledge about outcomes and probabilities. Strong uncertainty on the other side arises from neither knowing possible outcomes (fundamental uncertainty) nor probability of outcomes due to missing information (ambiguity). Furthermore strong uncertainty occurs in situations in which causal relationships between outcomes and actions are unknown (procedural uncertainty), which makes Dequechs approach compatible to research about types of knowledge (Barr et al. 2003; Berge and Hezewijk 1999; Nonaka and Takeuchi 1995; Nonaka and Toyama 2007; Sanchez 2005). Latest research on dimensions of uncertainty elaborate on these approaches by merging their findings. They incorporate subjective and objective perceptions of uncertainty as well as further detailing of knowledge-related dimensions. Packard et al. (2017) differentiate risk and ambiguity from environmental uncertainty, creative uncertainty and absolute uncertainty. In line with Knight (1964 [1921]), risk is defined by the present degree of knowledge about outcomes and probability. However, their understanding of ambiguity diverges from Knightian uncertainty in the way that for the former outcomes are known but probabilities are not, whereas for the latter neither outcomes nor probabilities are known.[1] Environmental uncertainty reflects situations in which outcomes are not fully known (yet) and hence is similar to state uncertainty according to Milliken (1987). Creative uncertainty is represented by knowing the outcomes but not knowing the underlying causalities or processes and absolute uncertainty is present when neither outcomes nor underlying causalities or processes are known. By revising literature and existing concepts, the paper aims at delineating types of uncertainty to provide a holistic framework of contingency and that are defined by specific knowledge configurations. First, the idea of *contingency* is introduced in order to unburden the uncertainty concept from conflicting definitions and heterogeneous operationalization. Second, types and dimensions of contingency are discussed. Thereby initially the concept of *certainty* becomes examined in order to demark further configurations of contingency. Of central importance remains the concept of *uncertainty*, but it is treated and dissected in more specificity and detail. Variations of contingency (*certainty, risk, uncertainty in the narrowest sense [i.n.s.]*, *complexity*, *ambiguity/ equivocality*, *isotropy/ radical uncertainty*) are presented successively. Third, configurations of contingency become aggregated to a contingency framework and forth, implications for further research avenues towards strategies to reduce contingency to enable efficient decision making are concluded.

TYPES OF UNCERTAINTY/ CONTINGENCY

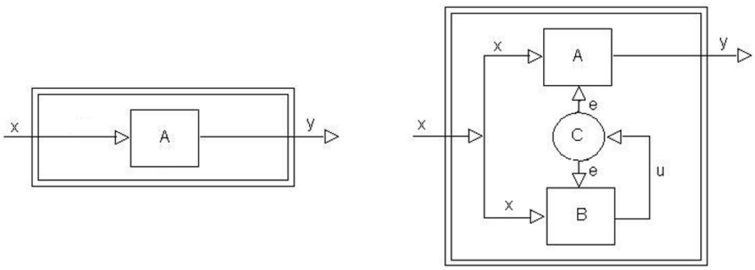
In order to avoid terminological confusion, the umbrella-term of uncertainty becomes renamed as contingency. Contingency hereby refers to a specific openness of opportunities and options. Contingent situations are characterized by coincidences which means that something might happen or might not happen, that something might be true or not be true. Types of contingency embrace different levels of what is known and what can be known in terms of specific decision-making situations. Lower levels of contingency represent situations of (almost) perfect information, higher levels represent decreasing information quality. Contingence replaces the umbrella-term of uncertainty in order to enable coverage of different types of uncertainty and beyond.

Types of contingence are outlined in the following chapter. Their level depends on the availability of specific knowledge dimensions. These comprise the knowledge of all possible outcomes and relevant variables, the knowledge of probabilities of all possible outcomes and relevant variables, the knowledge of succession of outcome-related variables and the knowledge of causal relationship of outcome-related variables/ distinctiveness of all variables. The discussed types of contingency increasing in level are *certainty, risk, uncertainty (i.n.s.), complexity, ambiguity/ equivocality* and *isotropy/ radical uncertainty*.

[1] An understanding that will be discussed in this paper later.

Certainty

Certainty represents the lowest level of contingency and marks the starting point of the contingency framework. Certainty is ascribed to situations that are characterized being trivial because they have only one (reasonable) state. In trivial situations a given, specific input always generates a specific concludable output (just like an equation with on variable). Triviality assumes a distinct causal relationship between input and output (Foerster 1985). In comparison, non-trivial situations may have at least two states, i.e. they provide one output or another output for the same input (Foerster and Pörksen 2023). The distinction is illustrated by **Picture 1**.



Picture 1: Situations of certainty (left) and situations of higher levels of contingency (right) exemplified by trivial and non-trivial machines
Source: Depiction based on Foerster (2011, pp. 357–359)

In situations of certainty, decision makers possess knowledge of all possible outcomes as well as their probabilities (Laux et al. 2014). In case there are sequences of events (variables) decision makers are intimate with follow-ups (succession of event-related elements) and final outcomes. I.e.: a stoplight will turn green in a fixed and known period of time after it turns red. It will also turn a definite number of seconds after the pedestrian light turns red which might indicate to the decision maker that it is time to engage the first gear of the car. Knowledge about regularities of processes, sequences, causalities and the differentiability of its intermediate events (variables) enable decision makers to be certain about outcomes. The same applies to situations where the stop light is turned off. Decision makers that are familiar with the situation will very likely not be waiting for the stoplight to turn green. They can clearly determine which alternative courses of action are available in known situations and which outcomes follow from states of the situation and their choice. The expected value of all future events is one and all alternatives to a choice represent "certain" alternatives. Situations of triviality are situations of low contingence and hence situations of certainty.

Risk

Formal and engineering sciences as well as the insurance industry define *risk* as a stochastically and calculable quantity, which is aggregated in the form of an expectancy value. The expectancy value of outcomes results, simplified, as the product of the expected amount of damage/ loss (or benefit/ gain) and the probability that an outcome occurs (Krohn and Krücken 1993). A definition as such presupposes the quantifiability of involved variables and intermediate states, which is commonly achieved by stochastic or empirical methods. Insurance companies can quantify risks and contract costs if they know the number of potential policyholders, the frequencies of insured events and the amount of damages. This may also include single risks for certain contracts (e.g. insured damage by martens additional to part insurance cover), with risk becoming the target variable of a mathematical calculation (Laux et al. 2014).
Other than formal science, social sciences such as business administration are confronted with the challenge that variables for risk calculation are often not or only incompletely quantifiable, if not even unknown. Against the background of bounded rationality, social theory preferably deals with (non-)presence of information in the context of risk. This does not necessarily exclude proximity calculations ("[...] risk is most commonly conceived as reflecting variations in the distribution of possible outcomes" (March and Shapira 1987, p. 1404)), but makes the application of the term less dependent on quantitative dimensions ("[and] is embedded, of course, in the larger idea of choice as affected by the expected return on an alternative" (March and Shapira 1987, p. 1404)). Hence, the concept of risk operationalized in social sciences is not strictly formal, insofar as it integrates the possibility of experience-based probabilities and allows for incomplete (because partially impossible) calculations.
For the development of a contingency-based decision-making framework, the question arises to what extent the concept of risk should be kept multifold (formal and/or social scientific). It appears in terms of distinctiveness less appropriate. Also, the social-scientific perspective of risk incorporates contingency determining variables, which are as well object of the level uncertainty (see chapter Uncertainty). This suggests the operationalization of risk according rather to a formal concept. Given this understanding is a situation declared to be risky if all possible outcomes and variables as well as their probabilities of occurrence are known. However, risk includes a lack of knowledge of causal relationships between related variables. Although decision makers a) might be knowing what can happen next (possible outcomes), they b) might be

able to tell the probability of any possible outcome, c) are familiar with the succession of outcome-related variables but d) are lacking about the causal relationship of outcome-related variables. A typical example for risky situations is tossing a coin. Outcomes are known (heads or tails), probabilities are known (50/50), succession of outcome-related variables (tossing, dropping, bopping around) are known but the outcome is not specifically determinable (physics behind outcome) due to the inability to control underlying causalities that lead to the outcome (head or tails). Additionally, risky situations are characterized by the prerequisite of being repeatable. Only the repetition of a situation (e.g. tossing a coin over and over again) with stable input, a restricted number of variables and subsequent output states enables the calculation of probabilities for the output (i.e.: ~ 50/50 out of 1000 attempts). This is especially an empirical challenge for more complex situations as estimates of probabilities depend on the repetitions determined by the numbers of variables included. The larger the number of variables and output states, the larger the number of required iterations.

Uncertainty

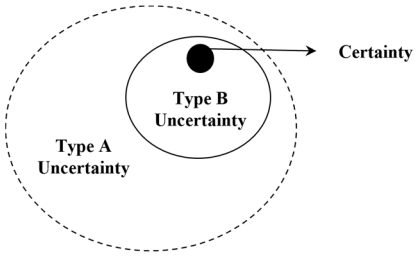
"Uncertainty must be taken in a sense radically distinct from the familiar notion of risk, from which it has never been properly separated " is noted by Knight (1964 [1921], p. 19). The distinction is drawn along the availability of quantifiable information. Decisions whose consequences are based on objectively known probabilities of occurrence and that can be calculated with the help of repetition or cumulative data collections are ascribed to be risky. *Uncertainty* in situations in contrast, means non-measurability or non-calculability in an empirical sense. While risk can actually be reduced by a priori calculation or empirical estimation, uncertainty can only be managed by judgment and the formation of experience. In consequence is uncertainty, unlike risk, not insurable (Knight 1964 [1921]).

Knightian Uncertainty is the result of this distinction and marks an expedient recourse to the construct of uncertainty in entrepreneurship and management literature. Because "[...] uncertainty is prevalent in business and other social situations, it is pervasive in entrepreneurial settings[...]" (Sorenson and Stuart 2008, p. 530) and hence forms the starting point for the application of effectuation in managerial decision making (Sarasvathy and Kotha 2001). Nevertheless, management research operationalizes the concept of uncertainty inconsistently, not generally as Knight understands it, and sometimes imprecisely. Basically, the definitional range extends from ignorance of information over a lack of information to the impossibility of having information and data (Packard et al. 2017). Such variance in the understanding of the term points to authors who equate uncertainty with *isotropy*. For them perfect formal calculability exists on one side and perfect incalculable, not predictable situations on the other side. Definitions cover aspects as that "environmental issues are, by their nature uncertain; the future is unknowable, and the framing of environmental issues occurs in a future context" (York and Venkataraman 2010, 252f.) or uncertainty defined as "[...] situation in which the missing information is yet to be created [...]" (Kuechle et al. 2016, p. 46) refer to the impossibility of recognizing future outcomes and much less being able to take them into account. This paper adopts to and discusses such a perspective at the appropriate point introducing the separate term isotropy (see chapter Isotropy). Knight also understands uncertainty close to isotropy, but less radical, when he implicitly states that uncertainty is an objective problem, which can only be tackled by society as a whole: "We must notice also the development of science and of the technique of social organization. Greater ability to forecast the future and greater power to control the course of events manifestly reduce uncertainty, and of still greater importance is the status of the various devices noted in the last chapter for reducing uncertainty by consolidation." (Knight, 1921, p. 265). While such a definition integrates isotropy in the sense of not knowing or not being able to foresee, it also points to a partially possible control or treatment or management of uncertainty through the collection of data and information. What is problematic about the Knightian understanding of uncertainty is that it leaves open a broad epistemological spectrum to the formalistic concept of risk. On the one hand, there are decision situations and events that can be calculated, and on the other hand, there are decision situations and outcomes that cannot even be predicted.

Against the background of such challenges, later authors stick only partly to Knight's strictly probabilistic distinction. They understand uncertainty not as linked to the general availability of information and data, but as determined by the possibilities to generate them. Uncertainty is seen not so much as objectively radical, in the sense of the inability to know, but rather as a consequence of the inability or impossibility to accurately determine outcomes of decisions or because of poor understanding of causal relationships (Downey and Slocum 1975). A moderate understanding of uncertainty is based primarily on the assumption that some relationships between variables and outcomes are not yet or cannot be investigated or manifested formal probabilistically. Hence, March (1994) suggest a more nuanced understanding of uncertainty by resolving the often synonymously used terms uncertainty, radical uncertainty and Knightian uncertainty. The distinction includes a moderate definition of uncertainty and a distinction from a radical or Knightian understanding. Knightian uncertainty is equal to the contingency level of ambiguity. Although ambiguity is somewhat related to uncertainty in the moderate sense, it differs because it is based on a general lack of information. Uncertainty however has its origin in a temporarily limited understanding of information. *Uncertainty in the narrow sense (i.n.s.)* is thus based on the assumption "[...] there is a real world that is imperfectly understood" (March 1994, p. 178). The distinction made between the moderate concept of uncertainty, ambiguity (Knightian uncertainty) and isotropy (radical uncertainty) is also reflected by questions about the objects of inquiry in the context of uncertainty. Is the environment uncertain? Are decision makers uncertain? Or are both uncertain? Isotropy/ radical uncertainty and to some extent ambiguity (Knightian uncertainty) assume uncertainty to be originated outside the decision maker. This type of uncertainty, also referred to as type A, is characterized by a stochastic variability of the environment (Campos et al. 2007), of probabilities, outcomes and relationships that are not identifiable or foreseeable ex ante (Miller 2012). Future states and outcomes are incompletely

or not known at all, their probabilities of occurrence are therefore not calculable or only calculable to a limited extent, and it is always uncertain what will come next (succession of outcome-related variables) (Hoffman and Hammonds 1994). Type A uncertainty is therefore considered to be irreducible in a planned manner, for example, through deliberate experimentation. Besides this, Type B uncertainty exists. In comparison its origin is rooted in the subjective inadequate processing capacities of the decision maker. Type B uncertainty, also called epistemic uncertainty, arises from knowledge deficits, scientific ignorance, or simply non-observability (Campos et al. 2007).[2]

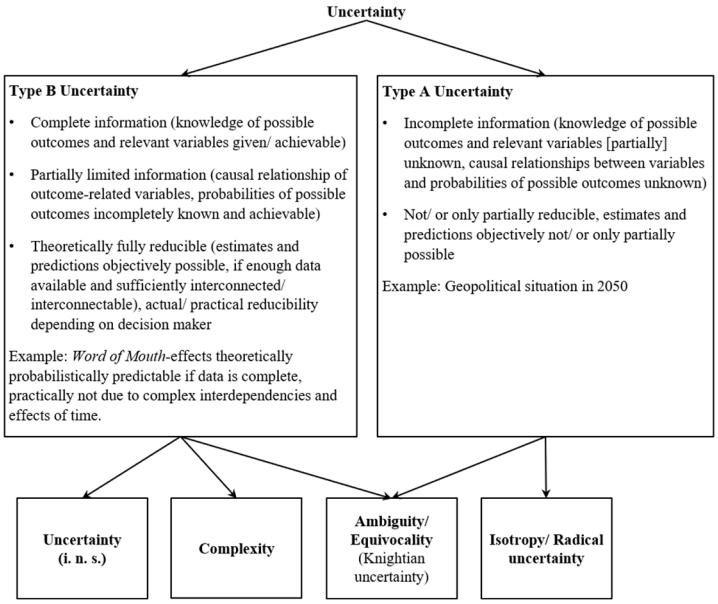
Type B uncertainties are typically residual uncertainties that arise in predictions based on opinions of experts or logical-deductive methods of cognition. Thus, they are not necessarily unresolvable. They are (theoretically) reducible by expanding systemic processing capacities (larger numbers of cases, more sensitive measurement methods, learning, improvement of indicators, investment of time and resources in experiments), since an approximation of complete information in a situation (although not quantifiable) prevails or is attainable. Practically, however, can distinct causal relationships or successions of outcome-related variables become validated probabilistically only to a limited extent. The basic distinction between type A and type B uncertainties allows subsequently different relations of both types to each other. If there is type A uncertainty, also type B uncertainty is necessarily prevalent since decision makers are unable to subjectively incorporate more information than is objectively available. The existence of type B uncertainty means that information about variables and regularities is already available, but these cannot (yet) be reduced to certainty or risk. The hierarchy of the major uncertainty types A and B are shown in **Picture 2**. Subsumed under certainty, the already described contingency level risk is also considered.



Picture 2: Relationships between types of major uncertainty
Source: Own depiction

The so far developed assumptions of different levels of contingency among uncertainty can be found in **Picture** 3. Besides isotropy/ radical uncertainty, that are assigned to type A and the subdivision of the type B uncertainty into uncertainty (i.n.s.) and complexity (see chapter **Error! Reference source not found.**), ambiguity/ equivocality (Knightian uncertainty) is located between the two types. Uncertainty type A describes a lack of information, uncertainty type B describes the lack of ability or possibility in dealing with available information. Uncertainty (i.n.s.) differs from the formalistic concept of risk by its probabilistic limitations since forecasts about future outcomes cannot (yet) be calculated beyond doubt. Nevertheless, in decision-making situations of uncertainty (i.n.s.), experience-based and experience-supported predictions of future outcomes are possible to a certain degree of certainty. The chosen understanding of uncertainty (i.n.s.) thus fills part of the space between radical uncertainty and calculable risk. Uncertainty (i.n.s.) is similar to the concept of risk applied in social sciences as it allows recourse to experience for estimating future outcomes. Theoretically, therefore, decision situations are reducible from uncertainty (i.n.s.) to risk or certainty if decision makers succeed in identifying and handling all relevant variables, interrelationships, probabilities of occurrence, and succession of outcome-related variables. Practically are those undertakings limited by lacks/ progress of time, scarce resources and the multiplicity of variables including their relationships. For example, it is theoretically known that special offers (such as price cuts) increase the quantity of products sold in the short run. However, how long the effect lasts, when and how competitors react to it is unknown or difficult to determine empirically. While it would be possible for empirical forecasting purposes to conduct a long-term and detailed study of the behavioral patterns of certain competitors in response to specific stimuli such as price cuts, an undertaking as such appears rather inefficient in terms of utility from a management perspective. Nevertheless, in the case of uncertainty (i.n.s.) experts can achieve relatively reliable predictions. Either by applying experience-based, subjectively collected a posteriori probability, which serve as a priori probability for estimating future outcomes, or by the option to transfer and abstract historical data to similar decision situations. Dealing with uncertainty (i.n.s.) thus depends to a large extent on the ability of decision makers to make reliable, albeit not fully probabilistic, forecasts by activating, applying and linking existing information. Uncertainty (i.n.s.) is present when all possible outcomes and variables, including their characteristics, are known, but the causal relationships, succession and probabilities of the outcomes are not yet fully deduced or cannot be fully deduced.

[2] Other authors (i.e. Sutcliffe and Zaheer 1998) also distinguish between *primary uncertainty* and *secondary uncertainty*, which is equivalent to Type A and Type B uncertainty.



Picture 3: Differences between major uncertainty types and further differentiation into different levels of contingency
Source: Own depiction

Complexity

A long cybernetic research tradition deals with the *complexity* of knowledge structures within systems and organizations. This of course spills over to management research if management of complexity becomes an USP in dynamic environments (Teece 2007, 2012). Especially the individual perception of complexity has markable influence on the application of decision-making strategies such as causation or effectuation in order to execute decision making, among other things (Mathiaszyk 2017). Complexity thereby has two main origins: detail complexity and dynamic complexity (Townsend et al. 2018). Detail complexity, similar to a formal understanding, refers to the number of considered variables. Dynamic complexity arises from possible interactions and interdependencies of the involved variables. The more variables and the more interdependencies, the higher the degree complexity. A concept that is closely related to complexity is emergence. Emergence represents a social, psychological, or physical phenomenon and ordering principle, that refers to a change of state with new qualities (i.e. the whole is more than the sum of its parts based). Complex systems do not behave linearly, but have the property of being able to form new structures based on the interaction of their elements. A specific property of emergence hence is that an observed phenomenon cannot be concluded directly from the properties of the underlying variables. The nonlinearity of complex systems has come into particular focus as organizational success factors do not appear to follow a linear distribution, but rather an exponential one (success multiplies according to Matthew effect) (Crawford et al. 2015). When decision makers face complexity, attribution difficulties arise. They face the challenge of competing in a complex environment because on the one hand they need to identify relevant factors and variables that may influence their actions and on the other hand they need to know and estimate the interaction effects and outcomes of these variables. Complexity is therefore generally considered as the "[...] heterogeneity and range of factors that have to be taken into account [...]" (Clarysse (Clarysse et al. 2011, p. 140) as well as "[...] the number of opportunity contingencies that must (be) addressed successfully" (Davis et al. 2009, p. 420).
In line with the introduced knowledge dimensions to define levels of contingency, complexity means that possible outcomes and variables are or can be known to decision makers. In case outcomes or variables laying beyond recognizability ambiguity would be present. Complexity arises from the number of included variables, their interactions, and emergent interdependencies. To decision makers are sequences and causal relationships between variables partially but not entirely clear as various interactions may have similar outcomes. Hence, formal probabilities for outcomes can hardly become concluded not least due to often low number of empirical measurable and comparable cases. However, complexity remains an issue of emergence not of fulguration (according to Lorenz 1975) and can be solved by identifying, selecting and understanding relationships between relevant variables. Decision makers need to increase their internal complexity in order to handle external complexity (Crawford et al. 2015). Or in other words: complexity can only be solve by complexity (Ashby 1956; Beer 1994 [1966]).

Ambiguity/ Equivocality

Also, *ambiguity* plays a central role in management research as well as in the study of decisions making in business and organizational theory (Townsend et al., 2018, p. 671). Some authors understand ambiguity as a decision-making environment in which decision makers have knowledge about possible outcomes of their decision, but it is not possible for them to specify their probabilities (Holm et al. 2013). Others declare ambiguity to be a "[...] problem of interpretation because it results from a lack of understanding and/ or consensus regarding the applicability of available knowledge" (Rindova et al. 2010, p. 1477). Both perspectives limit ambiguity to a subjective knowledge problem. On the other hands is ambiguity understood synonymous to isotropy/ radical uncertainty (Fox and Tversky 1995), which rather aims at an objective knowledge problem. In the following, ambiguity will be developed as bipartite concept containing objective and subjective limitations of knowledge. That means ambiguity is characterized by elements that subjectively may not be known and elements that are objectively unknown and hence subjectively cannot be known.

From difficulties in predicting results of repeating identical behavioral experiments Ellsberg (1961) concluded that besides uncertainty and risk, ambiguity must be a distinct problematic category within decision theory. Ambiguity depends on amount, type, reliability and clearness of available information as well as on the confidence of decision makers to conclude probabilities for outcomes. Ambiguity thus considers to what is also referred to in scientific discourse as the impossibility of sensemaking. In specific scenarios, decision makers fail to differentiate signals from the noise in their environment (Weick 1995) and to translate an observed process or variable into a rational system (Townsend et al. 2018). Ambiguity then encompasses a decision environment "[...] in which alternative states are hazily defined or in which they have multiple meanings" as well as where "a 'real' world may itself be [...] a product of social construction" (March 1994, p. 179). This reflect that although in ambiguity there is some information available, there is always also a yet marked space of no information.

Ambiguity is also equated with equivocality. By definition, equivocality arises from the existence of multiple meanings or interpretations toward an object of observation (Daft and Macintosh 1981). Based on that, equivocality cannot be solved by more information because "the key problem in an equivocal situation is not that the real world is imperfectly understood and that additional information will render it understandable; instead, the problem is that additional information may not actually resolve misunderstandings (Frishammar et al. 2011, p. 553). Hence ambiguous/ equivocal situations do not have objectively clear answers (Townsend et al. 2018) and can only be resolved "through shared observations and discussion until a common grammar and course of action can be agreed upon" (Daft and Weick 1984, p. 291).

The delineation of ambiguity/equivalence from complexity and isotropy/ radical uncertainty is drawn along objectively available knowledge. Decision situations characterized by ambiguity/ equivocality are to be placed between the major uncertainty types A and B. Ambiguity/ equivocality is present if possible outcomes and relevant variables are not fully known because they cannot be fully known, yet. This is due to unknown relevant variables, indifference towards the relevance of known variables, their probabilities, successions and causal relationships (Davis et al. 2009; Ellsberg 1961). Ambiguity/ equivocality differs from uncertainty (i.n.s.) in that the former is not based on the imperfection of knowledge about causal relationships between means and ends, but on the impossibility of predicting future outcomes and relevant variables whose qualities are indistinguishable (Garud and van de Ven 1992).

Isotropy/ Radical Uncertainty

Although it has already been referred to it several times, the contingency level of *isotropy/ radical uncertainty* shall also be briefly described. Isotropy/ radical uncertainty applies to decision situations, outcomes and variables which are still unknown or undetermined in society (objectively) as a whole and for which therefore no future predictions can be made. Isotropy/ radical uncertainty concerns objects of knowledge that are neither present nor foreseeable (Schneider 1997). Outcomes of isotropy/ radical uncertainty are random and cannot be predicted based on the current states of knowledge. The same applies to probability of their occurrence because inherent relevant variables, their causal relationships and internal processes (succession of relevant variables) are not known. Outcomes of isotropy/ radical uncertainty are not uncommonly single events, through which knowledge about interrelationships etc. can only become generated retrospectively (sensemaking).

Isotropy cannot be resolved by intentional system-immanent emergence, because this would require knowledge about a certain number of variables, dependencies and correlations as a starting point for a target definition (e.g. by research). Instead, isotropy/ radical uncertainty is based on the fact "[...] that in decisions and actions involving uncertain future consequences it is not always clear ex ante which pieces of information are worth paying attention to and which not" (Sarasvathy 2008, p. 69). Resolving isotropy/ radical uncertainty only happens through evolutionary leaps (fulgurations). Practically, dealing with isotropy/ radical uncertainty[3] can be observed regarding partnership heuristics of effectuation. *Crazy quilt* aims at indeterminate sensemaking and is based on flexible, arbitrary partnerships. Decision makers interact with business partners who are close to them, known to them, willing to collaborate and available. The purpose of engaging in partnerships is not predefined and emerges from the interaction. Similar to complexity can isotropy/ radical uncertainty only be challenged by isotropy/ radical uncertainty (Townsend et al. 2018). Random options for random solutions must be generated; with indeterminable outcomes.

[3] Some would say hoping for serendipity.

AGGREGATED CONTINGENCY-BASED FRAMEWORK

Error! Reference source not found. aggregates the discussed degrees of contingency. The identified levels of contingency differ based on available knowledge of possible outcomes and relevant variables, knowledge of their probabilities, knowledge of succession of outcome-related variables and knowledge of causal relationship of outcome-related variables/ distinctiveness of all variables. The spectrum of the contingency framework is bounded on the left by the contingence-levels certainty and risk. In certain situations, assured knowledge about all possible outcomes and variables, along with their probabilities of successions of occurrence and interrelationships are present. Causal relationships are unambiguous, and outcomes are calculable and insurable. Certainty and risk differ in terms of that in the case of the latter, the immediate next event is unpredictable.

Uncertainty (i.n.s.) and complexity both assume that experience-based certain predictions are possible, but that these are not yet fully revealed in the context of involved variable variations. I.e. the ingredients for the cake are already procured, but the recipe is missing. Possible future outcomes and constituent variables are largely known, but it is not yet empirically possible to trace causal relationships and effects of all variables beyond doubt or to prove them in the stochastic sense. In the case of complexity, this is aggravated by the fact that too many variables with unknown causal relations have to be considered.

Ambiguity/ equivocality represent a level of contingency in which data is more or less missing. Compared to uncertainty (i.n.s.) and complexity, where there is imperfect knowledge about causal relations between variables and outcomes, ambiguity/ equivocality occurs when decision makers do not know which outcomes can occur or which relevance variables (weight) within causal relationships have. Challenges in reducing this level of contingency arise mainly from the fact that the unknown is unknown. Decision makers do not know what is missing and therefore can only build incomplete causal chains: "[...] no certain answers exist and perhaps the right questions have yet to be formulated" (Daft et al. 1987, p. 359).

Isotropy/ radical uncertainty represent the right pole of the contingency framework. The state is characterized by not only incomplete knowledge about possible outcomes and relevant variables, but also by incomplete knowledge about their existence. Outcomes have no dominant probabilities, everything is equally possible (or not) (chaos), and beyond an existing "lack of clarity" for decision makers "it is difficult to interpret or distinguish opportunities" (Davis et al. 2009, p. 424).

Table 1: Contingency-based framework: Increasing levels of contingency (from left to right) depending on available knowledge qualities

Degree of (Un)Certainty→ Criterion↓	Certainty	Risk	Uncertainty (i.n.s)	Complexity	Ambiguity/ Equivocality	Isotropy/ Radical Uncertainty
Knowledge of all possible outcomes and relevant variables	Given	Given	Given	Given	Incomplete	Missing
Knowledge of probability of all possible outcomes und variables	Given	Given	Incomplete	Incomplete	Missing	Missing
Knowledge of succession of event-related variables	Given	Given	Incomplete	Incomplete	Missing	Missing
Knowledge of causal relationship of outcome-related variables/ distinctiveness of all variables	Given	Incomplete	Incomplete	Missing	Missing	Missing
Objective/ subjective insurable	Given	Given	Yes (, but depending on possibility of empirical validation, sufficient N or based on educated guesses)	Yes (, but depending on possibility of empirical validation, sufficient N or based on educated guesses)	Missing	Missing
Symbolic expression (exemplified)	e.g.: a,a,a,a,a,a,a,…	e.g.: a,b,a,b,a,b,a,b,a,b,…	a+b→c?	e.g.: a+b→c? AND ALSO d+e→c?	(a+b)*c*0→d AND ALSO (e+f)*g*0→d II N of 0? "0"=unknown outcome/ variable	a,b,a,b,(c),(a,b,a,b) OR 000000 (subsequence of unknown outcomes/ relationships/ variables)
Example	"Death and taxes"	Flipping a coin	Competing in a pitch with unknown N of competitors	Development of American declaration of independence in 1787	Consequences of artificial intelligence	Fortuity, rise of Facebook, discovery of ultraviolet light/ Higgs-Boson
Major (Un)Certainty Type	Certainty		Type B		Type A (depending on degree of isotropy)	Type A

Source: own compilation

IMPLICATIONS AND CONCLUSION

The development and consolidation of the presented framework serves as microfoundation for research on decision-making strategies (i.e. effectuation, causation), their prerequisites (i.e. configuration, presence and availability of knowledge) and appropriateness in terms of efficiency. Decision-making theory has developed several strategic approaches to deal with contingency in order to enable and reason decision making (Chandler et al. 2011; Dew et al. 2009; Sarasvathy 2001). I.e. causation focuses its attention "on the predictable aspects of an uncertain future" whereas effectuation focuses "on the controllable aspects of an unpredictable future" (Sarasvathy 2001, p. 251). Those approaches are heavily discussed as assumptions about their configuration appear random and overlapping (Arend et al. 2015; Grégoire and Cherchem 2020; Read et al. 2016). The presented framework may help decision-making situations to different levels of contingency. Organizations can control for subjectively present and objectively available knowledge to evaluate decision-making strategies in order to reduce contingency in decision making. Further research should aim at investigating more on knowledge types within levels of contingency (e.g. declarative/ accumulated knowledge, procedural/ structural knowledge, conceptual knowledge) and match those with decision-making strategies (including but also beyond the most commonly used). This would foster a better understanding about situation-specific decision-making strategies and help organizations choose strategies to deliberately reduce contingency in decision-making situations.

Implications and Further Research

Further research should focus on decision-making paradigms (algorithms, causation, effectuation, bricolage, improvisation, trial & error)[4] that deal with contingency. In order to make those applicable they require revision and clear differentiation as concepts are constructed in overlapping manner due to incomplete recognition in empirical researches (i.e. any occurrence of decision-making strategy beyond causation is declared to be effectuation although it is not distinguished from trial & error or other paradigms). After revision and differentiation of the concepts their capacities to reduce contingency requires investigation. An appropriate research avenue would question how far do specific decision-making strategies contribute to the reduction of contingency in order to efficiently enable reliable decisions? The answer requires an alignment between variations of decision-making paradigms (including their inherent types of knowledge, its transformation and transferability) and their assignment to different levels of contingency. An interesting research case, although not mainly managerial, would be the investigation of knowledge generation among scholars within the SARS-CoV-2-pandemic. At the beginning of 2020, German researchers hardly knew anything about the virus regarding transmission (aerosol vs. smear infection), temperature resistance or the effects of instruments for prevention. By 2022 researchers were able to forecast infections and incidences over 6 months in advance with almost no deviation, including variations of instrumental scenarios. The case indicates an archetypical evolution of knowledge worth investigating.

Contribution to Decision Making Theory

Differentiations within the original concept of uncertainty suits for outlining efficient decision making. The presented concepts show that different levels of contingency can be subsumed under the umbrella-term uncertainty, whereby challenges result from dealing with the synonymous use and lacking differentiation. Uncertainty can exist as two major types (type A and type B uncertainty), and its classification generally results from the relationships between information or data completeness and incompleteness. Type A uncertainty is understood an objective problem, while type B uncertainty is subject to the decision maker only. The distinction is important when it comes to measuring perceptions of uncertainty in empirical studies, since measurement results depend on the units of inquiry (respondents) as well as the objects of inquiry. Depending on own expertise decision makers update more or less limited amounts of information from their environment and coordinate their behavior on this basis. This is standard in cases of (perceived) imperfect information, which decision makers often encounter by means of heuristics (i.e. Trial & Error) without recognizing or collecting the maximal possible amount of information before acting (Busenitz and Barney 1997; McMullen and Kier 2016). Thus, from a subjective perspective, situations may be assigned to higher levels of contingency although objective information about outcomes, relevant variables, probabilities and causal relationships might (objectively) be available. A better understanding of the objective contingency of specific decision situations enables decision makers to select best suitable strategies to efficient decision making. In conclusion the following steps are suggested, to identify levels of contingency and conclude efficient strategies to reduce contingency.

1. Aiming at objective classification of a decision-making situation, exclusivity of the decision-making problem must be questioned: Is the problem objectively and/ or subjectively given? Are objective information/ solutions available (i.e.: expert knowledge, market research approaches)?
2. If gaps of information are identified on subjective level but information would be objectively available, which and how can the gap be bridged (i.e. own research, expertise from factor markets, trial & error, effectuation)? This reflects the efficiency of decision making as either choice of decision-making requires resources.

[4] See the conceptual works of Rogers, JR. 1987; Gigerenzer 2022; Chandler et al. 2011; Sarasvathy 2008; Hauser et al. 2020; Duymedjian and Rüling 2010; Fisher 2012; Archer et al. 2009.

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WORKPLACE EXPECTATIONS OF YOUNG HUNGARIANS - DREAM OR REALITY?

Abstract: The purpose of this study is to present the career plans, job search ideas and expectations of PTE students towards employers. Our research question is: What are the most critical factors during the decision?
The research took place in the spring of 2022. The target group was connected in the framework of an online questionnaire survey. A total of 886 full-time students filled out the questionnaire.
According to the main results of the research, when looking for a job, they first want to apply directly to the employer and plan to look at job advertisements. The respondents would primarily work in the competitive sector, and even within that, most insurance companies prefer the financial and activity sector.
For students, the most important things regarding their future workplace are the appropriate salary, achieving a sense of success for themselves, the development and advancement opportunities, and the existence of a predictable career path.

Keywords: Employee branding, future workplace, PTE students, employee expectations.

1. INTRODUCTION

In the everyday sense, a career means something different to everyone. Someone sees it as a professional challenge, moving up the ranks. Someone else sees it as self-realization, the achievement of their own goals, and the continuous growth of professional knowledge and lifelong learning. In recent years, the motivational structure of employees and their expectations of the workplace have also changed. Consciously planning your career is extremely important at a young age if you want to avoid going with the flow.
At the centre of our research were active students of the University of Pécs; during the research, we focused on the career plans of our students and their expectations of employees. In our study, we present our main results, which relate to the job search habits of our students. We explain which channels young people use when looking for a job, whose advice they seek, whether they plan to work at home or abroad, which sector they prefer, and what expectations they have of their employer.

2. THEORETICAL BACKGROUND

Researching the career plans and expectations of young people is an exciting field because employers need to know the needs of their future employees. However, these formulated goals or expectations are often uncertain or unrealistic.

2.1. Career plans of young people in the light of previous research

Gergely et al. (2016) think that most Hungarian university students do not know their career orientation and what motivates them in relation to work. The investigations completed by Fényes et al. (2021) confirm the facts mentioned above. When entering higher education, career-conscious students do not behave in a career-conscious way later on during their training. Furthermore, during higher education, their previous career goals are often reinterpreted.
Despite all of this, it is essential to know what is on the minds of young, future employees and their expectations so that prospective employers can prepare for their reception in time.
Csehné Papp (2016) asked 198 students in a questionnaire survey. From the results, we learn that more than half of the respondents (59%) want to find a job after graduation but continue their studies in parallel. 16% only want to work, 12% only plan to continue their education, and 13% are still unsure. Most students would like to work for a multinational organization rather than in the public sector.
Kőműves, Hollósy-Vadász and Szabó (2021) interviewed 223 people during their research. They found that young people seek some compromise when getting their first job. First, they try to find a job using their network of contacts (asking acquaintances and friends).

2.2. Expectations of young employees towards the future workplace

In addition to career plans, it is also worth looking at workplace preferences in light of previous research.
Based on Juhász és Terjék's survey experience in 2014, for the 20-25-year-olds surveyed, salary, the person of the manager, preferred working hours and other benefits were the most important factors regarding their future workplace.
During their research, Garai-Fodor, Jäckel and Nagy (2017) conducted 30 mini-focus interviews among university students. One of their primary research goals was to determine which factors play an essential role in young people's choice of workplace. One of the most important job selection criteria for the examined is salary and benefits. They also prefer flexible working. It is vital for them to have time for themselves in addition to work. What matters is the working atmosphere, the attractive working environment. They want a workplace where they can feel good while working and where there are opportunities for advancement. They are able and willing to work hard, but only if their efforts are recognized and rewarded.
Kőműves et al. (2021) found that remuneration, motivation, an inspiring work environment and the career opportunities offered by employers play a significant role in choosing a future workplace.
Every year, PwC assesses the job choice preferences of the Hungarian population along several dimensions. In their 2022 report, they believe that in the constantly changing, uncertain geopolitical and economic environment, the most crucial employee needs have changed significantly compared to previous years' results. Existential security became more important than work-life balance and meeting social needs. By examining the answers of university and high school students, it was found that the basic salary is the most important factor, followed by overtime payment and career opportunities.
Based on the summary of Zyntern.com's 2022 survey (Túri 2022), a competitive salary is the most important consideration for young people when choosing a job or commitment. Furthermore, it is essential for them if the employer recognizes exemplary performance and if there are development and career opportunities at the company.
As for the previous researches showed, the most important factors for young future employees are the salary, career opportunities, flexibility and work-life balance.

3. METHODOLOGY AND RESULTS

In this section, we show the data collection-related questions as well as the basic sample characteristics. Due to the nature of the analysis, we provide descriptive information related to the questions covering the labour-market expectations and future trends, such as job-seeking channels and influencing actors, domestic or international preference, targeted sector, and the list of expectations towards the future workplace.

3.1. Data collection

The questionnaire was finalised in the EvaSys software licensed by UP and sent to the students in a unique, non-anonymous message. The sent message contained a link to the questionnaire. Compliance with the relevant GDPR regulations is ensured by the data management declaration, which was reviewed and approved by the UP data protection officer. During the survey, we used temporary data linking, through which the students did not have to fill in the questions about faculty, gender, age, study programme, level of education, study form, financing, and language of education. After the end of the data collection, we connected the data stored in NEPTUN with the responses, after which the connecting key variable was deleted, so the data analysis was carried out on the anonymised database.
According to the research plan and rector's permission that launched the official survey, the research group handles the information generated during the data management of the online survey with the utmost care, strictly confidentially,

temporarily only to the extent necessary, and prevents unauthorised access to it by all legal means. Under no circumstances will the research team release any individually identifiable data it has come to know, including the original print version of the completed questionnaires or its recorded online record. With this method, the maximum data security and anonymity expected for online surveys can be ensured.
The period of the survey is April – May 2022, which includes three repeat mailings, as well as personal requests for the possibility of filling in the selected faculties.

3.2. The sample

The target group of the research is bachelor and master students studying at the University of Pécs (including Hungarian and English students). Based on the data of the NEPTUN study system, the number of active students in the 2nd semester of the academic year 2021/2022 (those who have an e-mail address), altogether 20,331 students consisted the basic population (4,078 Hungarian language-based programmes, and 16,253 in non-Hungarian language-based programmes).
A total of 886 students completed the questionnaire, which corresponds to 4.4% of the total student population. 34% is male, which corresponds to the general gender distribution of the university. 81% of the answers come from Hungarian language-based programme participants, 60% is from the bachelor level. It is to be highlighted that the sample distribution is slightly distorted due to the high presence (48%) of respondents coming from the Faculty of Business and Economics.

3.3. Results

When looking for a job, they first want to apply directly to the employer (60%), and they plan to look at job advertisements (56%). In addition, the respondents also trust other personal acquaintances (47%) and the social media platform (43%). Basically, National Employment Service and lecturer recommendation are the least planned job-seeking strategies. Even starting an own business and becoming self-employed could be more realistic options for them. However, it can be also seen that the university has a relatively important role by offering tailor-made career services (Fig. 1).

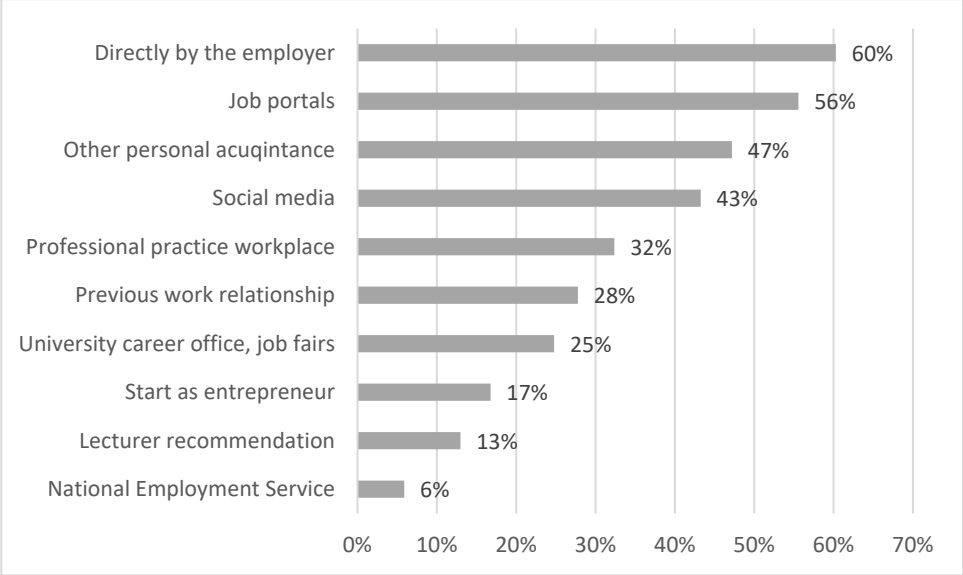

Figure 1: Job seeking channels
Source: Own elaboration

In the following table, it can be seen whose advice the students would ask for regarding their job search according to gender and age (Table 1).
Based on the results, we can conclude that the largest proportion of respondents would seek the help of acquaintances (73.1%) working in the given field and the advice of their family members (63.7%) or friends (56.7%) in relation to job hunting. In the smallest proportion, other actors were nominated, or none of the given options would be chosen in the event of a request for advice. Compared to the general job-seeking strategies, the lecturer's role is definitely more relevant.
The other non-categorised actors are:
o partner of people living in a partnership, life partner
o current and former colleagues
o department manager, HR manager
o employment websites

Table 1: Job-seeking suggestion

	n	Family members	Friends	Lecturers	Acquaintances working in the field	Career counsellor	Other	None of them
Gender								
Male	253	61.7%	62.5%	49.0%	67.2%	34.4%	1.2%	5.5%
Female	510	64.7%	53.9%	43.5%	76.1%	31.2%	1.6%	3.7%
Age								
25 years old or less	566	71.0%	59.0%	47.0%	74.0%	33.0%	0.9%	2.8%
26-30 years old	82	42.7%	57.3%	43.9%	70.7%	32.9%	1.2%	8.5%
31-45 year sold	100	42.0%	44.0%	40.0%	70.0%	26.0%	3.0%	9.0%
46 years old or more	15	46.7%	53.3%	26.7%	73.3%	40.0%	13.3%	6.7%
Total	763	63.7%	56.7%	45.3%	73.1%	32.2%	1.4%	4.3%

Source: Own elaboration

It is important to understand what sectors the students are targeting. 59.4% of them plan to work in the private sector, 30.3% in the public sector, while 10.3% in the non-profit sector. A higher proportion of men would like to work in the private sector (76.3%), while only 51.1% of women feel the same way. As age progresses, the preference for employment in the private sector decreases, and the desire to be employed in the public and non-profit sectors increases. 63.3% of the participants in the Hungarian language-based programmes would be employed in the private sector, while a higher proportion (46.1%) of the non-Hungarian language-based programme students would work in the public sector.
Altogether, 85% of respondents plan to work in Hungary, while only 15% plan to work abroad. The 46 years old or older definitely (100%) want to find a job in Hungary, probably because of the security, since people over 46 don't really plan to work abroad anymore, mainly because of their family or if they haven't worked abroad before, they won't in the future. More than half (53.3%) of the students participating in the non-Hungarian language-based programmes plan to work primarily in Hungary, and only 46.7% plan to work abroad.

Table 2: Workplace-related expectations

	Avg	Median	Mode	Std. Dev.
Expected salary, benefits, bonus	3.72	4	4	0.53
Success (for myself)	3.72	4	4	0.52
Opportunities for development and advancement, a predictable career path	3.66	4	4	0.56
Good workplace community, good relationship with direct colleagues and direct supervisor	3.62	4	4	0.60
Learning and experience opportunities	3.62	4	4	0.58
A secure job in the long term	3.48	4	4	0.71
Recognising and rewarding outstanding performance	3.47	4	4	0.67
Excellent working environment	3.46	4	4	0.68
Moral appreciation from my manager and colleagues	3.43	4	4	0.71
Interesting, diverse tasks, continuous challenges	3.40	4	4	0.71
Possibility of flexible working (e.g., home office work)	3.18	3	4	0.85
Family-friendly workplace	3.17	3	4	0.90
A reliable, well-known, reputable employer	3.00	3	3	0.81
The company excels in social responsibility and supporting good causes	2.94	3	3	0.89

Source: Own elaboration

The two most important factors regarding workplace expectations for the students are the appropriate salary, benefits, bonus, and the achievement of self-inflicted success (both statements reached a value of 3.72). As it is measured on a scale of 1-4, these average scores can be considered extremely high. It is also important to have a predictable career path with advancement opportunities, a good workplace community, learning opportunities, recognition and reward for performance. The statement related to social responsibility was given the least value, however, this is also a decisive part of the company's assessment, as it is only 0.06 behind the well-known, reliable, and reputable employer statement. It is to be noted that Covid could hinder the importance of the soft elements, and salary could become stronger to counterbalance the uncertainties related to and caused by the pandemic. Nevertheless, it is evident that the motivation-related elements are still dominant, which should be kept in mind by employers. (Table 2)

4. CONCLUSION AND DISCUSSION

During our research, we sought the answer to what kind of career plans and expectations our students have towards employees. We discussed the job search habits of our students, the channels they use most often, and their preferences regarding the sector, branch, and work experience abroad. We presented the expectations of young people regarding their employers.

According to our results, the students first want to apply directly to the employer (60%) and plan to look at job advertisements (56%). Based on the results, the largest proportion of respondents would seek the help of acquaintances (73.1%) working in the given field and the advice of their family members (63.7%) or friends (56.7%) concerning job hunting. 59.4% plan to work in the private sector, 30.3% in the public sector, and 10.3% in the non-profit sector. 85% of respondents plan to work in Hungary. Regarding students' workplace preferences, the two most important factors regarding workplace expectations for students are the appropriate salary, benefits, bonuses, and the achievement of self-inflicted success.

Based on our research, it is worth emphasizing the branding of employers, since most students want to apply for a job directly with the employer. It is even worthwhile to address students directly to employers already during their university years since the results show that a significant part of students (85%) do not even want to go abroad, that is, a well-known organization with a strong employer brand has a good chance of finding the talents. Although salary is still very important on the employees' preference list, it is worth taking advantage of the fact that young people want to learn and develop, and employers should emphasize this possibility when looking for a new employee.

Our research has several *limitations.* In the present investigation, the students of the Faculty of Economics were overrepresented. On the other hand, in terms of the territorial distribution of the students, it is significantly limited to the southern Transdanubian region.

As a *future research direction,* we designate the extension of the data collection to other institutions in Hungary; the findings at the national level can strengthen its validity. We also plan to expand the research to other European countries.

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QUALITY MANAGEMENT AND DIGITAL TRANSFORMATION IN A PORTUGUESE HEI: A PROCESS MANAGEMENT APPROACH

Abstract: Over the years, Higher Education Institutions (HEI) have been changing the way they observe and approach quality and the management of their teaching, research, or knowledge transfer activities. There are several guidelines regarding quality management in higher education. In Portugal, besides the framework proposed by the National Agency (A3ES), HEI use other standards, such as ISO 9001 or the EFQM excellence model. A comparative analysis of these guidelines shows that they share principles, are based on a process management approach, and seek to improving the organization's performance. Regarding the process management approach, there is a perception that processes add value to the organization and facilitate the achievement of its strategic objectives. Additionally, the incorporation of technology in the processes makes them more agile and increase the organization's efficiency.
In this context, digital transformation is a reality that proposes a change in the way organizations operate, incorporating digital processes into their processes, thus making them more prepared to face market demands. In this paper we present a use-case of digital transformation in a HEI. Based on the Digital Kaizen methodology, this work focuses on a systematic approach to review quality processes in use at HEIs, modeling, digitalizing, and automating them in the form of business processes. As result, a well-defined method containing the steps for the transformation of processes is proposed, as well as a set of reference tools that support the digital transformation process.

Keywords: Digital transformation, quality management, process approach, higher education institution (HEI)

1. INTRODUCTION

Efficiency, agility and ability to responsiveness to change are key attributes for organizations. In a globalized world such as the one we have today, these attributes, also seen as challenges, dictate the ability of organizations to remain operational, responding to an increasingly demanding target audience. To better respond to these challenges and remain operational, organizations seek and develop mechanisms that allow them to systematically: understand what they do, how they do it, identify risks and opportunities, be in line with legislation, regulations and requirements market and define procedures and corrective actions to quickly respond to change. It is within this framework that organizations identify quality management systems (QMS) as an important tool to support their operation. A QMS is a set of policies, processes, procedures, and resources that an organization uses to ensure that its products or services meet or exceed customer requirements and expectations. The role of a QMS is to help an organization achieve consistent quality and customer satisfaction, as well as to continuously improve its processes and products (Sá, Amaral, Barreto, Carvalho, & Santos, 2015; Sá et al., 2020; Santos et al., 2019).
One of the most widely used and recognized standards for quality management systems globally is ISO 9001 - a standard for QMS developed by the International Organization for Standardization (ISO) (Sá et al., 2020). ISO 9001 certification is not mandatory, but many organizations choose to pursue certification to demonstrate their commitment to quality and gain a competitive advantage. The implementation of a QMS, based for example on ISO 9001, involves a set of steps (Santos, 2018). One of the steps is to develop a quality manual and procedures. That is, the creation of a manual that

outlines the organization quality policy and objectives, as well as the procedures that will be used to achieve them. This should include procedures for all relevant areas, such as management review, document control, internal audits, corrective and preventive actions, and customer complaints. This manual is in practice a document, supported by several other documents that allow the organization to operate in a common way among its departments. However, it happens that a QMS can become complex to maintain. This occurs for several reasons, such as, lack of resources, overcomplication in terms of processes or documentation, difficulty in keeping up with continuous or frequent changing requirements, lack of buy-in by staff or stakeholders or resistance to change. To address these issues, it is important for organizations to take a strategic approach to their QMS, focusing on simplicity, efficiency, and continuous improvement.

One area that aims to provide organizations with mechanisms that facilitate innovation and change is digital transformation. Digital transformation is a gradual process that, according to (Plekhanov, Franke, & Netland, 2022) includes four main phases. The first stage of digital transformation is digitization, and it involves digitizing existing processes and data. The goal of digitization is to improve efficiency and reduce costs by eliminating paper-based processes. The second stage of digital transformation is optimization, and it involves using data analytics and more advanced digital tools to optimize existing processes and operations. The third stage is transformation involves leveraging digital technologies to fundamentally change the way an organization operates. This may involve using cloud computing to scale operations globally, developing new business models based on digital platforms, and creating new products or services that are enabled by digital technologies. The fourth stage of digital transformation is innovation and involves disrupting existing markets and business models using digital technologies. This may involve creating new products or services that disrupt existing industries, using top technology to create new business models based on trust and transparency, or leveraging artificial intelligence to create new customer experiences.

The School of Management and Technology - Polytechnic of Porto is a Portuguese HEI that, since 2006, has a certified QMS, according to ISO 9001. The QMS follows a process-based approach, and the organizational processes are divided into three levels: management processes; realization/operational processes and support processes. The system is rooted in the organization and is seen as an asset by all. It turns out that the QMS is still in the first phase of the digital transformation process (digitization) and in this context an opportunity for improvement was identified, which consists of its evolution to the third phase of the digital transformation. This opportunity is leveraged by a funded project (Quality 4.0 - Digital Transformation in Quality Management Systems) and aims to improve the efficiency and agility of the QMS while allowing interoperability between systems and leveraging a more generalized use of procedures, i.e. extended to more HEI belonging to the Polytechnic of Porto universe.

In this paper we present a use-case of digital transformation in a HEI. Based on the Digital Kaizen methodology, a systematic approach to review quality processes, modeling, digitalizing, and automating them in the form of business processes is presented. The approach encompasses methodologies and tools for modeling and automating business processes that facilitate the digital transformation process and contribute to greater efficiency and agility of the organization. In this way, other organizations can become aware of the digital transformation process carried out, the methodology used, the technologies involved, facilitating critical analysis, and ultimately helping the transformation process of these organizations. Although the use-case is applied to an HEI, it should be noted that the adopted process is transversal to a wide variety of organizations.

The rest of the paper is organized as follows: section 2 presents the literature review; section 3 presents the proposed methodology to transform QMS processes; a use-case regarding the digital transformation of HEI processes is presented in section 4; section 5 concludes the paper.

2. LITERATURE REVIEW

In this section, a review of the literature is presented, focusing in a first phase on quality management systems (QMS), with a focus on higher education institutions (HEI), and in a second phase on the digitalization process of these systems.

2.1. Quality management systems: guidelines for HEI

Quality management in higher education is an important aspect to ensure that institutions are delivering high-quality education to their stakeholders (Basari, Altinay, Dagli, & Altinay, 2016; Girmanová, Šolc, Blaško, & Petrík, 2022; Myna, Yarka, Peleschyshyn, & Bilushchak, 2016; Rosa, Sarrico, & Amaral, 2012). There are several guidelines and frameworks that institutions can use to implement quality management practices. Some of the commonly used in Portuguese Higher Education Institutions (HEI) are:

- Reference Framework for Internal Quality Assurance Systems in Portuguese Higher Education Institutions: This framework is proposed by the Agency for Assessment and Accreditation of Higher Education (A3ES, 2015). A3ES is a Portuguese Agency that evaluates and accredits higher education institutions and their programs. A3ES framework provides guidelines and criteria for quality assurance in higher education based on European and Standards Guidelines (ESG, 2015).

This framework is systematized around five vectors: policy for quality assurance; nuclear processes of the institutional mission (teaching and learning, research and development, inter-institutional and community collaboration, and internationalization); management of human resources and of the material resources and support services; management and publication of information; and periodic external review (A3ES, 2015).

- ISO 9001: ISO 9001 is a QMS standard that can be applied to any organization, including higher education institutions. The standard provides a framework for institutions to establish, implement, and maintain a QMS that focuses on meeting customer requirements and enhancing customer satisfaction (ISO 9001, 2015).This standard outlines seven quality principles that serve as the foundation for the ISO 9001 standard.
  These principles are: customer focus - meeting customer requirements and to strive to exceed customer expectations; leadership - leaders should set a clear vision, establish goals and objectives, and create conditions in which people are engaged in achieving the organization's quality objectives; engagement of people – recognizing the importance of its people and their contributions, and providing training, education, and development opportunities to empower them; process approach: implementing a systematic approach to managing processes and resources to consistently achieve the organization's objectives; improvement: involves continuously improving the performance and effectiveness of the organization by identifying opportunities for improvement and implementing actions to address them; evidence-based decision making: decisions within the organization should be based on analysis and evaluation of data and information; and relationship management: relationships with suppliers, partners and other stakeholders should be established and maintained to ensure mutual benefit and value creation (ISO 9000, 2015)

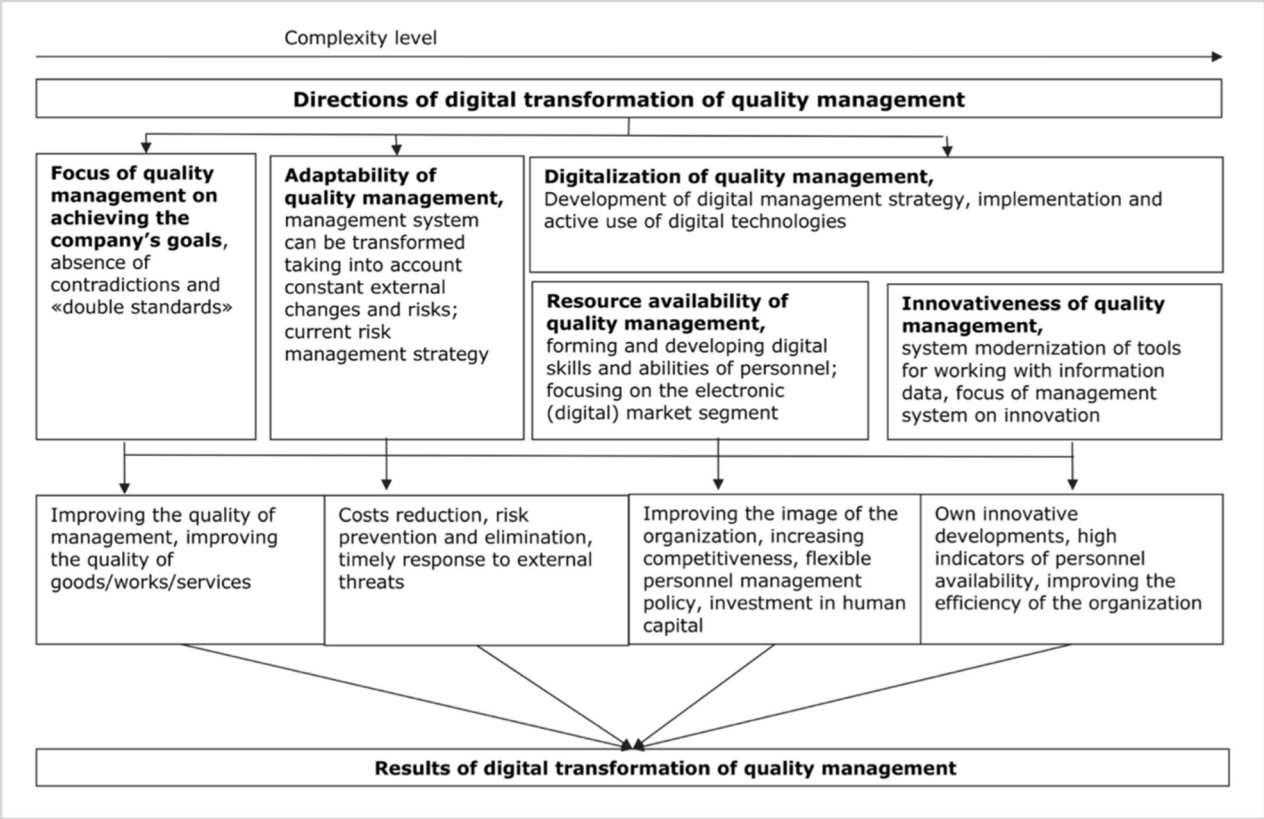
- EFQM model (European Foundation for Quality Management): The EFQM model is a framework for organizational excellence that can be applied to higher education institutions. The model provides a holistic approach to quality management and focuses on three domains: direction (purpose, vision & strategy; organizational culture & leadership), execution (engaging stakeholders; creating sustainable value; and driving performance & transformation) and results (stakeholder perceptions; strategic & operational performance). The EFQM model is based on a connection between the purpose and strategy of an organization and how that connection is used to help it create sustainable value for its relevant stakeholders and deliver outstanding results (EFQM, 2020).

A comparative analysis of these guidelines and frameworks shows that they are based on a process management approach, as it enables HEI to achieve their objectives, monitor their performance, and adapt to emerging challenges (Da Silva, Vieira, & Da Silva, 2017). Additionally, HEI can ensure that it is delivering high-quality education and services to their students and other stakeholders.

2.2. Digital transformation in quality management systems

The literature on digital transformation and quality management systems is recent and usually states that digital transformation can impact quality management systems (Carvalho, Sampaio, Rebentisch, & Oehmen, 2020; Mayakova, 2019; Menshikova, Piunova, & Makhova, 2019).

Menshikova, Piunova, & Makhova (2019) found that there is a need to transform quality management systems in the digital economy. They suggest an integration of the quality management system into the general management system by establishing the digital platform in the organization, emphasizing the need for risk identification at all stages of system implementation. In the same line, the research carried out by Mayakova (2019) found that digital transformation of quality management can have positive effects on organizations. An integrated model of quality management in the context of digital expansion was designed, based on the process approach (Mayakova, 2019). Figure 1 presents the model that combines the key areas of quality management and digital transformation.



Picture 1: Quality management model in the context of total digitalization
Source: Mayakova, 2019

Other authors found that digital transformation of quality management systems can impact the quality management stakeholders (Manakhova, Levchenko, & Esina, 2021) and the tools and methods of quality management (Carvalho et al., 2020). Consequently, digital transformation can have a significant impact on quality management systems.

3. METHOD

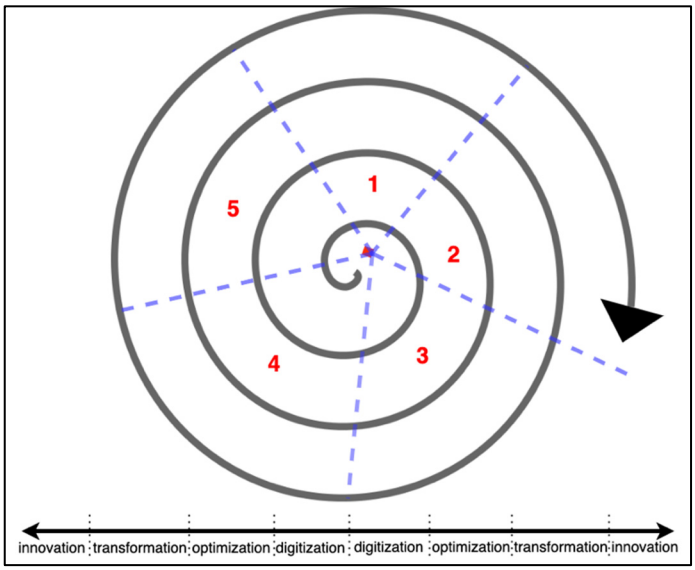
By implementing a QMS, a HEI is working to meeting its quality standards and continuously improving its processes to provide a high-quality education to its students. By adopting digital transformation, HEI is seeking to improve its operations, enhance student experience, and stay competitive in the ever-changing education landscape. As it turns out, things come together, and so the innovation and digital transformation of the QMS contributes to the digital maturity of the HEI and consequently to its efficiency, effectiveness, quality, and agility.
Change for the better and continuous improvement are the two key concepts of the Kaizen methodology (Imai, 1986). Such concepts are also fundamental to quality management and innovation and digital transformation. Table 1 provides a mapping between the digital transformation steps and the Kaizen methodology steps. From the combination of digital transformation and Kaizen methodology, arises the Digital Kaizen concept, that is being used by authors for the development of large-scale digital transformation projects (Dang-Pham, Hoang, Vo, & Kautz, 2020, 2022).

Table 1: Mapping between the digital transformation and the Kaizen methodology main steps

Steps	Digital Transformation	Kaizen Methodology
1	Understanding the current state	Identifying areas for improvement
	Identifying improvement goals	
2	Developing an action plan	Developing a plan for change
3	Implementing the changes	Implementing the changes
4	Monitoring and measuring progress	Measuring the results
5	Standardizing new processes	Standardizing the process
6	Sustainability and continuous improvement	Continuously improve

The systematic execution of the steps listed in Table 1 leads to the identification of improvements and consequently to actions towards its their implementation. When QMS and digital transformation or the digital Kaizen concept are combined, it becomes necessary to unfold the stages leading to a systematic phased approach. Picture 2 illustrates the

proposed systematic phased approach. The steps 1 to 5 correspond to the Kaizen Methodology steps presented in Table 1. Step 6 corresponds to the iterative cycle process. Improvements are applied at each iteration and if such improvements are part of the digital transformation, then the system will evolve towards an upper stage of digitalization (digitization – optimization – transformation – innovation).



Picture 2: Combining digital Kaizen and digital transformation – Systematic Phased Approach
Source: Authors

The QMS that the School of Management and Technology - Polytechnic of Porto has is currently in stage 1 (digitization). The work carried out under the Quality 4.0 - Digital Transformation in Quality Management Systems project focuses on the digital transformation of the QMS, raising it to stage 3 (transformation). The achieve it the six steps of the Kaizen methodology will be applied.

3.1. Combining Quality Management and Business Process Management

It is often mistakenly believed that digital transformation is solely focused on implementing new technology and business strategies. However, the truth is that the most essential aspect of digital transformation is the transformation of organizational culture. Since the scope of the project is the evolution of the QMS system, moving from phase 1 of the digital transformation to phase 3, we start from the assumption that the organization culture issues are addressed, and the focus now is the transformation stage. This stage involves using technology to fundamentally change how a business operates and interacts with customers. This may involve introducing new products or services, adopting new business models, or creating entirely new customer experiences.

The revised ISO 9001 promotes Business Process Management (BPM) as a technique that adds value to the QMS itself and improves the final service or product. BPM is an organizational approach that focuses on recording and improving business processes to help people in an organization work more efficiently. This is achieved by mapping, recording, and documenting an organization current end-to-end process. Documenting processes in a process map allows process owners to identify where inefficiencies are and gaps to improve. This helps the organization to base its decisions on evidence and data, while making the necessary changes to each process to eliminate waste, reduce costs and eventually improve efficiency. BPM automation comes from Workflow Management (Workflow Automation Tool) that connects the people who execute the processes with a digital system and the right tools for a more efficient way. BPM is described by several authors (Dumas, La Rosa, Mendling, & Reijers, 2013; Rosemann & vom Brocke, 2015) and used in numerous projects.

Business Process Model and Notation (BPMN) is a graphical notation used to model business processes. It provides a standardized way for businesses to visualize and communicate their processes, making it easier to understand and analyze them. It uses a set of symbols and graphical elements to represent the various components of a business process. BPMN is widely used in business process management (BPM) and is supported by most BPM software tools. It has become the standard for modeling business processes and is used by organizations of all sizes and industries. There are evolutions on BPMN that add important features. One of the evolutions is called intelligent Business Process Model and Notation (iBPMN). iBPMN adds more intelligence and automation capabilities to the notation. It includes additional symbols and elements that can be used to model more complex and dynamic business processes, such as those involving artificial intelligence (AI), machine learning, and decision-making algorithms.

This project starts from a quality management system in stage 1 of the digital transformation process (digitization), applies the steps identified in the Kaizen methodology to, through modeling and automation tools (iBPMN), transform these processes making them more efficient and agile.

4. DIGITAL TRANSFORMATION OF QMS PROCEDURES

In this section we present the digital transformation process of the quality system procedures in use at the School of Management and Technology - Polytechnic of Porto.

4.1. Applying the Kaizen Methodology

The project started with the application of the Kaizen methodology. In this way, the procedures to be transformed were identified, prioritizing them according to the impact they represent on the efficiency of the process to which they belong. Once the procedures were identified, an attempt was made to model the new business process using iBPMN modeling tools. The main interlocutors of the procedure were involved in the modeling, thus allowing the assessment of the true role of each interlocutor in the procedure, as well as the flow of information to be considered in the business process.
Once the business process was validated, the next phase was its implementation using an iBPMN system. The choice of the iBPMN system to use fell on the Camunda tool (Zuhaira & Ahmad, 2021). The choice was based on a set of requirements, among which stands out the adoption of an open-source solution and a solution that, in addition to allowing modeling, facilitates interoperability with existing systems as well as the automation of the business processes. Modeling and automation through an iBPMN solution also facilitates the collection of process-related metrics. In the workflow engine, it is possible to obtain data at any moment, such as the status of each process, the number of processes running for a given user or the average time between processes or process tasks. The collection of these data contributes to the measurement of the results obtained with the modeling of the process. A well-defined process, capable of responding to the needs of the business and audited at every moment, contributes to its adoption, becoming a standard in the sense that everyone performs operations in a similar way, leading to greater consistency thus reducing the likelihood of errors occurring. The fact that the procedure is graphically modeled and easily understood by the organization facilitates the continuously improve needs, thus reducing obstacles to its change whenever justified.

4.2. Modeling and Automation Requirements

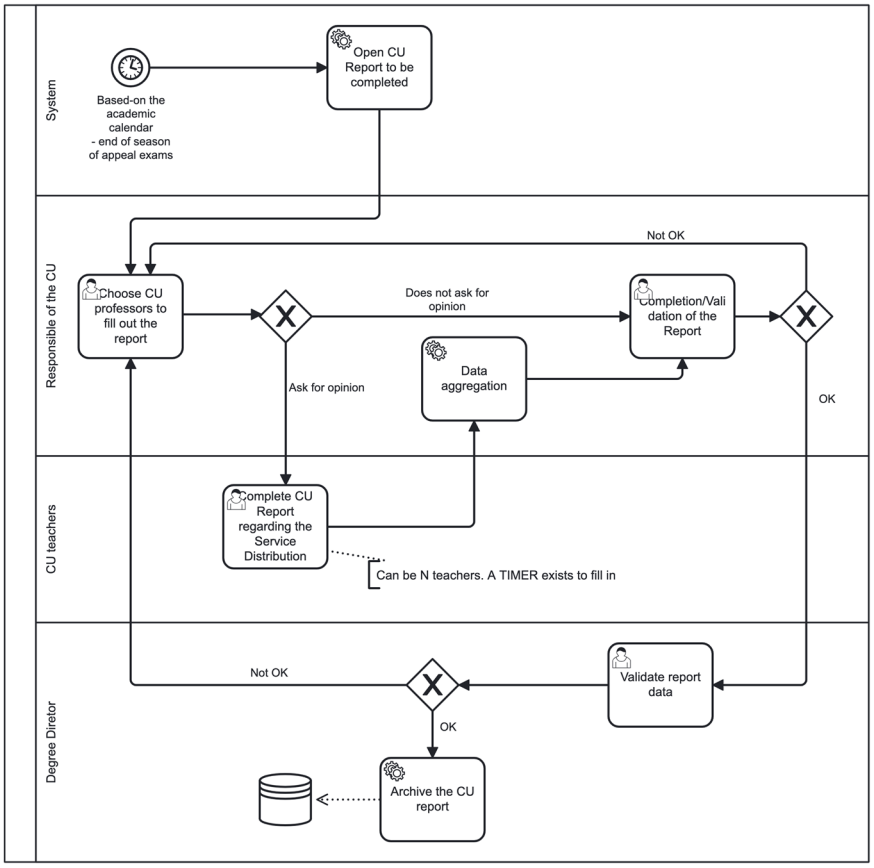
For the modeling and automation of business processes, the following list of requirements were considered:

1. Agility: processes can be completed more quickly, not only due to better orientation of pending work, but also due to faster decision-making and the potential reduction in the number of human errors;
2. Ease of change: the processes will not be static and will be able to evolve quickly, accompanying the needs of an activity that also evolves dynamically;
3. Productivity: the availability of action/decision support mechanisms allows for a clear increase in productivity accompanied by an increase in the quality of the work carried out;
4. Risk reduction: the support tools, in concert with automatic validation mechanisms, allow the proactive detection of possible errors, reducing the risk of their occurrence;
5. Compliance and transparency: the possibility of analysis and detailed review of the activity developed, associated with the definition of automatic validation rules, promotes compliance of the work with procedural rules, as well as transparency about the activity. This aspect can be particularly important for departments and managers, who will be able to have detailed access to activity details and receive automatic notifications in cases that are identified as subject to review;
6. Less human dependence on the execution of processes: aspects such as automated document production make it less dependent on specific people, allowing that, in cases such as unavailability due to holidays, illness, or others, the activity can continue without interruptions;
7. Repeatability: in terms of procedural execution, the system will promote the fulfillment of similar processes under similar conditions. This aspect directly results in the promotion of the homogenization of the level of quality in the execution of processes;
8. Reliability: the permanent updating of information from dynamic, reliable and detailed data sources, as well as the dynamic application of rules for inferring new information, not just from static data, but applying real intelligence in the combined analysis of data from different sources, promotes the reliability of decision-making processes;
9. Dematerialization: the adopted approach will definitively promote spontaneous document dematerialization, as well as the implementation of principles such as Only Once (Mamrot & Rzyszczak, 2021) and digital interoperability.

These requirements also weighed in the choice of Camunda, as the modeling and automation tool.

4.3. Use-Case: Transforming Quality Processes using iBPMN

This section presents the transformation of a procedure related to filling in the curricular unit report(CU report). In the pre-digital transformation QMS version, the CU report is opened at the beginning of the school year. The person in charge of the CU must remember, according to the defined procedure, to complete the report as soon as the academic semester ends. If the person in charge of the UC wants to collect information from the teaching team about the functioning of the CU, he will have to do it outside the system (e.g., by email) and consolidate all the inputs received.
This procedure, which is simple to describe and carry out, was analyzed and aspects to be improved were quickly found. One of the aspects has to do with the timing of the opening of the report for completion, another has to do with the possibility of collecting information about the functioning of the CU from the teaching team by defining a timer for data collection. The information from the various teachers is aggregated in the report and after being validated, it is made available to the person in charge of the CU for appreciation and archiving. The result of the process modeling is shown in Picture 3.



Picture 3: iBPMN of the curricular unit report process
Source: Authors

One of the advantages of modeling using iBPMN is that the flowchart shown in Picture 3 is loaded and executed into a process execution engine. A manual or service action is attached to each task thus allowing human-to-machine (synchronously) or machine-to-machine (synchronously or asynchronously) interaction. Another great advantage with process modeling using iBPMN and the Camunda process engine is that each intervening party knows at every moment the task they must perform, and it is possible to visualize the process at every moment and obtain its status all the time. With the previous system, this information did not exist, thus emphasizing the advantages of digital transformation, namely efficiency, agility and ability to respond to change.

5. CONCLUSIONS

Digital transformation is seen as a necessity for organizations to face the need for change and continuous improvement. Usually, it is associated with the industry and the introduction of technology in it, thus making it more modern and operational in a global world. It turns out, however, that innovation and digital transformation has a much broader application. A HEI, for example, has numerous processes, procedures and documents that support its activity. In the specific case of the School of Management and Technology - Polytechnic of Porto, a QMS in line with ISO 9001 was

adopted and used as support for the activity carried out. It is a mature system regarding the processes, procedures, and adoption, but it lacks for transformation to make it more agile and efficient. It is from this need that the Quality 4.0 project was proposed and approved.

Throughout this paper, the role of digital transformation and the stages inherent to it were highlighted. The QMS is in stage 1 - digitization - that is, it consists of a set of documents in digital format that are governed by procedures. Its transformation into business processes, modeled through iBPMN solutions, allowed its automation and integrated execution in a process engine, thus contributing to an easy redesign of procedures and to a better monitoring of the same by the various actors in the process. With systematic phases approach, the procedures passed from stage 1 of digital transformation to stage 3. To date, we have several processes modeled and, recognizing the advantages of the digital transformation, this paper contributes with a methodology and a set of technologies to support a smooth and value-added digital transformation of a QMS. Although the work presented is focused on an HEI, it should be noted that the approach is generic enough to be successfully applied in other organizations.

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WHAT AFFECTS WAGES?

Abstract: For a long time, economic theories did not deal with wages and differences in wages. My main goal is to present Mincer's wage equation and the criticisms of his theoretical and empirical research. After that, I examine how different authors felt about wages, wage determination, and the reasons for wage differences. In connection with the analysis framework, I set out to distinguish two main factors: external and internal (individual) factors. Within the external factors, I examine the studies that analyze how region, industry, sector (private or public), city sizes, company sizes, and unions affect wages. Within the internal factors, I focus more on articles that deal with the influence of education, ability, age, race, gender, and marital status.

Keywords: wage determination, human capital theory, wage differences

1. INTRODUCTION

For a long time, economic theories did not focus on wage determination, wage theories, or wage differences. My main goal in this paper is to present Mincer's wage equation and its theoretical and empirical criticisms. After that, I introduce how different researchers analyzed the wage-determining factors and the reasons for the differences in wages.

2. WAGE DETERMINATION BY MINCER

In almost every article, researchers associate the theory of human capital with three names: Theodore W. Schultz, Gary S. Becker, and Jacob Mincer. Economists and researchers have been looking for the determining factors of wage differences for a long time. Adam Smith has already noted that the cost of education in a particular occupation affects average income. Friedman and Kuznets (1947) examined the incomes of different professions. They realized that wages are high in those occupations where entry costs must be compensated. Mincer (Rosen, 1992) was the first to connect the theory of human capital with research on wage inequalities.

Mincer (1958) emphasizes that income inequalities can be observed in terms of the shape and parameters of statistical frequency distributions. Because of that, the theories of factors affecting personal income distribution should predict the characteristics of observable statistical constructs. The theory states that all individuals have the same skills and opportunities in the labor market. Occupations differ in the number of prior studies that they require. Participating in education takes time, and each year postpones the individual's entry into the labor market, thus only receiving their first salaries later and reducing the amount of income that can be collected during their life. Differences in wages between occupations are due to different education requirements. Just as formal education can be measured by the time an individual spends at school, the other part of training (experience) can also be included in the model by introducing the time the individual spends at the workplace. In Mincer's 1958 model, he measured the combination of formal training and experience with age and looked for differences between occupations. Mincer (1962) used experience instead of age in the following article.

In 1974 Mincer devoted an entire chapter in his book to examining the effects of education and experience. He used logarithmic wage in his equation, on which he regressed education and not only experience but experience squared, as well. This is because experience is assumed to have a non-linear relationship with wage. Based on all of this, we can talk about the following equation.

$$\ln(\text{wage}) = \beta_0 + \beta_1 \text{ education} + \beta_2 \text{ experience} + \beta_3 \text{ experience}^2 + u$$

Initially, Mincer (1974) wanted to focus on education only since differences in school years can explain 7% of wage inequalities. However, he noticed that human capital development continues beyond schooling. Post-school investment, i.e. experience, must also be considered when determining the value or remuneration of human capital. Experience has a significant impact on salary. He pointed out that the effect of experience on wages, although positive, after reaching a certain level (which in the case of his model was visible after nine years) is decreasing. Because of that, he considered it essential to include the square of experience in the equation. Thus, the equation could explain 30% of wage inequalities.
In the database (CPS: Current Population Survey) processed by Mincer (1974), experience data was unavailable. That is why he used an assumption that if experience (t) is counted from school completion, then work experience is equal to the current age minus the number of years spent in education.

$$t = (A - S - b),$$

where:
A = age (at the moment)
b = age at starting school (6 years)
S = number of years spent in education
During his research, he had the following assumptions:

- (1) In the absence of investment after finishing education, the individual with S years of study has a flat age-income profile.
- (2) In the lack of investment after completing education, the discounted present value of life earnings would be the same for all individuals regardless of how many years they attended school.
- (3) The number of years spent at work is independent of the years spent at school.
- (4) The return on investment after education is constant because it increases income.
- (5) The investment rate decreases linearly during the investment period after completing education.

Mincer (1974) emphasized that special attention must be paid to selecting the appropriate wage variable because introducing the number of weeks worked into an equation with a weekly wage would increase the explanatory power of the equation even further. He pointed out that the only drawback of this idea is that it assumes the same post-school investment for all people, which can vary from person to person.

2.1. Criticism of Mincer's wage equation

Blinder (1976) criticized Mincer's equation in his study. In his opinion, there are alternative assumptions that differ from Mincer's and would lead to a further empirical analysis of the human capital model. First of all, it goes back to Mincer's assumptions.
In the case of the first condition (1), he pointed out that income is affected by decisions of labor supply and also by the number of hours spent at work. Because of this, several questions arose regarding its correctness.
Concerning condition (2), he distinguished several problems. Blinder believes that the discounted present value would only be equal if every individual had the same opportunity to enter the capital market and had the same skills in human capital development and income generation. If the workplaces were the same in things other than different levels of education, there would be no various risks or fringe benefits.
He accepts assumption (3), but with (4), he points out that the finite life condition becomes problematic, especially concerning the analysis of older workers.
For condition (5), he did not agree with linearity. He understands the importance of simplification, but many other functions would be more suitable in empirical studies.
Secondly, he pointed out the difference between experience and calculated experience. He showed that the computed experience is correct if we can talk about continuous employment, thus excluding those who were on maternity leave, served in the military, or were unemployed.
Based on these, he proposed an alternative model:

$$logW = f(S, X_1, X_2, \text{other variables})$$

Where:
logW = logarithmic wage rate
S = number of years spent in education
X_1 = relevant (given workplace) work experience
X_2 = every other experience
The model allows greater flexibility because it avoids linearity, but because of this, we can also accept several criticisms. For example, if we did not have actual data about work experience, then we can no longer apply the model.

3. WAGE DETERMINATION

In connection with the analysis framework, I distinguish two main factors: external and internal (individual) factors. Within the external factors, I examined the studies that analyzed how region, industry, sector (private or public), city sizes, company sizes, and unions affected wages. Within the internal factors, I dealt in more detail with articles dealing with the influence of education, ability, age, race, gender, and marital status.

3.1. External factors

In his study, Reder (1962) examined the differences in wages. He drew attention to the fact that it is challenging to avoid drastic simplifications during measurement when we analyze the behaviour of wage differences. Researchers often treat workers at all skill levels and industries as one quantity and the average or median wage as one price. During the analysis of wages, in many cases, the analysis of fringe benefits is wholly omitted; therefore, the study assumes that the distribution of fringe benefits is similar to the distribution of wages. In addition: in the case of wage levels, average hourly wages have always been analyzed, which must also include overtime. Reder surveyed skilled and unskilled workers in different occupations. He noticed that we could talk about differences between skills and industries, but the reasons behind them cannot be measured in the short term, only in the change of employment; thus, the wage characteristics of the industry were formed.

Behman (1966) wrote about the wage determination processes of American manufacturing companies. He analyzed the relationship between skilled and unskilled workers and industry wage differentials. He stated that labor is not a homogeneous factor, so an industry can have different labor supply functions in the same period if it wants to employ people with other skills and education levels. The author compared skilled employees to unskilled ones, so in the first step, he defined who was a skilled worker.

- Individuals who acquired their skills during internships, work experiences, or informal on-the-job training.
- Individuals whose skills can be utilized in other industries and therefore may receive job offers in different industries.

According to the theory, workers want to change jobs if the new job's net benefit exceeds the current one's use. Therefore, labor mobility says that the highest wage influences the distribution of workers. In this theory, we assume the entire labor supply and full employment. The job has the same characteristics in every industry, making the worker's decision a simple process. The theory rejects even the idea of voluntary unemployment.

In contrast, Behman noticed that the unsatisfied but skilled workforce was the largest group. They are the ones who migrate from one job to another without unemployment intervening, so their mobility will be low when there are not many jobs, but they will respond to an increase in labor demand, as well. However, this statement is only valid for skilled workers. Because of all this, the skilled worker hypothesis states that an industry with a high proportion of skilled labor is much more willing to change wages following the needs of workers than an industry with a relatively low ratio of skilled labor. This is different for the medium-skilled and unskilled workforce.

Zweimüller and Barth (1994) examined wage differences in six OECD countries. The authors lacked a broader explanation of wage differences between industries, so they started the research. They refer to Krueger and Summers (1986), in which the authors pointed out that workers who move from one industry to another can experience significant wage changes compared to those who stay. This change can increase if they choose a higher-paying sector and decrease if they continue their career in a lower-paying industry. In addition, referring to Dickens and Katz (1987) stated that we can also see changes within occupational groups. The productivity factor of Becker's (1964) human capital theory cannot explain these factors since, in many cases, the individual's productivity does not change. The second case excludes wage differences resulting from different occupations. Zweimüller and Barth examined: Austria, the United States of America, Canada, Germany, and Norway, including analysis of trade union effects, centralization distribution effects, and cross-country effects. It is important to emphasize that different countries have different characteristics, so while Austria, Norway, and Sweden are corporative countries, i.e. they do not have trade unions, Germany was characterized by highly high trade union membership (2016 ILO data: % of trade union organization Germany 17, Austria 26.9, Sweden 67), on the other hand, the low weight of trade unions is typical in Canada, and the United States are characterized with low union membership. Due to the available country data, it was necessary to run three different regression equations. In all cases, the wage was represented by a logarithmic variable (hourly or weekly). In addition, education, experience, its square, gender and race, and an industry dummy variable were included in all equations.

The explanatory power of the regression increased significantly with the inclusion of the industry variable in the equation. The industry variable was able to provide the newest information because it was shown that there are industries that pay above-average wages in each country, such as Mining and Insurance. Some industries, such as Trade, Hotels, and Restaurants, pay below average. The industry wage structure is very similar in all countries. However, the distribution of wages shows significant differences between countries. This is unsurprising since reducing wage differences is of prime importance for the more unionized and corporatist countries (Scandinavian countries). This is less true in Austria, where trade unions aim to increase employment. Due to decentralized wage determination in Canada and the United States, wage differentials between industries can be as much as fourfold, less likely to be tolerated in corporatist countries.

Dickens and Katz (1987) examined wage differentials within industries. The authors found several kinds of research about wage differences for workers with seemingly identical characteristics in different sectors. According to the authors, previous studies failed to differentiate between union and non-union members. The article aimed to demonstrate whether a focus on union membership can help better explain wage differences between different industries. They concluded that, although individual characteristics and environmental factors were widely controlled, wage differences also remained in union and non-union groups. It has been shown that the wages of different occupations are highly correlated across industries, i.e. if a field is highly paid in one sector, it also has a wage premium in the other industry. They concluded that there are better-paying industries, so if someone is looking for the same job in a higher-paying sector, they can have a higher wage in the same occupation. On the other hand, if you look for a job in a lower-paying industry, even in a well-paying profession, you still have to expect an inevitable wage loss.

Van der Gaag and Vijverberg (1988) examined the wage differences between the private and public sector and their causes. The authors turned back to the theory of human capital. They point out that investing in human capital concerning the return on investment is one of the significant concerns of many researchers. To non-competitive markets and their wages, they first drew attention to union influence, believing that union members experience wage differences compared to non-union members. It should be emphasized here that this difference is only possible between organizations rather than within. In most continental Europe, if a given organization has a union and a collective agreement is concluded, then the wage included applies equally to everyone, whether that person is a member or not. So it is a matter of wage differences between organizations with a union and those without. In the second part of their investigation, they turned to public sector wages. In connection with state employment, we are talking about a wage scale, which also generates differences compared to those working on the market. After that, the influence of the state was investigated, and it was found that it tries to influence the market or market wages in several cases. The introduction of the minimum wage is also such an initiative. These drive a wedge between the marginal productivity of the individual and his compensation, so the market no longer determines wages. By the end of the 1980s, many researchers were dealing with the question: are we talking about wage differences between the private and the public sector?

In most cases, developed countries were examined; therefore, the authors aimed to investigate a developing country. They chose Ivory Coast, seeking to expand Mincer's equation. Their goal was to explore both sectors. Their regression equation analyzed the effect of education, skills, and experience on wages. They concluded that although wages are higher in the private sector, in a developing country with a high proportion of government workers, public employment may be more attractive because non-wage factors make public employment more attractive to employees. Such positive benefits include job security, fixed working hours, fringe benefits, paid sick leave, paid vacation, and social security.

In many cases, wage differences also result from differences in education. Interestingly, the private sector offers higher wages compared to the public sector at lower education levels and relatively lower wages at higher education levels. This may be because, while a significant part of government jobs in a developing country requires higher education, lower education is sufficient to work in a factory.

Stelcner (et al., 1989) also wrote a joint article with the authors, in which a study in Peru examined the differences between the public and private sectors. The results supported the conclusions of the previous article. This article discussed the effect of experience, time spent in education, education, and parental education on wages. Experience is given almost the same importance in both sectors, yet it can be noticed that the time spent in education and the diploma are more critical in the public sector. If the worker studied at a public school, he could expect a higher wage in the public sector but a lower one in the private sector. A father's higher education level can also significantly increase wages. However, their most significant conclusion was that wage offers in the public sector are characterized by higher variability than private sector ones.

To see what characterizes developed countries, I examined the study of Mueller (1998), who conducted his research in Canada. The author used quantile OLS regression to study the wages of the two sectors. He noticed that public sector workers have a wage premium compared to private sector workers. This premium is the highest for state government employees. This premium would be negative only in the case of rural male workers. The wage premium in the public sector is higher for women also. When comparing those with lower salaries, the regression showed that this premium is much higher in the public sector. These results prove that even in the case of Canada, a developed country, workers in the public sector receive higher wages than members of the private sector with the same characteristics.

Homund and Zetterberg (1990) also examined the wage-determining variables in different industries by comparing five other countries. During the empirical research, they had the opportunity to examine the panel database of Sweden, Norway, Finland, Germany, and the United States of America between the early 1960s and the mid-1980s. Their most important result was that in the United States of America, industry wages respond much faster to sectoral prices and productivity changes, even when the workers' human capital and demographic characteristics are controlled for in the regression equation. An interesting finding is that the U.S. has the most decentralized wage system among the five listed, yet inflation, unemployment, productivity, and sectoral prices significantly impact workers' wages. This clearly shows that American wages are much more flexible and react more quickly to the shocks of the market. These changes last much longer than in European countries, where the reaction is slower or almost minimal, and there is no visible long-term effect. It can be shown that in the case of industries with a higher proportion of unions, the response to external wages is much more often, which the authors identify as an insider effect.

Fuchs (1967) examined wage differences in different regions and city sizes. The researcher wrote and published in the United States of America, which is essential because much lower wages characterized southern states. Fuchs also highlighted that regional wage differences were significantly more significant for unskilled labor than for skilled labor. The author drew attention to the fact that in the case of previous studies, gross state wages were discussed, or only a few specific industries or occupations were examined. During these researches, wages were calculated from actual income or annual income. Still, in many cases, only certain types of workers were discussed; therefore, they needed a complete picture of hourly wages. It can be seen that self-employed or hourly workers were not examined at all. Age, education, race, and gender were also missing from previous research. If we look at the data with these characteristics, correct conclusions may be drawn regarding regional differences. After these findings, the author began to examine all employed people over the age of 14 who, according to their admission, did not work in agriculture. These people can be classified into different groups according to the following aspects:

- Race: white and non-white
- Gender: male and female
- Number of years spent in school: 0-4, 5-8, 9-11, 12, 13-15, 16, and more
- Age: 14-19, 20-24, 25-34, 35-44, 45-54, 55-64, 65 and above
- Region: North-east, Middle-North, South, and West
- City size: 7 different groups from rural to the standard statistical metropolitan territory, which is 1 000 000 people and above

When calculating the annual working hours, the weekly working hours of each employee were multiplied by the number of weeks they worked. It is important to emphasize that the multiplication was carried out on an individual level for each employee. An estimated income was determined, then divided by the aggregated hours worked, and based on this, an expected income was obtained for each region and city size. Based on all this, the following calculations were made where::

A = actual yearly income
K = number of worked weeks
L = number of worked hours in April
H = K*L = number of estimated worked hours
W = A/H = estimated average hourly wage
c = gender, race, age, education
R = region
u = U. S.
s = city size

$$E_r = \frac{\sum_c H_{cr} W_{cu}}{H_r} = \textit{expected average number of hours worked in r region}$$

$$R_r = \frac{W_r}{E_r} = \textit{actually expected income in r region}$$

It should be emphasized that the differences are relative, obtained by dividing the actual by the expected. For this reason, an absolute difference test, which could be calculated from the expected real wages, could be substantial.

These were the theoretical basis for today's research. In the last part, I will introduce one of the newest wage determination research in connection with external factors, and we will also see some internal factors.

Fogg (et al., 2018) examined the American labor market. The authors pointed out that over the past four decades, the average income benefit of completing a bachelor's degree has increased significantly. The study examines three main factors in the evaluation of human capital. These factors are essential skills, finished school, and work experience. The researchers used a regression equation to examine the effect of the factors listed below on wages. In addition to the Current Population Survey (CPS) database, the PIAAC database was used. First, descriptive statistical data were presented, contributing to the statement that there is a positive relationship between education and skills and a strong positive relationship between skills and income. Based on all of this, workers with a higher level of education receive higher wages than workers with a lower level of education. Measurable differences could be found in the average wages between workers with the same education when examining their reading and addition skills. The authors admitted that they see their model as an extension of Mincer's equation. Education was defined with a dummy variable corresponding to terms described in the PIAAC database, such as high school diploma, post-high school vocational qualification, college degree, bachelor's degree, and master's degree. The third measure they used is the worker's skills, which were taken from the PIAAC database and examined the scores and levels of individuals' numeracy and reading skills. Six wage regressions were analyzed, and abilities were inspected with four sub-regressions. They distinguished four different meanings of skills:

- Skill, standardized points achieved on reading and writing tests
- Skill standardized points achieved on the numeracy test
- Skill, level achieved in the reading and writing test
- Skill, level achieved in the numeracy test

Below you can find the six different regression equations which were run by the authors. The equation was gradually expanded with more and more explanatory variables. In the case of the first equation, the effect of skill on wages was investigated only.

$$\ln(\text{wage}) = \beta_0 + \beta_1 \text{ skill} + u$$

In the second equation, they analyzed the effect of skills and education, as well. They investigated the effect of different levels of education on wages.

$$\ln(\text{wage}) = \beta_0 + \beta_1 \text{ skill} + \beta_2 \text{ education} + u$$

In the third equation, they analyzed the effect of experience and the skills of writing in English. This is important because, in the PIAAC database, there were non-American citizens as well.

$$\ln(\text{wage}) = \beta_0 + \beta_1 \text{ skill} + \beta_2 \text{ education} + \beta_3 \text{ experience}^2 + \beta_4 \text{ writing in English} + u$$

In the fourth equation, the authors have included variables that are independent of the person but have an impact on the wages. Such is the sector, which alone can determine the starting salary from which a given person's salary starts. This is also true for occupation, since in many cases the salary of a lawyer is difficult to compare with the salary of a shop assistant, and this is not only due to education.

$$\ln(\text{wage}) = \beta_0 + \beta_1 \text{ skill} + \beta_2 \text{ education} + \beta_3 \text{ experience} + \beta_4 \text{ writing in English} + \beta_5 \text{ sector} + \beta_6 \text{ occupation} + u$$

The authors included the number of hours worked per week, educational status, which refers to enrollment, and residence first in the fifth equation. The place of residence is particularly important because it shows the city size in which the person lives, which can also affect the salary scale.

$$\ln(\text{wage}) = \beta_0 + \beta_1 \text{ skill} + \beta_2 \text{ education} + \beta_3 \text{ experience} + \beta_4 \text{ writing in English} + \beta_5 \text{ sector} + \beta_6 \text{ occupation} + \beta_7 \text{ number of hours worked per week} + \beta_8 \text{ educational status} + \beta_9 \text{ residence} + u$$

The last equation completes the regression. This one takes into account gender and race differences, as well as if someone was not born in the United States of America. With the inclusion of disability, they calculated with variables indicative of discrimination, the filtering out its effects have a significant impact on the effectiveness of the model.

$$\ln(\text{wage}) = \beta_0 + \beta_1 \text{ skill} + \beta_2 \text{ education} + \beta_3 \text{ experience} + \beta_4 \text{ writing in English} + \beta_5 \text{ sector} + \beta_6 \text{ occupation} + \beta_7 \text{ weekly worked hours} + \beta_8 \text{ educational status} + \beta_9 \text{ location of home} + \beta_{10} \text{ gender} + \beta_{11} \text{ race} + \beta_{12} \text{ foreign} + \beta_{13} \text{ disability} + u$$

The study significantly contributed to the decision of which external factors are significant in the case of a wage determination model. As a result, sector and place of residence will be included in my wage-determining equation. In addition to all this, I feel it is important to point out that this study already included to a significant extent individual internal factors such as education, experience, occupation, gender, and disability, which I also consider important from the point of view of my equation.
In the next subsection, I focused on the studies dealing with internal factors to finally compile my own, individually defined wage determination model.

3.1. Internal factors

Sorkin (1969) looked for answers to how skills and education affect and explain wage differences between occupations. In the article, three simple models are tested on an American database. In the first model, wages are presented by the level of education and skills; in the second model, the wages of occupations are explained by the worker's skills, education, and age. In the third model, the author analyzed the relationship between unemployment in a given occupation and skills, education, and average age. Based on the results, skills are more critical than education among the factors affecting wages. The author explains this by saying that the number of years spent in school only shows how many years someone has completed, while skills utilize what has been learned.
Ashenfelter and Krueger (1994) also examined the effect of education on wages. They had the opportunity to study twins who had different educational levels. They realized that the impact of an additional year on the salary is much higher than the previous ones, which can increase by up to 9-12%. Four years later, Ashenfelter and Rouse (1998) determined, based on the analysis of wage data of 700 pairs of identical twins, that the previous estimate of 9% was correct. However, there may be minor deviations due to differences in ability. They stated that better-skilled individuals complete more years of schooling not because it has higher marginal benefits but lower marginal costs.
Smith and Welch (1979) investigated wage inequalities using the CPS database. Their study included education, region, state employment, experience, and the number of weeks worked. Wage differences were examined between white and black men and within the groups of white and black men. They found that although black men suffer a wage disadvantage compared to white men, the distribution of wages within the black male group is more unequal than within the white group. In the case of older black workers, we saw substantial wage inequalities compared to the older white male groups. Education and the number of hours worked per week were found to have the highest explanatory power. They stated that the number of completed school classes also shows significant differences within the group of blacks.

Although trends in employment (number of hours worked) improved between 1960 and 1970, both between groups and within groups, significant differences remained within the black group.
In their study on discrimination, Oaxaca and Ransom (1994) examined wage differences using the CPS database. The sample was narrowed down to individuals over the age of 25. They also used a logarithmic wage regression model, where the dependent variables included experience, measured in years (both linearly and as a quadratic term), the number of years spent in school (quadratic and linear terms), public employment, industry, city size, regional location, and occupation. Hourly wages were used as the basis, and the sample was analyzed for gender and racial differences. Based on these, their equation looked like this:

$$\ln(\text{wage}) = \beta_0 + \beta_1 \text{ gender} + \beta_2 \text{ race} + \beta_3 \text{ experience} + \beta_4 \text{ experience}^2 + \beta_5 \text{ education} + \beta_6 \text{ education}^2 + \beta_7 \text{ state} + \beta_8 \text{occupation} + \beta_9 \text{ industry} + \beta_{10} \text{ region} + \beta_{11} \text{ city} + u$$

Lee and Lee's (2006) research was about wage determination in the Korean labor market. The quantile regression had dependent variables such as education, age, work experience, high-paid intellectual employment, low-paid intellectual employment, high-paid physical employment, low-paid physical employment, place of residence at age 14, current region, gender, marital status, and trade union membership. In the Korean labor market, age is the most significant wage-influencing variable; experience plays a lesser role in the higher wage categories. Education plays a prominent role in wage determination for all wage groups, and its effect is relatively consistent across groups. The return on education is relatively low compared to the American model. According to the authors, the reason behind this is that Korean education prepares you for the challenges of the labor market to a relatively small extent. Female workers are significantly underpaid compared to men, and union membership is more rewarding in higher wage brackets because it does not affect wages in lower wage brackets. In the previous articles, I did not find any research that would have involved marital status in the equation. The question has often arisen regarding wage differences and whether a married woman with children is at a wage disadvantage compared to a man with similar abilities.
To prove that my wage determination model is sufficiently innovative, I examined the research of the last ten years in more detail. Castex and Dechter (2014) wrote about the changing role of education and skills in determining wages. The authors used the following regression equation in their study:

$$\ln(\text{wage}) = \beta_0 + \beta_1 \text{ education} + \beta_2 \text{ ability} + \beta_3 \text{ experience} + \beta_4 \text{ experience}^2 + \beta_5 X + u$$

They had information about the individual's abilities, which measured the cognitive abilities, the average verbal ability, and the average mathematical ability. This is essential information for the employer when making salary decisions, as it shows the new employee's skills. X is a vector for determining the individual ability and family background. The authors highlighted that it would be interesting for future research if they continue to follow these characteristics and thereby determine which attributes of the individual possibly led to a dismissal, promotion, or different career opportunities.
Mehdikarimi (et al., 2015) included the relationship between wages and the number of hours worked in their model:

$$\text{Hourly wage} = \beta_0 + \beta_1 \text{ lnwage} + \beta_2 \text{ rfamilymember} + \beta_3 \text{ lngas} + \beta_4 \text{ middle} + \beta_5 \text{ high} + \beta_6 \text{ voucher} + u$$

Where:
hourly wage = the average hours the individual worked during the week
lncome = the logarithm of the individual's corrected personal income of the previous year
family member = number of family members who worked in the last 12 months
lngas = logarithmic monthly gas (heating, cooking, hot water) bills
middle = workers whose income was greater than $20,599
high = individual's income in the last 12 months > $104,096
voucher = whether the individual received a food voucher
In addition to the previous ones, this article helped to realize that hourly wages are the appropriate dependent variable because, in many cases, workers from lower-wage families only work a few hours a day and do not have full-time jobs. The article also presented the interchangeability and substitutability effect, which shows that workers who earn more are willing to work more.
The presentation of these equations was essential because it helped me create a set of variables I wanted to incorporate into my wage determination model. During the article, I paid particular attention to the regression equations and the properties of the explanatory and control variables within them.

4. RESULTS AND SUMMARY

As a summary, I present in the following table how the work of the author(s) described above influenced the development of my wage-determining equation. Only those researchers who influenced my equation were included in the table. As seen in the table, in my wage-determining equation - a modified version of Mincer's equation - I only used variables that were also given special attention by the author(s) analyzed in the article (Table 1). An exception to this is the family status variable, which is not included in the table and is only mentioned as marital status by Lee and Lee (2006). Still, it is significant from the point of view of determining an individual's income. By family status, I mean whether someone is single or married and whether they have children. I do not assume a significant difference between the wages of a single childless man and a woman. On the other hand, we can find substantial wage differences between a mother with children and a single man.

Table 1: Synthesizing wage-determining equations

	Variable/Author	Mincer (1958)	Reder (1962)	Mincer (1974)	Dickens and Katz (1987)	Oaxaca and Ransom (1994)	Fogg et al. (2018)	Own
Internal	Education	X		X		X	X	X
	Experience			X		X	X	X
	Expericence^2			X		X		X
	Racer					X		X
	Gender					X		X
	Family status							X
External	Occupation				X	X	X	X
	Industry		X		X	X	X	X
	Location				X	X		X
	Union				X			X
	City size					X		X
	Organization size							X
	Other	X	X		X	X	X	

* age, skilled, public employee, skills, other abilities,

Source: Own editing

Based on these, my wage-determining equation became the following:

$$\ln(wage) = \beta_0 + \beta_1 \text{ gender} + \beta_2 \text{ race} + \beta_3 \text{ experience} + \beta_4 \text{ experience}^2 + \beta_5 \text{ education} + \beta_6 \text{ family status} + \beta_7 \text{ occupation}$$
$$\beta_8 \text{industry} + \beta_9 \text{ city size} + \beta_{10} \text{ organization size} + \beta_{11} \text{ region} + \beta_{12} \text{ union} + u$$

Under the other variable, I listed variables that only one author selected. Ultimately, I did not consider them particularly important in my equation either. Among them, we find the skilled variable from Reder's (1962) equation, instead of which Mincer, Oaxaca and Ransom, and myself, used education. The public employee variables used by Oaxaca and Ransom can also be found here. Many variables can significantly impact wages, and many of them could have been included in my equation as control variables. However, my goal was not to examine discrimination or wage differences between different markets but to determine which explanatory variables determine wages the most

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ECOLOGICAL AGRICULTURE AS AN IMPORTANT FACTOR IN THE DEVELOPMENT OF SUSTAINABLE TOURISM IN CROATIA

Abstract: Climate change has been one of the key socio-political issues in recent years, and thus the main goal of "green" policies is to reduce man's negative impact on the environment. Conventional agriculture, which is intensive and extensive and based on unsustainable work methods, primarily on chemical pesticides and the destruction of nature, is one of the biggest polluters and culprits for climate change. The solution to this big problem is organic farming, which is based on sustainable - or at least more sustainable - principles. As citizens increasingly recognize the harms of conventional agriculture, not only for the environment but also for their health, more and more tourists are supporting efforts to make agriculture more sustainable. Therefore, organic agriculture and its output in the form of healthy food has become a new trend in tourism and a competitive advantage for businesses that are in any way related to it. Croatia has great potential when it comes to organic agriculture, especially in terms of the synergy of ecology and tourism, given that tourism, in its current form, is also an activity that harms the environment. The paper discusses the current state of organic agriculture in Croatia and supply, demand, and competitiveness in the context of Croatian organic products in tourism. The scientific paper gives examples of good practice and analyses the perspectives of Croatian organic agriculture in European and global tourism. The role of organic agriculture in the creation and implementation of the system of sustainable development of Croatian tourism is becoming increasingly important.

Keywords: Ecology, Tourism, Sustainable Development, Organic Agriculture.

1. INTRODUCTION

In recent years, it has become clear that the last model of tourism developed in Croatia, which was natural mass tourism, has negative consequences, for the environment, but also cultural and historical heritage, and society in general. Due to the relatively bad economic situation in the country, i.e., the decline of other industries and activities, especially manufacturing ones, tourism has in a way imposed itself as a salvation. This leads to a large increase in the number of apartments, which brings (local) residents either additional income or it is even their primary activity. The growth in the number of apartments leads to major urban changes and creates additional pressure on the existing and mostly insufficient infrastructure, such as sewage. The expansion of rental facilities in some areas is so pronounced that the term "apartmentisation" (the term for "apartment building") began to be used for it. According to the Department of Linguistics of the Faculty of Philosophy in Zagreb. (2015, November 12), Neologism Apartmentisation is a negative phenomenon that implies the "large and often illegal construction of apartments". The term "concreting" is often associated with the term "apartmentisation", and according to the Department of Linguistics of the Faculty of Philosophy in Zagreb (2015, December 10) Neologism Concreting implies "the construction of buildings, usually on the coast, which endangers the natural environment". These two terms - apartmentisation and concreting - have recently been more often associated with the perception of Croatian tourism and in some ways perhaps best describe it. It is a spontaneous model of tourism development management, which calls into question the adequate management of tourism activities and environmental protection, waste management and industrial pollution, construction, etc. The pandemic of the disease COVID-19, which began in 2019 and significantly reduced tourism and economic trends in general, additionally pointed out the pressing problem of mass tourism and its ultimate unsustainability but also focused

on some of the potential solutions. One of them is ecotourism, which is based on ecological agriculture. Ecological agriculture is agriculture that is based on sustainable principles of cultivation and management that do not harm nature or humans, or these damages, or possible negative consequences, are minimal and reversible. Organic agriculture is thus the only adequate alternative to conventional agriculture, which is based on unsustainable and harmful practices such as, for example, the intensive use of pesticides. Conventional agriculture today is one of the activities that most pollute nature and the environment and is considered one of the biggest culprits for climate change, which is one of the key socio-political topics today. As a result, so-called "green policies" are being rapidly developed, the goal of which is to reduce the negative impact of humans on the environment as soon as possible, as far as possible under the given circumstances. Organic agriculture as part of the ecotourism offer would thus have multiple beneficial effects not only on the environment but also on the economy, i.e., it would help generate new ways of doing business that would be sustainable both ecologically, economically and in the general social sense.

2. THE IMPORTANCE OF SUSTAINABILITY IN TOURISM

Sustainability implies the management of a specific activity in a way that is balanced and does not endanger any of the components involved in the processes and activities necessary for the performance of that specific activity. According to Croatian encyclopaedia, online edition from Lexicographic Institute Miroslav Krleža. (2021) Sustainable Development (seen as balanced development, steady development) "is economic development that fully considers the impact of economic activity on the environment and is based on renewable sources of goods. The basic premise of sustainable development is: increasing well-being is measured by increasing the quality of life of the individual and the entire population and not by increasing the amount of produced or consumed material goods or energy. Inconsistency of interests and orientations of different groups and countries regarding the priorities of development goals is the cause of the unevenness of the development plans of individual countries, regions, or continents. Sustainable development, although incompletely defined and open to different, even partially conflicting interpretations, enters as a principle into the development strategies of all countries. The UN, through the Commission for Sustainable Development, assesses the progress achieved in geographical and thematic areas and makes recommendations." You can sometimes come across partially conflicting views on what sustainable development is or should be, but generally, this development (tourism, economy in general) is balanced and stable. Although sustainable development as a component of management guidelines is integrated into the development plans of practically all countries and business plans, visions, and missions, it often happens that practice is largely or even completely different from theory. At the same time, for tourism, sustainability is not only a noble practice that will contribute to the reasonable and balanced use of resources and the preservation of natural and cultural heritage. For tourism, sustainability is of crucial importance for the activity itself, therefore also from a strictly economic point of view. If countries like Croatia, which succumbed to mass tourism without a clear strategy for the development of the activity itself, and especially without a clear plan for the sustainable development of that activity, precisely because of spontaneous and unbalanced tourism, destroy natural and cultural and historical resources on which their tourist offer is based, will directly threaten their position on the global tourist market. In the long term, investing in sustainability is not only an investment in the preservation of nature and other resources but also an investment in the future of tourism itself. Without sustainability, tourism is exposed to a real threat to destroy itself. The real question is not what sustainability is, but how profitable it is. And it turned out that, in the short term, it is often not profitable, but quite the opposite. Tourism, like many other activities, has already sunk into unsustainability to such an extent that the implementation of sustainable development guidelines has become an expensive investment, but as time goes by without investing in sustainability, this sustainability in many of its segments becomes more expensive. In addition to the fact that investment in sustainable development is important for nature and other resources and is therefore important for the further development of tourism itself, of which nature is one of the main resources, sustainability has become or is rapidly becoming, one of the critical competitive advantages. This is an additional reason that should influence decision-makers in tourism - from governments to the management of business entities and organizations in tourism - to speed up and strengthen efforts in the direction of implementing the principles of the concept of sustainable development in their laws, strategies, plans and operations. In the year 2001 author Pravdić primarily criticizes the World Trade Organization, "which violates the principles of sustainable development in numerous ways, but also the very dangerous phenomenon of manipulation of terms and nominal principles of sustainability, based on which many developed and executed projects that are bad for the environment, even destructive, can be seen as sustainable". All these conclusions are from him (Pravdić, 2001): (A) Implementation of sustainability guidelines is slow and ineffective or non-existent. He concludes that the key reasons are that those who should be the bearers of change have neither the interest nor the political strength to implement the principles of sustainability and sustainable development. (B) The problem is that a generally accepted interpretation of these concepts has not been found, and thus real progress in its introduction into legislative practice has been prevented. (C) Ethically based attitudes towards environmental protection should be obligatorily included in economic development. (D) Unclear meaning and interpretations of these terms allow their usual abuse for special or collective goals. (E) A critical factor in the (un)successful implementation of the principles of sustainable development is the insufficient specification of the abilities and characteristics that must be possessed by persons in charge of creating sustainability strategies and their implementation. He especially emphasizes the need for education in the field of sustainability. After that, more and

more authors are dealing with the question of the feasibility of sustainable development, especially in tourism as a very specific and complex activity that directly and for the most part depends on natural beauty. Also, in the year 2019 author Grofelnik, asks these questions: "Is it possible to combine the development needs of modern tourism with the preservation of originality and high-value resources in the environment? From today's perspective and knowledge, is it possible to measurably determine the impact of man on the environment? Is it possible to create realistically based plans for ecologically sustainable development that will satisfy society's wishes for an increase in the standard of living, while at the same time maintaining the high-value characteristics offered environment? Is the sustainable development of tourism as a concept even achievable or is it a utopia?" (Grofelnik, 2019). The author states that it is difficult to give an unambiguous and accurate answer to these questions. This is a problem that persists in Croatia, which at the same time is strongly economically linked to tourism, and the preservation of the environment (as a basic local resource) is a comparative advantage compared to similar competitive areas. As stated by the same author, the analysis of strategic documents, spatial plans and similar documents shows that the elaboration of the approach to the sustainable development of tourism is "insufficiently concrete" (Grofelnik, 2019). The reason for this usually is not only the lack of professional and competent people in Croatian politics and in key positions in the government and government institutions, and the Croatian tourist community, when it comes to the creation of sustainability policies, but also the fact that the implementation of sustainability in the given conditions is a complex problem, often difficult to solve. Author Šimleša in the year 2003 points out the relationship between economy - ecology - society is the basic relationship that is at the core of the principle of sustainable development. "The fundamental question arises as to whether it is practically possible to achieve the material development of a society without endangering the sustainability of natural resources and people's health. This is especially pronounced in tourism, and especially in mass tourism, where it is practically impossible to harmonize the economy and ecology" (Šimleša, 2003). One of the potential solutions is in alternative forms of tourism, such as ecological tourism, i.e., ecotourism. It is about tourism that is responsible towards nature and that does not endanger natural resources. The International Society for Ecotourism describes this form of tourism as "responsible travel to natural areas where the environment is preserved and the well-being of the local population is improved" (Klarić & Gatti, 2006). It can be noted here that ecotourism is not only a form of tourism that preserves nature but at the same time strives not to disturb the way of life of the local community in the destination where it takes place. The dictionary of tourism defines ecotourism as "tourism in which the emphasis is placed on the stay of tourists in a natural and unpolluted environment, especially in areas with a certain degree of environmental protection (national parks)" (Opačić, 2006). According to this definition, the focus is on the tendency of tourists to prioritize a preserved environment, such as national parks, which therefore become more competitive in the tourist market. According to the volume, ecotourism is tourism that has minimal negative effects on the nature and socio-cultural resources of the destination. Ecotourism is a form of tourism that "supports the protection of natural areas by raising the awareness of residents and tourists about the need to protect the environment, creating jobs and achieving economic benefits for the local community and organizations that are responsible for the protection of natural areas" (Klarić & Gatti, 2006). An important part of ecotourism is the interaction between tourists and the local population, for mutual benefit, which is also strongly aimed at strengthening awareness of the need to preserve and protect the environment and cultural heritage. According to the definition of ecotourism given by the United Nations World Tourist Organization, these are all forms of natural tourism whose main characteristic is that tourists are motivated by respecting the nature and culture of the destinations they visit. Croatia has great potential for the development of ecotourism "which needs to be adequately valorised and protected by the concept of sustainable development" (Ćurić, 2010). One of how Croatia can develop ecotourism is through ecological agriculture. This claim is supported by the fact that Croatia is traditionally an agricultural country, and particularly large investments, both financial and other resources, have been focused on ecological agriculture in recent times. Although the investment has not yielded even close to proportional results and considering that in this area there is a lack of expertise and competence of those who implement policies and make decisions, perhaps this is precisely why the solution is in the combination of agriculture and tourism, i.e., ecological agriculture and ecotourism.

3. ECOTOURISM

In December 2022, the Croatian Parliament presented a proposal for the Sustainable Tourism Development Strategy until 2030, adopted by the Ministry of Tourism of the Republic of Croatia, which was adopted in November 2022 at the session of the Government of the Republic of Croatia as "the most important strategic document of Croatian tourism" (NN 2/2023, 2023). The drafting of the National Plan for the Development of Sustainable Tourism from 2021 to 2027 was launched. It is noticeable that both documents put sustainability and sustainable development first, and the following is stated: "The strategy will prescribe a vision for the development of tourism, taking into account the principles of sustainable development, development needs and development potentials of tourism, as well as prescribing strategic goals, key performance indicators and target values of indicators" (NN 2/2023, 2023). It is stated that "as part of the development of the Strategy and the National Plan, the Ministry of Tourism and Sports plans, by the Law on Environmental Protection and the Law on Nature Protection, to carry out a strategic assessment of the impact on the environment and the main assessment of acceptability for the ecological network" (NN 2/2023, 2023). Despite these documents, tourism in Croatia is still relatively unsustainable. Many segments are increasingly unsustainable, and the

previously mentioned processes, such as apartment building and concrete construction on the coast, continue. The strategy for the development of sustainable tourism until 2030, as one of the critical environmental protection measures, states in the first place the encouragement of the use of ecological agricultural products in tourism. Furthermore, it states the encouragement of the agricultural identity of the recognized areas, and its inclusion in the tourist presentation/offer within the agricultural holdings themselves, whose primary activity is agriculture and the processing and sale of its agricultural products (NN 2/2023, 2023). When it comes to organic agriculture, despite the investments and incentives that are measured in billions of HRK since Croatia joined the European Union (EU), the value of Croatian agriculture in general, including ecological agriculture, is constantly decreasing. Specifically, HRK 33 billion (or 4.4 billion €) has been invested in agriculture since Croatia joined the EU, and according to data from 2021, production is lower than in 2012. Consultant Zvjezdana Blažić said in an interview for "Agroklub" in 2021 that Croatian agriculture, upon joining the EU, "experienced the cumulative shock of strong open market competition, new agricultural policy rules and the loss of the traditional CEFTA market" (Petković, 2021). She also pointed out that "unsolved structural issues for years led to the loss of over HRK 5 billion (or 663,614,042.07 €) in the value of this product in the first three years" (Petković, 2021). Croatian agricultural products - neither organic nor conventionally produced - are not competitive on the European market, but often not even on the domestic market. As far as the European market is concerned, the Croatian organic product does not have to strive for that kind of competitiveness, but to begin with, focus on the domestic market and on tourists to whom the producer will offer the product at their doorstep. Despite all the indications that there is a huge potential here, it has only been minimally used so far. This is the result of a lack of vision and competence in the management of this sector, and not a lack of potential because it undoubtedly exists. The bad results in the sector of organic agriculture so far should not be an obstacle to continuing thinking and planning in the direction of functionally connecting organic agriculture and tourism to make both agriculture and tourism sustainable. We are talking about activities that in their current form in Croatia have enormous negative consequences for the climate, environment, flora and fauna, cultural heritage, and the person himself and his health and overall well-being. All recent research shows that the awareness of tourists, and the population in general, about the need for sustainability in tourism, is growing. According to research conducted by the European Commission in 27 countries of the EU, and the data which are presented with the Strategy for the Development of Sustainable Tourism until 2030, 82% of EU citizens stated that they are ready to change their habits and consequently make their touristic travelling to be more and more sustainable. Citizens to a large extent (55% of them) expressed their willingness to travel or vacation, to consume domestic products on vacation, to reduce the amount of waste they produce during vacation (48% of them), to travel outside the tourist season (42% of them) and to travel to less visited destinations (41% of them). A third of the surveyed citizens are ready to pay more for environmental protection or the well-being of the local community. A significant share of citizens (33% of them) is ready to prefer to use transport that has a less negative impact on the environment, and a large of respondents are ready to reduce water consumption during vacation and participate in some way in nature protection activities, such as planting trees, etc. (Croatian Government, 2022). These data imply that an increasing number of tourists are looking for destinations that implement the principles of sustainable tourism, i.e., that the demand for ecotourism will grow. Regional and global trends in ecotourism already show this. More than fifteen years ago, it was shown that in countries where ecotourism is developed, most ecotourists prefer destinations with preserved nature that also offer integrated ecological agriculture, and this especially applies to rural areas that still preserve authentic cultural heritage (Pelikan Matetić & Pelikan, 2008). As the combination of tourism and ecological agriculture became more and more common, the term "eco agrotourism" was created, and introduced by the Food and Agriculture Organization, which combines ecology, tourism, and agriculture. Eco agrotourism is a form of tourism that combines ecotourism and agrotourism, i.e., tourism that is based on ecological - responsible and sustainable - agriculture and tourist activities that take place on family farms that implement the principles of sustainability and ecological awareness in their operations and production method (Pelikan Matetić & Pelikan, 2008). Organic agriculture thus enriches the tourist offer, and - in turn - tourism helps or encourages the further development of organic agriculture. This is not only a mutual benefit, in which both agriculture and tourism profit, but also multiple benefits for numerous other stakeholders, primarily nature, and then the local community and society.

4. CROATIAN ECOLOGICAL AGRICULTURE AS PART OF THE CROATIAN TOURIST OFFER

Organic farming is a form of agriculture that strives not to harm nature, animals and the environment in general, as well as humans, to produce healthy food. The detailed definition says that ecological agriculture is "a system of agricultural management that strives for ethically acceptable, ecologically clean, socially just and economically profitable agricultural production" (Stepinac Fabijanić, 2012). Organic agriculture is thus considered an alternative to conventional agriculture, which is "the biggest polluter of the environment" and it "is both a source of pollution and its victim" (Srpak & Zeman, 2018). Although conventional agriculture still largely prevails, "ecological agriculture is rapidly spreading as a practice of healthier living, as a survival strategy for the rural (partly also urban) population and as a worldview" (Puđak & Bokan, 2011, p. 139). It is considered that organic agriculture in Croatia developed through three key phases (Srpak & Zeman, 2018). The first phase is until 1991 when it is considered that the development of this form of agriculture in Croatia was just beginning to be seen, and it was mostly about individuals. The second phase

is from 1991 to 2001 when the number of organic producers grows and the first healthy food stores are opened, and more and more associations are founded through which ecologically conscious individuals strive to educate citizens and promote ecologically produced food. In 2001, the Department for Ecological Agricultural Production was established in the Croatian Agricultural Advisory Service. This was the beginning of the third phase of the development of ecological agriculture, which is considered to have lasted until 2012. In this phase, the market is formed, and the legislative and institutional framework begins to be created, the first production standards are set, and ecological certificates are issued (Gugić et al., 2017). Although the period from 2012 to today should mark the further, fourth phase of the development of organic agriculture in Croatia, experts believe that this development is stagnating and that Croatia currently "joins the group of rare European countries where organic agriculture is still poorly and insufficiently developed" despite the enormous potential (Srpak & Zeman, 2018). Recently there has been more and more talk about connecting ecological agriculture with tourism. In Croatia, the law related to ecological agriculture, the full name of which is the Law on Ecological Production of Agricultural and Food Products, was passed in 2001. This law calls ecological agriculture "organic" or "biological", and defines ecological production as "a special system of sustainable management in agriculture and forestry that includes the cultivation of plants and animals, the production of food, raw materials and natural fibres, and the processing of primary products, and includes all ecologically, economically and socially justified production-technological methods, operations and systems, making the most favourable use of soil fertility and available water, natural properties of plants, animals and landscapes, increasing the yield and resistance of plants with the help of natural forces and laws, with the prescribed use of fertilizers, means for the protection of plants and animals, by internationally adopted norms and principles" (NN 12/2001, 2001). In the year 2003 there was more talk about the connection between ecological agriculture and tourism, so the Ministry of Tourism of the Republic of Croatia included ecological agriculture in its Strategy for the Development of Croatian Tourism. It states that ecological agriculture has great potential in the function of tourism and that the goal is to connect agriculture, tourism, and ecology precisely through ecological agriculture (Ministry of Tourism of the Republic of Croatia, 2003). Official statistical data on the number of organic farmers and other indicators of the state of organic agriculture in Croatia have existed since 2002. That year, only two producers were registered in the Register of producers in organic agriculture. In 2020, 5,548 organic agricultural producers were registered in Croatia, and only 389 processors of organic products (Ramov & Slavuj, 2021). In the EU, where the demand for certified organic products is constantly increasing, there are currently 344,000 organic product manufacturers (Business diary, 2022). In Croatia, the area under organic cultivation is increasing (although production is still insufficient). In 2017, these areas were 13 times larger than in 2007. One of the most important indicators of the state of organic agriculture in Croatia is the share of areas under organic production in total agricultural production. This share amounted to 7.21% in 2020, and it records continuous growth (Ramov & Slavuj, 2021). Of this, the most agricultural land under organic production is in Osijek-Baranja County, followed by Lika-Senj and Virovitica-Podravina County, and the least in Krapina-Zagorje County (Ministry of Agriculture, 2021a). Cereals are mostly produced in organic agriculture (87%), primarily wheat and spelt, followed by fruit (6%), primarily organic grapes and olives, aromatic, medicinal and herbs (4%), and fresh vegetables (2%), and potatoes (1%). The quantities of vegetables and most species produced in organic agriculture are not sufficient for the domestic market - they cover about 50 to slightly less than 60% of the market's needs (Ministry of Agriculture, 2021b). This clearly shows that there is still a lot of room for growth, only when it comes to the domestic market, and especially when it comes to foreign markets. The question arises as to how competitive domestic organic products are in these markets, including domestic ones. As can be seen from the previously mentioned figures, the number of organic farmers is growing (in 2020 it is higher than in 2013), but there is no proportional increase in the share of organic agriculture in the GDP. It is a matter of stagnation, while tourism can play a key role in encouraging the growth of organic agriculture in Croatia. Croatia is a globally popular tourist destination. In 2019, it was ranked 27th in the ranking of the world's leading tourist countries and recorded constant growth in the tourism sector until the pandemic. The problem is that Croatia is dominated by mass tourism, which destroys nature and the environment in general. Croatia is dependent on tourism. The share of tourism in GDP is constantly growing, but this is more an indicator of negative economic trends in general (lack of production and shutdown of numerous industries), than the development of tourism. Data from the State Statistical Office of the Republic of Croatia from 2019 show that the share of the direct GDP of tourism in the total GDP was 11.8%. The share of direct and indirect tourism GDP is around 25%, according to data from the World Travel & Tourism Council. This also places Croatia at the very top of the list of countries with the highest share of tourism - direct and indirect - in the total national GDP. In Greece, this is 20.3%, in Portugal 17.1%, in Malta 15.8%, in Spain 14.1%, in Cyprus 13.8%, in Italy 13.1% and in Austria 11.8% (State Bureau of Statistics, 2021). Croatian tourism in 2019 (pre-pandemically, relevant) generated total revenue of 10,539 million euros. For comparison, 10 years earlier, in 2009, the revenue generated amounted to 7,115 million euros (Ministry of Tourism of the Republic of Croatia, 2020.) Tourism has been the dominant economic activity in Croatia for decades (Croatian Government, 2022). Despite this and its enormous potential, it is still mostly based on the offer popularly called "sun and sea", without a clear development strategy and with intensive and unsustainable exploitation of natural and other resources to create an additional tourist offer (which is growing quantitatively, more than qualitatively). Croatian tourism majority takes place in Adriatic Croatia, and this situation has remained almost unchanged for decades. In 2009, 96% of all overnight stays took place in Adriatic Croatia, and in 2019, this change is only slightly lower and amounts to 94.5% (Croatian Government, 2022). Tourists in Croatia are mostly foreign. The share of domestic tourists is only about 10%. Most tourists to Croatia come from Germany, Slovenia, Austria, Italy, and Poland, according to data from 2019 (Croatian Government, 2022). When

it comes to the fundamental features of Croatian tourism, which is characterized by distinct seasonality, ”the greatest compared to European Mediterranean countries, and which is directly correlated with the main product of “sun and sea”, as well as the structure of accommodation capacities.” (Croatian Government, 2022). According to the same source, the dominant form of accommodation facilities is “rooms, apartments and vacation homes” (share of 66%), followed by “campsites” (20.4%) and “hotels” (13%). However, although the number and share of rooms, apartments and vacation homes have grown, this type of accommodation has a low occupancy rate - 27.6% (which indicates the quantitative, but not necessarily qualitative growth), while hotels have the highest occupancy rate - 48.2% (Croatian Government, 2022). The largest number of accommodation facilities (92.5%) is, as expected, in Adriatic Croatia, which causes great pressure on the destination, i.e., its space, environment and infrastructure, which, as mentioned earlier, is mostly inadequate, i.e., insufficient and outdated. Croatia is a popular tourist destination and generates large revenues from it. Seasonality and concentration mostly along the coast have extremely negative consequences for nature and the overall environment. Changes are urgently needed to increase the sustainability of the Croatian tourism sector. One way is to diversify the offer, that is, the form of tourism. Ecotourism is still in its infancy, but this form of tourism would solve, to a significant extent, some of the critical problems that Croatian tourism is dealing with. The critical advantage of ecotourism is the reduction of the growth of mass tourism and the positive combination of tourism and agriculture, i.e., encourages the growth of ecological-sustainable - agriculture. For the ecotourism sector to start developing (faster), a clear development plan and investments are needed. In addition to the fact that there is no clear plan or strategy for the development of ecotourism (or ecological agriculture) in Croatia, in 2019 Croatia was also rated as an unfavourable investment environment. The document called “The Travel & Tourism Competitiveness Report” placed Croatia in 123rd place, out of a total of 140 places, according to the evaluation of the quality of the business environment. The biggest problems are a low-quality management system, restrictive and outdated legislative frameworks, slow and ineffective administration, and high taxes (Croatian Government, 2022). Now, in this regard, Croatia ranks slightly better according to the World Bank's ranking, so it is in 51st place out of a total of 190 places. The critical problems highlighted by the World Bank when it comes to investments in tourism are the slow processing of construction permits, the slow processing of the obtaining process, and inertia in starting a business. “In support of the above, research on the attitudes of key business stakeholders in the private sector of Croatia, where the problem of the slowness and complexity of the reaction of the investment preparation system, the legal framework and implementation on the ground, and the reduction of the profitability of high-added-value accommodation, has been identified” (Croatian Government, 2022). Ecotourism based on ecological agriculture is here in many of its segments in a more favourable position than some other forms of tourism, primarily because a significant part of the resources and infrastructure already exists. In Croatia, there are numerous rural households and other subjects of ecological agriculture, i.e., numerous examples of good practice, and a highly developed know-how system, i.e., human resources with already developed skills and practical knowledge applied for a long. Education and investment in the promotion are needed to strengthen competitiveness. Organic products can be sold directly on the farm, or indirectly, through markets, shops, fairs or online. The goal should be to shorten the path from the producer to the customer as much as possible, which means selling on the spot where the product was created. The same applies to services. This is the most common type of implementation of ecological agriculture in tourism, the arrival of tourists to the eco-destination itself and the consumption of ecological products and related services in the same place. The producer thus has a direct benefit, and the price of his product is more competitive (without the price of distribution, reseller's margin, and sometimes without the price of packaging, etc.), and the tourist has direct contact with the agricultural economy (nature and the people who produced the food he eats or other products and services they will consume). For this scenario to take place in the manner described, adequate marketing in ecotourism is needed, which “implies the importance of knowing the profile of ecotourists” (Ćurić, 2010). Ecotourists are characterized by the fact that they are highly ecologically aware, usually highly educated, and they are motivated to travel by enjoying a healthy environment healthily. “Ecotourist or responsible tourist is a new type of traveller who wants to have new experiences by actively participating in the way of life of the places he visits” (Klarić & Gatti, 2006). To attract such tourists to a destination that offers an offer within the framework of organic agriculture, it is necessary to label such destinations, i.e., their products and services, as organic. In Croatia, there are eco-labels, i.e., certificates that prove the ecological way of doing business and production, i.e., the origin of the product or service. The following can be concluded: organic agriculture as part of the tourist offer in Croatia already exists, the potential is enormous, but it is still in its infancy, and a clear development plan and investment, primarily in marketing, are missing. The development of ecological agriculture in Croatia is one of the key things in reducing mass tourism in Croatia and preventing other negative impacts of the current model of tourism on nature and the environment.

5. EXAMPLE OF GOOD PRACTICE: ECO-FARM “ZRNO”

The eco-farm “Zrno” (in Eng.: “Grain”), the oldest organic farm in Croatia, which has been in existence since 1988, was chosen as an example of good practice or the synergy of ecological agriculture and tourism. It was started by Zlata Nanić (a pioneer of ecological food production in Croatia) under the name “Bio Zrno”. This is still the name of the company that manages the estate, but since 2010 it has been owned by Biovega. Zrno employs more than 50 people. The estate is in the village of Habjanovac, about 55 kilometres from Zagreb. The area of the property is 20 hectares, and

it is surrounded by a forest. In addition to organic farming, Zrno is also engaged in processing and bakery production. More than 60 crops are grown on the estate, and Zrno offers about 52 bakery products and 18 processed products. The estate also has its restaurant, Bistro Zrno, which opened in 2013, and offers about 30 types of organic dishes. All products from the estate are ecologically certified, and in addition to being organic, they are also vegan, i.e., all products that can be purchased on the estate or in the bistro are free of animal products (Zrno estate website, 2023). Among crops, vegetables, field crops and herbs are grown on Zrno. Everything is grown using ecological and regenerative farming methods. As stated on the estate's website, "all Zrno eco-growing products share the same criteria: ecological cultivation, regenerative practices, crop rotation of diverse crops, soil covering, green fertilization and many other methods that guarantee the highest quality of agricultural culture, but also the restoration of the environment" (Zrno estate website, 2023). No mineral fertilizers or chemical pesticides and herbicides are used on the farm. There grow vegetables and herbs on bio-intensive no-dig beds "which represent the highest standard of regenerative ecological agriculture and soil conservation" (Zrno estate website, 2023). Field crops and vegetables for processing are grown in a five-year crop rotation, "with a continuous change of cover crops and green manure crops and avoiding heavy tillage such as ploughing" (Zrno estate website, 2023). Zrno has more than 35 types of salad, root, fruit and tuber and other vegetables (Zrno estate website, 2023). When it comes to field crops, sorghum, soybeans, and corn are mostly grown in Zrno. About 12 types of herbs are grown on Zrno, on about 900 m2, basil, sage, lemon balm, mint, oregano, thyme, celery, dill, coriander, parsley, chives, and chilli peppers. "Our herb garden also has an experience effect - covered with rich compost and crisscrossed by paths of wood chips, its beds are the most fragrant point of the estate and the star of all tours and events" (Internet site of the Zrno estate, 2022), states the description on the Zrno estate's website. The estate is also engaged in processing, primarily in its Zrno Eco bakery, which was launched in 2011, and catering, in its Zrno Eko bistro. Zrno produces bread, pastries, desserts, and sandwiches in its bakery. There are about 14 types of bread on offer, the most famous of which are brown rice bread spelt and rye bread, tahini bread, sesame bread and Mediterranean ciabatta, and there is also gluten-free bread, which is said to be "the only ecological gluten-free sourdough bread in the market" (Internet site of the Zrno estate, 2023). Given that, in addition to vegetables, field crops and herbs, which make up most of the cultivation on the estate, Zrno also produces fruit, which is largely used in processing, i.e., to produce desserts, almost 30 types of them (cakes, pies, cakes, biscuits, etc.) which he sells in his bistro, but also through the organic grocery store Bio&Bio. The estate also produces the popular vegan foods tofu and seitan as part of its processing activities. From processed products, Zrno also offers sauces and spices and a pickled assortment. It is also interesting to note that the property has its water from an artesian well. Estate Zrno is a special tourist attraction which offers very innovative processed products. Time has shown that the estate attracts more and more visitors who - only 60 kilometres from Zagreb - could enjoy a peaceful environment and preserved nature, but also in an environment that offers additional value, which is sightseeing farms and enjoying healthy, and homemade foods. Zrno also began to offer educational content related to ecological agriculture, zero waste philosophy and other forms of a sustainable lifestyle. In 2012, the director of the estate received the Network for Development and Creativity award for the creative and innovative educational program Development of a Self-Sustaining Earth Station on the Zrno Ecological Estate (Biovega website, 2023). Thus, on the farm, additional space was arranged with accommodation capacity for a smaller number of visitors (later this capacity grew). Over time Zrno became profiled as a destination for groups, primarily those whose members share the same worldview that is nurtured on the estate: the desire for preserving nature, enjoying it and healthy food, but also learning about organic farming. A special Eco-educational centre was built, which consists of two halls and can host about 50 visitors, also who practice yoga, meditation and various anti-stress and other relaxation programs. Zrno has 6 rooms that can host 15 people, with additional space that can accommodate another 35 people in mountain conditions, and it offers services for holding various ceremonies, celebrations, etc., such as weddings, in which case it can host from 100 (in winter) to 200 people (in summer). Within the estate, there is also a natural swimming pool and a pond, a playground for children. Several types of tourism take place on the Zrno property, within the framework of ecotourism, primarily rural and health tourism, as well as business and educational tourism, and team-building gatherings. To expand business and education, Zrno started the association "Živa zemlja", and twice a year Open Days are held on the estate when visitors can participate in various activities and taste a food on the estate for free. While all the above-mentioned offers – healthy food, accommodation facilities and education – are located on the property itself, the catering facility Zrno Bio bistro is in the centre of Zagreb. It is "the first and only certified 100% eco restaurant in Croatia" (Zrno estate website, 2023) and as such has a huge competitive advantage. The joint action of ecological agriculture and tourism enabled the Zrno estate not only to stay and survive on the market but to take a leading market position and to make all its business processes sustainable. Thus, the complete sustainability of the business was achieved, i.e., from the perspective of tourism, the sustainable development of the tourism industry was achieved. The director of the estate, David Pejić, was declared the best ecological farmer in Europe in 2022. The director of Zrno received the prestigious EU Organic Awards of the European Commission (which places increasing emphasis on ecological agriculture and the strategy "from field to table") at the end of September 2022 in Brussels. 200 representatives from 26 countries were registered, with the director of Zrno being the only representative from Croatia (Business diary, 2022). That the combination of ecological agriculture and tourism is profitable in terms of increasing profits is shown by the income of the Zrno estate: they grew by an average of 10% for the last seven years, and in 2021 they amounted to HRK 9.1 million (or 1,207,777.56 €) (Starčević, 2022).

6. CONCLUSION

Based on the presentation of the case of the Zrno estate and the theoretical framework presented in the paper, it can be concluded that ecological agriculture could - and should - be one of the critical factors in the development of sustainable tourism in Croatia. The mass and elemental character of Croatian tourism is currently one of the most pressing problems, which shows that Croatia chronically lacks a clear vision of tourism development in general, especially in the sustainability segment. As for organic agriculture, despite the potential and large investments in the last decade, and the growth in the number of organic farmers and areas under organic farming, that sector is almost stagnating, which shows that there is no (satisfactory) vision of development there. The synergy of ecological agriculture and tourism can result in a significant improvement of the Croatian situation in both sectors, and contribute to the development of sustainable tourism, i.e., ecotourism, which is a growing trend in the world, both in terms of supply and demand. That can encourage the development of ecological agriculture and generally contribute to the product and the promotion of sustainability as a way of doing business that is less and less an option and more and more imperative.

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BRIDGING THE KNOWLEDGE GAP BETWEEN SCIENCE AND INDUSTRY: EMPIRICAL RESEARCH OF UNIVERSITY OF NOVI SAD AND UNIVERSITY OF BELGRADE

Abstract: The paper presents results of the research of academic engagement activities among scholars in the Republic of Serbia at two largest and most influential universities. Comparison of academic engagement activities at University of Novi Sad (UNS) and University of Belgrade (UB) was based on the questionnaire that was sent to 3.163 scholars, and the analysis was carried out on the answers of 184 respondents. The included academic engagement activities are ranked according to the degree of potential for commercialization; starting from the publication of scientific papers in domestic and foreign journals, through participation in conferences and lectures, and up to higher levels in relation to the potential for commercialization of knowledge, such as consulting, selling products of a research without establishing a firm, licensing of patents, and establishing a spin-off. Potential differences in type of academic engagement were tested. A statistically significant difference was found between respondents from the University of Novi Sad and the University of Belgrade in relation to the mean values calculated for three types of academic engagement activities: publishing papers in international journals, selling products of their research without establishing a firm, and establishing a spin- off (new business). Respondents from University of Belgrade were statistically significantly ahead in the number of published works and sales of products or services without establishing companies, while respondents from University of Novi Sad showed a statistically significant advantage in entrepreneurial activity and the most significant form of commercialization of knowledge. Results obtained through this research of academic engagement activities show that researchers at the University of Novi Sad and University of Belgrade universities are significantly bridging the knowledge gap between universities and industry through the commercialization of academic knowledge.

Keywords: academic engagement activities, commercializing university knowledge

1. INTRODUCTION

The knowledge economy is based on the premise that in the global economy, knowledge is a crucial strategic resource, and learning is a basic competitive activity. In academic discourse, as well as in the field of politics, the terms knowledge economy and learning economy are used as synonyms, although the knowledge economy prevails because it is more often emphasized in the OECD countries and in the definitions of American authors, while the learning economy is still present in traces among Nordic authors. Fascination with the great success of high-tech companies in

recent decades has led to the fact that activities that require intensive use of knowledge and innovation are associated with companies from the information and communication sector. Research and development (R&D) activities are inextricably linked to knowledge acquisition and innovation. Depending on the definition of the economy as one based on knowledge or learning, it also depends on the approach to innovation, which is an indisputable source of competitive advantage in the global economy. Learning economy perceives innovation as an interactive learning process, which is socially and territorially embedded, and culturally and institutionally shaped (Lundvall and Borrás, 1997).

Each university cooperates with its environment in different ways. They are expected to fulfill their traditional mission of education and research, and additionally to contribute to the development of the economy, society, and culture in the region they belong to (Cirella and Murphy, 2022). The role of modern universities is multifaceted (Bishop, D'Este & Neely, 2011; Etzkowitz et al., 2000; Goddard et al., 2016; Hvide & Jones, 2016; Thomas & Pugh, 2020) and encompasses teaching, research, and entrepreneurship functions (Audretsch, 2014). Universities are changing, implementing new activities, and accepting practices that make them more entrepreneurial (Siegel & Wright, 2015; Cunningham & Link, 2015). Research commercialization requires building a strong external partnerships with ecosystem stakeholders, such as entrepreneurs, universities, local and national governments and private industries (Acs, Autio & Szerb, 2014; Bozeman & Gaughan, 2007).

Mechanisms of university knowledge transfer, as well as resulting financial compensation are subjects of research, and attract a lot of attention from both researchers and policy makers in developed (Kalar & Antoncic, 2015) and developing economies (Marozau & Guerrero, 2016).

2. ACADEMIC ENGAGEMENT

Universities are recognized as basic generators of knowledge and as such occupy a special place in modern society. Adding to them a third mission in the form of technological transfer, it becomes increasingly important to measure the contribution of universities to economic growth. The commercialization of academic knowledge, which includes the patenting and licensing of inventions, as well as academic entrepreneurship (Lockett, Wright & Franklin, 2003; Di Gregorio & Shane, 2003), is becoming an increasingly important research field, both for academia and policy makers. Commercialization represents a basic example of generating academic impact, as it represents an immediate and measurable market confirmation of the acceptance of the results of academic research (Markman, Siegel & Wright, 2008). It represents the basic and most important form of contribution of the academic community to society and the economy. A broader term than commercialization represents academic engagement which implies a way of transferring university knowledge, so it could be defined as scientifically based cooperation between academic and non-academic organizations (Perkmann & Walsh, 2007).

Collaboration can be formally defined as: joint research, contract research, consulting, informal counseling, or networking with associates. After establishing cooperation and academic engagement, commercialization in the form of academic entrepreneurship could follow (Würmseher, 2017) with the aim of commercializing a patent, invention, or unprotected expertise, in the form of university spin-offs, spin-outs, or start-up companies. This definition of commercialization emphasizes academic engagement with the sole purpose of financial gain, and that is why commercialization is a narrower, more precise term (Petrov, 2022).

Academic engagement, with all its nuances and aspects, is unfortunately driven solely by the personal motives of scientists. Motivating researchers at universities to work on commercialization of scientific research is a particularly important issue for the establishment of entrepreneurially oriented universities that would integrate much easier into various types of partnerships with the economy, i.e. innovation systems.

The most common barriers to the commercialization of scientific research are: overload of teaching and administrative work related to teaching, as well as the absence of the impact of commercialization on the academic career both for researchers and teachers. Therefore, commercialization is most often seen as a burden and an unnecessary waste of time, with a misunderstanding of the value of the potential market application of research for society. On the other hand, there is also a fear that active engagement in commercialization will slow scientists down in their academic work (Van Looy et al. 2004).

Academic engagement does not only depend on personal affinities and individual factors influencing scientists, but also on organizational and institutional factors. The existence of a technology transfer office, as well as the skills and experience of its employees, greatly facilitate commercialization at universities. In addition, the organizational climate, the presence of successful examples of academic startups and the proximity of business incubators, technology parks and similar supporting institutions influence academic engagement. On the other hand, academic engagement affects not only the scientific, but also the teaching results of scientific researchers (Petrov, 2022). In the 21st century, when the personal characteristics and motives of students are changing, it is imperative to demonstrate the applicability of the knowledge offered. Academic engagement leaves the opportunity for engaged teachers to make their teaching more interesting, down-to-earth and thereby popularize their subjects, modules and profiles.

At the individual level, scientists who have achieved success in scientific circles and are well connected engage in academic engagement. Most often, these are employees in higher scientific and teaching positions, with significant social capital, greater engagement in projects, more approved grants and more scientific publications, who are

considered experts in their fields, and consequently with better connections with the economy. Research has confirmed that there is a positive correlation between academic engagement and received grants, i.e. academic engagement and scientific production (Parkmann et al., 2013), which only confirms that academic engagement and academic progress are realized in parallel.

The practice of academic engagement is present and concentrated in cities with universities and with a traditionally strong industrial base such as Belgrade, Novi Sad, and Niš in the Republic of Serbia, although it is sporadic and based on personal contacts and initiatives. Formalized and structurally defined cooperation between state scientific research organizations and the private sector has been absent in the Republic of Serbia. The traditional cooperation between universities and the industry has also led to a regional concentration of researchers. It has been shown that the research sector lacks a critical mass of human potential, except around Belgrade and Novi Sad (Government of the Republic of Serbia, 2020).

This paper presents academic engagement activity among scholars at two most influential universities in the Republic of Serbia, University of Belgrade and University of Novi Sad. Academic engagement activities considered for this research were:

- Number of research papers published in Serbian journals in last 5 years;
- Number of research papers published in international journals in last 5 years;
- Honorarium for conferences, lectures;
- Consulting, mentoring, coaching;
- Selling products of your research without establishing a firm;
- Licensing of patents;
- Establishing a spin-off (new business).

Listed academic engagement activities are ranked according to the degree of commercialization potential, from the publication of scientific papers in domestic and foreign journals, which don't necessarily have any connection with the economy or the application of research, through participation in conferences and lectures, which may or may not bring any compensation for the researcher. A slightly higher level of knowledge commercialization potential is represented by consulting, which must have some connection with the economy, and is closer to the application of research knowledge than the publication of scientific papers. A special group of academic engagement activities, which are the closest to commercialization and which imply earning from the application of knowledge, include: selling products of your research without establishing a firm, licensing of patents, and establishing a spin-off (new business).

The aim of this paper is to analyze the statistically significant differences between respondents from the University of Novi Sad (UNS) and the University of Belgrade (UB) when it comes to the above mentioned academic engagement activities.

3. RESEARCH METHODOLOGY

3.1. Instrument

For this research, we used a survey instrument (Belitski et al., 2019) previously applied in transitional, i.e. post-socialist and developing economies: Belarus, Kazakhstan, and Azerbaijan. The same instrument was applied in a research conducted in the Republic of Serbia (Petrov et al., 2022).

The instrument itself consists of 3 parts. The first part includes general information about the respondents, such as: age, work experience, title, position, research field, faculty, and university. The second block of questions is devoted to the academic progress in terms of number of works published in Serbian or international journals in the last 5 years. The third part of the questionnaire is dedicated to the academic engagement of researchers, in the form of undertaking some of the following activities:

- Honorarium for conferences, lectures, etc.;
- Consulting, mentoring, coaching;
- Selling products of your research without establishing a firm;
- Licensing of patents;
- Establishing a spin-off (new business).

The empirical analysis is based on a dataset collected via online survey over the four months from September 2018 to January 2019 in the Republic of Serbia.

3.2. Sample

In our analysis, we first devoted our efforts to obtaining contact information of scholars from two most influential universities in the Republic of Serbia. There were 3,163 established scholars found via the universities' web-pages. In total 956 questionnaires were opened, and 266 responses were received, which represents response rate of 27.82%. Of

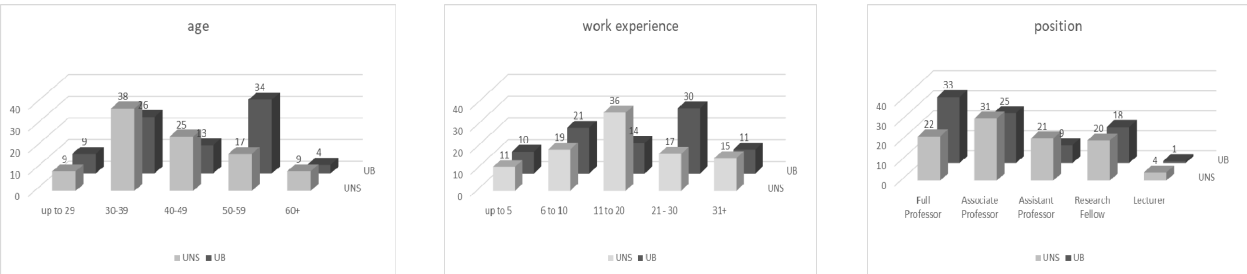
the 266 received responses, 41 had to be rejected as incomplete, because it was not stated which university the respondent was from.
Out of 225 valid answers, 115 respondents were from the University of Novi Sad, and 110 from the University of Belgrade. Out of 115 respondents from the University of Novi Sad, 17 respondents (representing 14.78% of respondents from UNS) did not report any type of academic engagement activities, while that number for respondents from the University of Belgrade was 24 (representing 21.82% of respondents from UB).
That left us with subsample of 184 respondents who reported some academic entrepreneurial activity. An overview of the demographic characteristics of the respondents is presented in Table 1.

Table 1: Demographics of the sample

Characteristics		UNS	UB	total	%
Age	up to 29	9	9	18	9.78%
	30-39	38	26	64	34.78%
	40-49	25	13	38	20.65%
	50-59	17	34	51	27.72%
	60+	9	4	13	7.07%
Work experience	up to 5	11	10	21	11.41%
	6 - 10	19	21	40	21.74%
	11 - 20	36	14	50	27.17%
	21 - 30	17	30	47	25.54%
	31+	15	11	26	14.13%
Title	PhD	78	69	147	79.89%
	MS	16	14	30	16.30%
	MSc	4	3	7	3.80%
Position	Full Professor	22	33	55	29.89%
	Associate Professor	31	25	56	30.43%
	Assistant Professor	21	9	30	16.30%
	Research Fellow	20	18	38	20.65%
	Lecturer	4	1	5	2.72%
Total Sample Size (n) = 184					

Source: Authors

In relation to the age the predominant number of respondents, 64 of them (34.78%) were in 30 to 39 years interval, followed by 51 of them (27.79%) in 50 to 59 years interval, and by 38 respondents (20.65%) that were between 40 to 49 years of age. The youngest and the oldest scholars are much less represented, with 9.78% and 7.07% respectively.



Picture 1: Demographic characteristics of survey respondents from UNS and UB
Source: Authors

In terms of the work experience, the distribution was as follows: 50 of respondents (27.17%) had between 11 and 20 years of experience, 47 (25.54%) between 21 and 30 years, 40 (21.74%) between 6 and 10 years, while the groups with 31+ and up to 5 years of work experience were much less represented, with 14.13% and 11.41% respectively.
The most represented academic title by far in our sample was PhD with 147 (79.89%), followed by MS with 30 (16.3%) and MSc 7 (3.8%). Most of the respondents held teaching positions - 141 (full professor 29.89%, associate professor 30.43% and assistant professor 16.30%), followed by research fellow - 38 (20.65%), and lecturer - 5 (2.72%). Characteristics of the sample are presented in Table 1 and Picture 1.

4. RESEARCH RESULTS

For this research, the difference in the degree of academic engagement activities of employees at the two largest universities in the Republic of Serbia was tested. Potential differences in the type of academic engagement were also tested. Levene's test was used to test if samples have equal variances. The results of the t-test are shown in Table 2.

Table 2: Results of independent t-test for two samples

Academic Engagement	t statistics	df	p
Papers published in Serbian journals	.344	180	.731
Papers published in international journals	-2.018	157.783	.045
Honorarium for conferences, lectures, etc.	.513	182	.609
Consulting, mentoring, coaching	1.099	182	.273
Selling products of your research without establishing a firm	-1.767	173.062	.079
Licensing of patents	-.194	182	.846
Establishing a spin-off (new business)	1.866	172.308	.064

Source: Authors

A statistically significant differences were found between the respondents from the University of Novi Sad and the University of Belgrade in relation to the mean values calculated for three types of academic engagement activities:

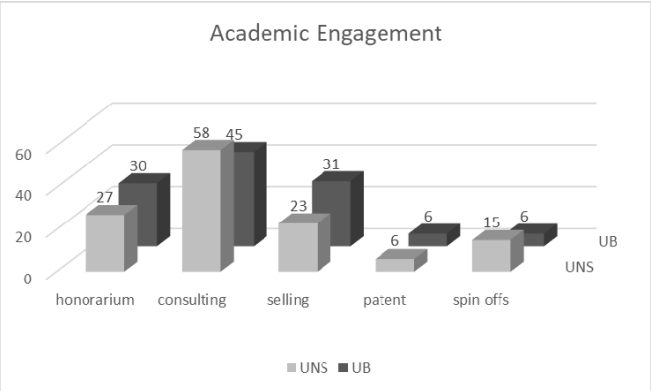
- Papers published in international journals (t=-2.018, df=157.783, p<0.05),
- Selling products of research without establishing a firm (t=-1.767, df=173.062, p<0.1), and
- Establishing a spin-off (new business) (t=1.866, df=172.308, p<0.1).

For these three types of academic engagement, the variance homogeneity test indicated that equal variance was not assumed (F=6.764, p=0.010; F=12.69, p=0.001; F=14.481, p=0.00 respectively).

For the variable Papers published in international journals a statistically significant difference was confirmed with a confidence level of 95%. Figure 2 presents distribution of respondents with publications of more than 20 papers in international magazines, at the various faculties of the University of Novi Sad and the University of Belgrade.

Picture 2: Number of researchers reporting the highest production of papers in international journals (more than 20 in 5 year period)
Source: Authors

A statistically significant difference, with a confidence level of 90%, was confirmed for the variables Selling products of your research without establishing a firm (t=-1.767, df=173.062, p<0.1), and Establishing a spin-off (new business) (t= 1.866, df=172.308, p<0.1), see Table 2.



Picture 3: Reported academic engagement at University of Novi Sad and University of Belgrade
Source: Authors

Picture 3 presents distribution of frequencies for types of academic engagement activities at University of Novi Sad and University of Belgrade. Consulting, mentoring, coaching is the most represented activity at both universities. Next at University of Belgrade, almost evenly represented are Selling products of your research without establishing a firm, and Honorarium for conferences, lectures. At University of Novi Sad Honorarium for conferences, lectures is slightly more represented compared to Selling products of your research without establishing a firm. The most important activity, from the aspect of commercialization, Establishing a spin-off (new business), is more represented at University of Novi Sad than at University of Belgrade, and that difference was confirmed by the t-test as statistically significant. The number of reported patents was equal at both universities.

5. CONCLUSION

In the subsample of respondents who reported some kind of academic engagement activities and were from University of Novi Sad, the majority were between 30 and 39 years of age, held the title of Associate Professor, and had 11 to 20 years of work experience. The typical profile of respondents from University of Belgrade who reported some type of academic engagement activities was: 50 to 59 years of age, with the title of Full Professor, and 30 to 39 years of work experience (Picture 1).

A statistically significant difference between respondents from University of Novi Sad and University of Belgrade (Table 2) was determined at the 95% confidence level for the variable Papers published in international journals, which was expected given that University of Belgrade was ranked in the 401-500 interval on the Academic Ranking of World Universities, while University of Novi Sad was ranked in 901 to 1000 range.

A statistically significant difference between respondents from University of Novi Sad and University of Belgrade (Table 2) was determined at the 90% confidence level for the variable Selling products of your research without establishing a firm, where 31 respondents were from University of Belgrade, and 23 from University of Novi Sad. With the same level of reliability, a statistically significant difference was found between respondents from University of Novi Sad and University of Belgrade (Table 2) for the variable Establishing a spin-off (new business), whereby 15 respondents from University of Novi Sad established a spin-off, while only 6 respondents from University of Belgrade did so.

Respondents from University of Belgrade were statistically significantly ahead in the number of published works and sales of products or services without establishing companies, while respondents from University of Novi Sad had a statistically significant advantage in entrepreneurial activity and the most significant form of commercialization of knowledge.

The results of this analysis of academic engagement activities, demonstrate that the activities of researchers at the universities of University of Novi Sad and University of Belgrade are significantly bridging the knowledge gap between science and industry through the commercialization of academic knowledge.

The limitation of this research is reflected in the structure of the sample in relation to the distribution of respondents by faculties, i.e. the number of respondents is not evenly distributed among scientific fields.

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ПОРЕСКЕ СТРАТЕГИЈЕ И ОСЕТЉИВОСТ СДИ У КРИЗНИМ УСЛОВИМА: СЛУЧАЈ ЕУ

Апстракт: У последњим деценијама, пореске стратегије се користе као инструмент за привлачење страних директних инвестиција (СДИ), које су препознате као кључни фактор за стимулисање привредног раста. Међутим, успешност снижавања пореских стопа и основица, зарад привлачења СДИ може бити упитно нарочито у кризним годинама. Циљ овог рада је да испита дугорочну везу између ефективне просечне пореске стопе (ЕППС) и СДИ у периоду 1998-2019, коришћењем хетерогених панела, а потом да истражи утицај глобалне пандемијске кризе на дугорочну везу, проширењем модела за године у којима је обухваћена криза (1998-2021) у ЕУ-27. Коришћењем модела Здружених групних средина (PMG) оцењена је значајна негативна дугорочна веза, у оба модела, премда је дугорочна веза нижа у проширеном моделу, као последица негативних кризних утицаја, указујући да пореска политика није опредељујући фактор за прилив СДИ у кризним условима. Корекција равнотежне грешке је значајна и негативна у оба модела, а резултати показују да је у развијеним земљама ЕУ осетљивост СДИ на смањење ЕППС у условима пандемијске кризе била мања него у емергентним економијама ЕУ. Наиме, пореске стратегије у правцу привлачења СДИ развијених економија ЕУ су отпорније на кризне околности у поређењу са емергентним економијама ЕУ.

Кључне речи: стране директне инвестиције, ефективна просечна пореска стопа, пандемијска криза, макро панели, Европска унија

TAX STRATEGIES AND FDI SENSITIVITY IN CRISIS CONDITIONS: THE CASE OF EU

Abstract: In recent decades, tax strategies have been used as an instrument for attracting foreign direct investment (FDI), which has been recognized as a key factor for stimulating economic growth. However, the success of lowering tax rates and bases, for the sake of attracting FDI, can be questionable, especially in the outbreak crisis years. The aim of this paper is to examine the long-term relationship between the effective average tax rate (EATR) and FDI in the period 1998-2019, using heterogeneous panels and then to investigate the global pandemic crisis impact on the long-term relationship, by extending the model for the years in which the crisis is included (1998-2021) in the EU-27. Using the Pooled Mean Group (PMG) model, a significant negative long-term relationship was revealed, in both models, although, the long-term relationship is lower in the extended model, as a negative consequence of crisis impacts, indicating that tax policy is not a determining factor for FDI inflows in crisis conditions. The error correction is significant and negative in both models, showing that in the developed EU countries the FDI sensitivity to the EATR reduction in the pandemic crisis condition was lower than in the emerging EU economies. Namely, developed EU economies' tax strategies aimed at attracting FDI are more resistant to crisis circumstances compared to emerging EU economies.

Keywords: foreign direct investment, effective average tax rate, pandemic crisis, macro panels, European Union

1. УВОД

Оснивање јединственог тржишта и убрзани процес глобализације подстакли су четири слободе унутар чланица Европске уније. Висока мобилност радне снаге и капитала наметнули су пореску конкуренцију као инструмент за привлачење страних директних инвестиција (СДИ) и пореских прихода. Наиме, пореска конкурентност представља процес некооперативног одређивања пореских стопа од стране националних влада (посебно њиховим снижавањем) зарад подстицања прилива СДИ, а тиме и привлачења мобилних пореских основица (Cozmei, 2015). Порез на добит предузећа представља кључан порески облик у "трци ка дну", с обзиром да профити корпорација представљају значајну пореску основицу за сваку привреду. Порески системи поред пореских стопа укључују различите пореске одбитке, подстицаје за улагања, обрачун амортизације, пореске кредите, као и рупе у закону због којих се законске стопе пореза на добит могу разликовати од стварно плаћених стопа. Према томе, зарад привлачења СДИ, националне владе се опредељују да поред снижавања законских стопа пореза на добит, примене и промену пореских основица (Heshmati et al. 2010), односно снижавање ефективних просечних пореских стопа (ЕППС). Власницима капитала за одлуку о локацији инвестиција кључно је ефективно оптерећење профита, те ова пореска стратегија постаје опредељујући фактор.
На нивоу ЕУ као и на нивоу ОЕЦД-а постоји тенденција постизања пореске координације у виду БЕПС-а (споразума о ерозији пореске основице и скретању профита) и минималне ефективне просечне стопе пореза на добит предузећа, са циљем отклањања штетних ефеката пореске конкуренције у свету. Међутим, значајан број научних радова указује да је тренд пореске конкуренције (трке ка дну) присутнији од тренда пореске хармонизације када је реч о економијама ЕУ. Разлог за доминацију пореске конкурентности може се огледати у фискалној суверености чланица, који омогућава националним владама да дефинишу различите пореске политике у односу на националне интересе. Додатно, пореска хармонизација одређене земље ЕУ ставља у неповољан положај посебно јер се земље чланице разликују по величини, а и диспаритети у њиховим почетним пореским структурама су широки (Milton, 2017). Ситуацију додатно компликују негативни спољни шокови, као што су светска финансијска криза 2008, пандемијска криза 2020. и геополитичка криза 2022. године с обзиром да производе високу нестабилност и могу довести до периода успореног привредног раста, веће незапослености, а тиме и пада реалних пореских прихода (Beljić & Glavaški, 2021; Stojkov et al. 2022). Наиме, постојеће пореске стратегије могу бити мање ефикасне у односу на пред-кризне периоде. Према томе, посебан интерес овог рада је усмерен ка испитивању различитих пореских стратегија између развијених и емергентних економија ЕУ у периоду од 1998. до 2021. године (који обухвата период пандемијске кризе), као и осетљивост у кретању СДИ у пандемијским условима.
Циљ овог рада је да анализира однос између ЕППС и СДИ у развијеним[1] и емергентим[2] економијама ЕУ, користећи расположиве емпиријске податке. Анализа је извршена у оквиру нестационарних, хетерогених панела, коришћењем модела Здружених групних средина (Pooled Mean Group) да би се открио дугорочни однос између ЕППС и СДИ и хетерогена прилагођавања дугорочној вези. Главне хипотезе су:

(H_1): Постоји негативна дугорочна веза између прилива СДИ и ЕППС у економијама ЕУ са хетерогеним прилагођавањима у односу на дугорочну везу у периоду 1998–2019. године.

(H_2): Утицај ЕППС у дугом року на прилив СДИ за економије ЕУ је нижи у кризним околностима.

Остатак рада организован је на следећи начин: после увода следи преглед литературе, затим трећи део апострофира значај страних директних инвестиција за економије, као и утицај различитих пореских стратегија на њихов прилив. Четврти део анализира дугорочну везу између ефективне просечне пореске стопе и прилива страних директних инвестиција, као и утицај кризних година. У последњем делу су изведена закључна разматрања.

2. ПРЕГЛЕД ЛИТЕРАТУРЕ

Рад се ослања на литературу која анализира утицај различитих пореских политика чланица ЕУ. Иако су државе чланице ЕУ задржале фискални суверенитет, на нивоу ЕУ институција се инсистира на пореској хармонизацији већ дуги низ година, како би се елиминисала штетна пореска конкуренција између држава чланица (Glavaški et al. 2022). Како Marques et al. (2019) истичу у свом истраживању артикулисање пореских политика унутар ЕУ је пожељно, јер за циљ има не само да ублажи агресивно пореско планирање мултинационалних компанија, већ и да повећа неутралност пореских система држава чланица ЕУ. Gropp & Kostial (2000) у свом истраживању истичу да спровођење пореске хармонизације унутар ЕУ може имати различите ефекте (последице), узимајући у обзир разноврсност пореских стратегија чланица ЕУ. Наиме, оптимална пореска структура зависи од бројних

[1] Немачка, Француска, Италија, Белгија, Холандија, Луксембург, Ирска, Грчка, Шпанија, Португал, Шведска, Финска, Аустрија.
[2] Словенија, Словачка, Мађарска, Пољска, Чешка, Малта, Кипар, Естонија, Летонија, Литванија, Хрватска, Бугарска, Румунија.

фактора и разликује се од економије до економије ЕУ (Stoilova, 2016). Присуство пореске конкуренције резултат је изналажења начина за генерисање економског раста, а управо се многи креатори економских политика опредељују за снижавање пореских стопа, с обзиром да се тиме подстиче рад, штедња као и инвестиције (Gale & Samwick, 2014). Lee & Gordon (2005) потврђују негативну везу између стопе пореза на добит предузећа и економског раста у 70 економија широм света. Са друге стране, Stoilova & Patonov (2012) у истраживању потврђују да је пореска структура која се ослања на директне порезе ефикаснија у смислу подршке економском расту у поређењу са индиректним порезима. Bellak & Leibrecht (2005) емпиријски потврђују да висока пореска оптерећења у емергентним економијама ЕУ делују као препрека приливима СДИ, пошто негативно утичу на профитабилност инвестиција. Резултати истраживања које су спровели Talpoş & Vancu (2009) указује да приход на основу пореза на добит има негативан ефекат на економски раст у земљама у развоју, а позитиван ефекат у развијеним земљама. Наиме, истраживање Thanh & Canh (2020) сугерише да развијене земље имају могућност да задрже или повећају стопу пореза на добит како би се побољшао приход од пореза на добит предузећа, док се код земаља у развоју јавља супротан ефекат, са растом пореског оптерећења, смањује се акумулација капитала. Са друге стране, истраживања показују да смањење пореза на добит предузећа стимулише међународну пореску конкуренцију (Devereux et al. 2002), међутим нема значајан утицај на структуру токова СДИ у ЕУ (Blechová, 2016), као ни на унапређење економског раста (Gechert & Heimberger, 2021).

Радови који се баве значајем страних директних инвестиција, као и њеним детерминантама су такође од интереса за овај рада. Готово све владе економија ЕУ за циљ имају привлачење страних директних инвестиција, будући да су инвестиције једна од компоненти бруто домаћег производа (БДП), а самим тим и генератор привредног раста (Ercegovac & Beker Pucar, 2021a). Наиме, прилив СДИ дугорочно промовише раст и запошљавање (OECD, 2008). Hunady & Orviska (2014) су такође препознали да су СДИ покретач емергентних привреда ЕУ, јер су присуство мултинационалних компанија и прилив страног капитала одиграли кључну улогу у успешној транзицији економија централне и источне европе (Bevan & Estrin, 2004). СДИ утичу на повећање запослености, продуктивности, конкурентности, унапређењу технологија, бољој позицију на међународном тржишту, као и на повећање извоза и прилива девиза (OECD, 2008; Ercegovac & Beker Pucar, 2021b). Најновије питање везано за СДИ јесте утицај пандемијске кризе на њихово кретање, што је предмет истраживања Moosa & Merza (2022). Идеја овог рада је да допуни празнину која постоји у литератури у вези са утицајем ЕППС на прилив СДИ на нивоу ЕУ, са посебним фокусом на утицај пандемијске кризе на везу између ЕППС и СДИ коришћењем модела Здружених групних средина.

3. СТРАНЕ ДИРЕКТНЕ ИНВЕСТИЦИЈЕ И ПОРЕСКЕ СТРАТЕГИЈЕ

Стране директне инвестиције (СДИ) су кључни елемент убрзане еволуције економских интеграција, као и глобализације. СДИ обезбеђују директне, дуготрајне и стабилне везе између привреда, такође, побољшавају конкурентску позицију економије "домаћина". Наиме, прилив СДИ представа значајан извор капирала, а поред тога подстичу и трансфер технологије и знања између економија, што даље омогућава економијама "домаћинима" продор на међународна тржишта (OECD, 2008). Са правим политичким оквиром, СДИ могу обезбедити финансијску стабилност, промовисати економски развој и побољшати добробит друштава. Према томе, СДИ су временом добиле све већи значај, постајући главна брига креатора економских политика (Moosa & Merza, 2022). Наиме, националне владе су мотивисане да усвајају пореске стратегије које пружају подстицаје, односно представљају стимуланс за прилив СДИ.

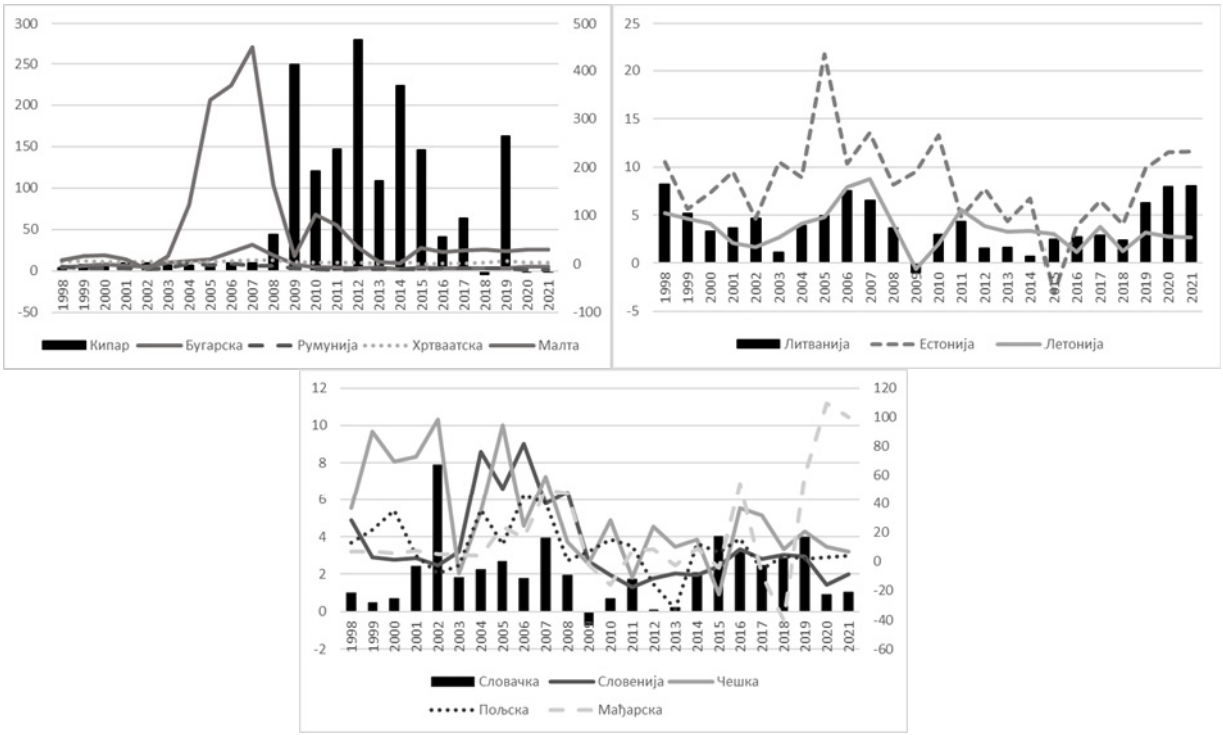
Порез на добит предузећа препознат је као један од кључних фактора за привлачење СДИ (OECD, 2008). Та чињеница је допринела да чланице ЕУ с обзиром на сувереност фискалне политике посегну за снижавањем пореских стопа, чиме је уместо жељене пореске хармонизацији, постигнута пореска конкурентност. Међутим, пореска конкурентност се не огледа само у снижавању законских стопа пореза на добит предузећа. Наиме, порески подстицаји као што су: (а) „порески празници“ (tax holidays); (б) одбици за истраживања и развој (R&D double deduction); (в) олакшице за ауторске накнаде (royalty income relief); (г) олакшице за улагања у новооснована предузећа која обављају иновативну делатност (Andresen et al. 2018; PwC, 2023[3]); ефикаснији су у привлачењу СДИ, с обзиром да се власници капитала опредељују за економије које ће обезбедити што већу профитабилност.

Кризе несумњиво остављању негативне последице на инвестиције, чему сведочи и пад прилива страних директних инвестиција у већини чланица ЕУ током пандемијске кризе (Слика 1). Наиме, у емергентним економијама ЕУ пандемијска криза проузроковала је пад прилива СДИ у Словачкој од 3% удела СДИ у БДП-у (прилив СДИ са 3.97% у 2019. години смањио се на 0.9% у 2020. години). Пад страног капитала забележила је и суседна Чешка (1%) и Словенија чији је пад прилива СДИ износио 1.5% БДП-а. Једина балтичка економија која је забележила пад СДИ у 2020. години јесте Летонија, која је у поређењу са Литванијом и Естонијом једина забележила одлив СДИ (-0.57 у 2008. години) након избијања светске финансијске кризе. Чланице које су се придружиле након „историјског проширења“ претрпеле су најоштрији пад прилива СДИ по избијању

[3] https://taxsummaries.pwc.com/serbia/corporate/tax-credits-and-incentives

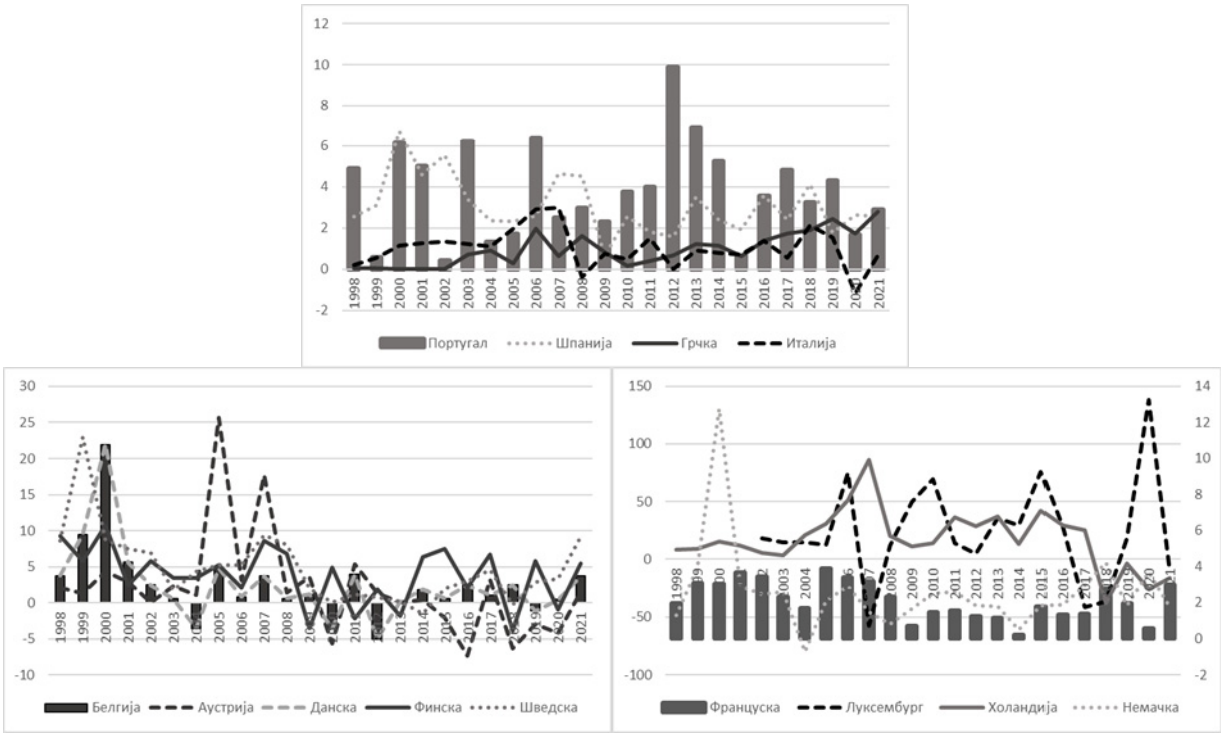
пандемијске кризе. Пад СДИ на Кипру био је најдрастичнији у односу на остале посматране економије, наиме прилив СДИ који је износио 163% у БДП 2019. године, у 2020. години смањио се на -1.33%. Наведено указује да је у 2020. години дошло и до одлива постојећих СДИ, а тај тренд се наставио и у 2021. години. У Хрватској је забележени пад од 4.2% (прилив СДИ у 2019. години био је на нивоу 6.3% у БДП, да би у се 2020. години смањио на 2.1%) био неупоредиво мањи у односу на Кипар, али и даље виши у односу на остале емергентне економије ЕУ. Румунска економија се такође суочила са смањењем прилива СДИ у 2020. години (1.44% БДП-а) у поређењу са 2019. годином (2.95% БДП-а), а нижи прилив СДИ у односу на пред кризни период забележен је и у 2021. години (1% БДП-а).

Редукован прилив СДИ, изазван пандемијским шоком није заобишао ни развијене чланице ЕУ (Слика 2). Друга најразвијенија економија ЕУ, Француска, забележила је снижен прилив СДИ у 2020. години (0.56%) у поређењу са оствареним приливом у 2019. години (1.97%). У Аустрији се негативан тренд прилива СДИ додатно продубио/погоршао пандемијском кризом: одлив СДИ из 2019. године (-2.95%) повећао се на -4.2% у 2020. години. Слична ситуација забележена је и у Холандији где је тренд одлива СДИ започет 2018. године додатно погоршан у 2020. години са одливом СДИ од -26.1% БДП-а, а одлив је идентификован и у 2021.години од -15.9%. Финска је након прилива СДИ од готово 6% у 2019%, забележила одлив СДИ у 2020. години од -0.9%, међутим тај тренд је заустављен већ 2021. године, када се бележи раст СДИ. Посматрајући земље ПИГС-а, може се запазити да су готово све економије забележиле пад прилива СДИ у јеку пандемијске кризе. У Португалу је прилив СДИ смањен са 4.3% (2019) на 1.67% БДП-а (2020), у Грчкој је забележен пад са 2.43% (2019) на 1.74% БДП-а (2020), док је у Италији, која је била једна од најтеже погођених европских економија, забележен одлив СДИ (-1.16% БДП-а) у години избијања пандемије.



Слика 1: Прилив страних директних инвестиција у периоду од 1998. до 2021. године у емергентним економијама ЕУ

Извор: аутори на основу World bank података



Слика 2: Прилив страних директних инвестиција у периоду од 1998. до 2021. године у развијеним економијама ЕУ

Извор: аутори на основу World bank података

4. АНАЛИЗА РЕЗУЛТАТА – МЕТОД ЗДРУЖЕНИХ ГРУПНИХ СРЕДИНА

Анализа је заснована на економетријском оквиру података панела, који омогућава истраживање дугорочне везе између СДИ и ЕППС у економијама ЕУ у последње 24 године. Узорак садржи податке за 27 економија ЕУ (N=27), за укупан посматрани период 1998-2021 (T=24). Наведени период је био најдужи могући због доступности података које се односе на ЕППС. У овом раду коришћене су методе које се односе на макро панеле како бисмо анализирали хипотезе (H_1) и (H_2) помоћу PMG модела. Прилив страних директних инвестиција изражен у доларима за узорак 1998-2019 је означен скраћеницом *fdi_dol*, док је за период који обухвата кризе коришћена ознака *fdi_dol'*. Варијабла која изражава ефективне просечне пореске стопе је означена са *efec* за период 1998-2019, док је за период који обухвата кризу означена са *efec'*. Прво је тестирана зависност података упоредних пресека (cross-sectional dependence (CSD)). Резултати Pesaran-овог CSD теста представљени у Табели 1, која истовремено приказује резултате везане за анализу хипотезу H_1 (за период 1998-2019) и хипотезу H_2 (за период 1998-2021). Резултати указују да се нулта хипотеза о независности мора одбацити за варијабле *fdi_dol* и *efec* за оба периода. Уочена зависност података је очекивана услед снажног институционалног оквира и заједничких политика унутар ЕУ (Glavaški et al. 2022). Резултати CSD теста условљавају коришћење тестова друге генерације јединичних корена, наиме Pesaran-овог CIPS теста (2007) који дозвољава постојање CSD (Табела 1, део (а)). Тестови јединичних корена не одбацују нулту хипотезу о нестационарности, што значи да су варијабле *fdi_dol* и *efec* нестационарне, као и варијабле *fdi_dol'* и *efec'*. Након тога, тестирана је стационарност првих диференци, а резултати показују да су све варијабле стационарне (Табела 1, део (б)). С обзиром на постојање CSD, за тестирање коинтеграције, користи се робусна верзија Westerlund-овог теста. Резултати засновани на Westerlund-овом тесту показују да се нулта хипотеза о не постојању коинтеграције одбацује, те се прихвата алтернативна хипотеза о постојању коинтеграције за оба периода (Табела 1, део (в)).

Табела 1: Pesaran-ов CD тест, Pesaran-ов CIPS тест и Westerlund-ов тест коинтеграције

Узорак: економије ЕУ за период 1998-2019.										
(а)				(б)				(в)		
Варијабле	**Pesaran CD тест**	**p-вредности**	**Доцње**	**Pesaran-ов (CIPS) тест за ниво варијабли**	**p-вредности**	**Pesaran-ов (CIPS) тест за прве диференце варијабли**	**p-вредности**	**Westerlund-ов тест коинтеграције**		**p-вредности**
fdi_dol	17.49	0.000	0	-5.704	0.000	-19.829	0.000	Pt	-7.101	0.000
			1	2.599	0.995	-9.457	0.000			
			2	6.125	1.000	-1.211	0.013			
efec	45.61	0.000	0	0.009	0.503	-14.303	0.000	Pa	-2.671	0.002
			1	-1.076	0.141	-5.780	0.000			
			2	-0.668	0.252	-2.366	0.009			
Узорак: економије ЕУ за период 1998-2021.										
fdi_dol'	15.85	0.000	0	-6.214	0.000	-20.141	0.000	Pt	-7.056	0.000
			1	0.153	0.561	-12.885	0.000			
			2	3.276	0.999	-2.885	0.002			
efec'	49.45	0.000	0	0.163	0.565	-15.051	0.000	Pa	-2.501	0.004
			1	-1.420	0.078	-5.749	0.000			
			2	-0.724	0.235	-2.873	0.002			

Извор: прорачун аутора

Табела 2: Резултати PMG и MG модела за хомогене коефицијенте у периодима 1998-2019. и 1998-2021. године у економијама ЕУ

Узорак	**Економије ЕУ за период 1998-2019. (а)**				**Економије ЕУ за период 1998-2021. (б)**			
Зависне варијабле: *fdi_dol/ fdi_dol'*	**Дугорочна равнотежна веза (θ)**		**Корекција равнотежне грешке (Фі)**		**Дугорочна равнотежна веза (θ)**		**Корекција равнотежне грешке (Фі)**	
	Коеф.	p-вредност	Коеф.	p-вреднос т	Коеф.	p-вредност	Коеф.	p-вредност
MG	-2.678	0.016	-0.768	0.000	-2.051	0.001	-0.768	0.000
PMG	**-1.461**	**0.000**	**-0.693**	**0.000**	**-1.385**	**0.000**	**-0.699**	**0.000**
Hausman-ов тест	0.2911				0.2746			

Извор: прорачун аутора

Добијени хомогени коефицијенти коришћењем PMG модела дати су у Табели 2. Резултати указују да постоји значајна негативна дугорочна веза између прилива СДИ и ЕППС (-1.461) у периоду 1998-2019. године (Табела 2, део (а)). Наведено указује да у дугом року, уколико се ЕППС смањи за један 1%, долази до раста СДИ за 1.461%. Хомогене оцене потврђују дугорочну везу, пошто је параметар корекције равнотежне грешке значајан и негативан, што показује брзину прилагођавања ка дугорочној равнотежи. Закључује се да се сваке године 69,38% ЕППС динамике коригује ка равнотежи. Сличан резултат даје MG (Mean Group – модел групних средина) у контексту параметара корекције равнотежне грешке. Међутим, коришћењем Hausman-овог теста, PMG модел је откривен као ефикаснији, а самим тим и динамика коефицијента хетерогеног прилагођавања је анализирана коришћењем PMG модела (Табела 3).

Табела 3: Резултати PMG модела са хетерогеним коефицијентима за економије ЕУ у периодима 1998-2019. и 1998-2021. године

Узорак:	**Економије ЕУ за период 1998-2019. године**				**Економије ЕУ за период 1998-2021. године**			
	(а)				(б)			
PMG	Корекција равнотежне грешке (Фі)		Δ*lnefec*		Корекција равнотежне грешке (Фі)		Δ*lnefec*	
Емергентне економије ЕУ	Коеф.	p-вредност	Коеф.	p-вредност	Коеф.	p-вредност	Коеф.	p-вредност
Бугарска	-.2381	0.125	-2.126	0.043	-.260	0.083	-2.048	0.041
Чешка	**-1.290**	**0.000**	-6.249	0.069	**-1.281**	**0.000**	-5.766	0.065
Естонија	**-0.494**	**0.008**	-5.826	0.043	**-.519**	**0.004**	-3.700	0.058
Хрватска	**-0.689**	**0.001**	0.246	0.941	**-0.711**	**0.000**	.089	0.978
Кипар	**-0.227**	**0.028**	0.574	0.540	**-0.224**	**0.029**	.580	0.537

Летонија	**-0.635**	**0.005**	-0.495	0.754	**-0.606**	**0.003**	-.509	0.737
Литванија	**-0.475**	**0.022**	.0325	0.977	**-0.367**	**0.034**	.204	0.850
Мађарска	-0.097	0.616	2.417	0.404	-0.077	0.573	2.338	0.386
Малта	**-0.397**	**0.023**	-0.887	0.829	**-0.397**	**0.017**	-.850	0.828
Пољска	**-0.883**	**0.000**	-1.948	0.324	**-0.873**	**0.000**	-1.635	0.381
Румунија	-0.312	0.052	-.186	0.805	**-0.342**	**0.029**	-.261	-.261
Словенија	**-0.565**	**0.002**	8.835	0.085	**-0.609**	**0.001**	8.911	0.076
Словачка	**-0.843**	**0.000**	-3.568	0.002	**-0.823**	**0.001**	-3.527	0.003
Развијене економије ЕУ								
Аустрија	**-0.878**	**0.000**	-10.04	0.031	**-0.875**	**0.000**	-10.01	0.032
Белгија	**-1.236**	**0.001**	2.602	0.569	**-1.235**	**0.001**	2.664	0.560
Данска	**-0.803**	**0.000**	-11.33	0.094	**-0.904**	**0.000**	-9.785	0.150
Финска	**-1.301**	**0.000**	-1.086	0.815	**-1.302**	**0.000**	-.936	0.840
Француска	**-0.807**	**0.000**	-6.449	0.012	**-0.891**	**0.000**	-5.093	0.046
Немачка	**-0.643**	**0.002**	3.032	0.169	**-0.689**	**0.000**	3.013	0.159
Грчка	**-0.516**	**0.000**	.679	0.581	**-0.507**	**0.000**	.598	0.615
Ирска	-0.315	0.061	.293	0.904	-0.336	0.055	-.063	0.980
Италија	**-0.983**	**0.000**	-5.161	0.594	**-0.987**	**0.000**	-5.155	0.594
Луксембург	**-0.725**	**0.008**	-13.87	0.448	**-0.726**	**0.017**	-11.39	0.577
Холандија	**-0.537**	**0.002**	-8.357	0.012	**-0.528**	**0.002**	-8.271	0.013
Португал	**-1.116**	**0.000**	1.896	0.410	**-1.118**	**0.000**	1.804	0.421
Шпанија	**-1.202**	**0.000**	-8.090	0.031	**-1.192**	**0.000**	-8.201	0.021
Шведска	**-0.513**	**0.016**	9.684	0.045	**-0.505**	**0.019**	8.737	0.072

Извор: прорачун аутора

Главна предност хетерогених панела је оцена сваке економије у контексту параметара корекције равнотежне грешаке. Корекција равнотежне грешке, која означава прилагођавања ка дугорочној равнотежи значајна је и негативна у Чешкој, Естонији, Хрватској, Кипру, Летонији, Литванији, Малти, Пољској, Словенији, Словачкој, Аустрији, Белгији, Данској, Финској, Француској, Немачкој, Грчкој, Италији, Луксембургу, Холандији, Португалу, Шпанији, Шведској. Детектована је једна емергентна економија – Чешка (-1.290) и четири развијене економије: Белгија (-1.236), Финска (-1.301), Португал (-1.116) и Шпанија (-1.202), које имају коефицијент прилагођавања већи од 1, указујући на прекомерну корекцију. С тога, најбрже прилагођавање је идентификовано у Пољској (-0.883), емергентној економији која је од почетка посматраног периода значајно снижавала ефективне просечне пореске стопе што је допринело утростручавању прилива СДИ у апсолутним износима. Најбрже прилагођавање код развијених земаља примећено у Италији (-0.983) и Аустрији (-0.878). С друге стране, коефицијент прилагођавања није значајан у Бугарској, Мађарској, Румунији и Ирској. У случају Мађарске високе флуктуације прилива и одлива СДИ, не могу бити повезане са перманентним снижавањем стопе пореза на добит (Glavaški et al. 2022).

Хипотеза (H_2) је оријентисана на претпоставку да је брзина прилагођавања ка дугорочној вези између прилива СДИ и ЕППС спорија у кризним годинама у економијама ЕУ, због чега се анализира период године 1998–2021 који обухвата године пандемијске кризе. Поновили смо цео поступак оцене за проширени узорак за економије ЕУ за период 1998-2021: (i) резултати Pesaran-овог CD теста (Табела 1) су показали постојање CSD у проширеном узорку за варијабле *fdi_dol'* и *efec'*; (ii) Pesaran CIPS тест (Табела 1) је показао стационарност у првим диференцама за анализиране варијабле; (iii) Westerlund тест коинтеграције потврђује конитеграцију између *fdi_dol'* и *efec'*; (iv) Hauman-ов тест показује да је пожељније коришћење PMG модела у односу на MG модел (табела 2). Према резултатима хомогених коефицијената дугорочна веза између *fdi_dol'* и *efec'* је значајна и негативна (-1.385) и нижа од дугорочне везе за период 1998-2019 (-1.461), што указује да у дугом року када се обухвате кризне године, пореске стратегије за привлачење СДИ имају смањени простор за маневар, тада, смањење од 1% ефективне просечне пореске стопе доводи до прилива СДИ од 1.385%, што је мање у поређењу са приливом СДИ од 1.461% у моделу који не обухвата кризу, указујући на већу осетљивост СДИ на кризне околности него на промене у пореским стратегијама.

ЗАКЉУЧНА РАЗМАТРАЊА

Економије ЕУ се у последње две деценије суочавају са егзогеним шоковима који су утицали на промене у пореским стратегијама и њихове усмерености ка привлачењу СДИ. Шок условљен пандемијом довео је до затварања граница, отежане сарадње, високе и брзо-растуће неизвесности током пандемијске кризе, док је кретање СДИ значајно погођено. Према томе, овај рад се бавио анализом утицаја ефективне просечне пореске стопе на прилив СДИ у чланицама ЕУ. Посебан интерес рада био је испитивање дугорочне везе када се у модел обухвате године избијања пандемијске кризе. Резултати истраживања упућују на чињеницу да је утицај

снижавања пореских стопа и основица на СДИ мањи у периодима кризе, него у годинама које су изузете од екстерних шокова. Наиме, главни закључци рада су следећи. (а) Резултати модела Здружених групних средина (PMG оцена) на узорку од 27 економија ЕУ у периоду од 1998-2019. године потврђују постојање значајне дугорочне негативне везе између ефективне просечне пореске стопе и прилива страних директних инвестиција. Наиме, у просеку ЕУ, смањење ефективне просечне стопе пореза на добит за 1% доводи до повећања прилива СДИ за 1.461%. (б) Коришћењем PMG оцена у проширеном периоду 1998-2021, потврђује се негативан утицај кризе на коришћење пореских стратегија зарад привлачења СДИ. Наиме, у моделу који обухвата кризне године, дугорочне веза је снижена, на основу чега, када се смањи ЕППС за 1%, прилив СДИ се повећава за 1.385% за просек економија ЕУ. (в) Хетерогени коефицијенти указују на мање вредности коефицијената прилагођавања дугорочној равнотежи у емергентним у односу на развијене економије ЕУ.

Налази показују да егзогени притисци ограничавају могућности креатора економских политика да примењују постојеће пореске стратегије у контексту привлачења СДИ у кризним околностима. Међутим, резултати истраживања указују да су пореске стратегије развијених економија отпорније на кризне околности у поређењу са емергентним земљама ЕУ. Наиме, коефицијент прилагођавања у емергентим економијама је у просеку нижи у поређењу са развијеним у периоду 1998-2021. године. Дакле, пореске стратегије са циљем привлачења СДИ, рањивије су у емергентним земљама ЕУ у поређењу развијеним земљама ЕУ.

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АСИМЕТРИЧНИ ЕФЕКТИ НАФТНИХ ШОКОВА НА БЕРЗАНСКЕ ИНДЕКСЕ ОДАБРАНИХ ЧЛАНИЦА ЕУ

Апстракт: Процес продубљивања економске интегрисаности европских економија достигао је врхунац формирањем супранационалног ентитета за вођење монетарне политике. Но, високи степен трговинске и финансијске интегрисаности тржишта уједно је подразумевао и рањивост економске уније у смислу реаговања на екстерне шокове са дивергентним ефектима, попут нафтних шокова. Услед широке употребе нафте као производног инпута или чак зависности производње од њеног увоза, флуктуирање цена нафте је круцијална категорија на коју су рањиве државе широм света, а посебно европске економије са релативно највећим степеном увозне зависности у глобалној економији. Изостајање промптних реакција супранационалних тела ЕУ на изненадне промене цена нафте упућује на структурну изложеност економске уније и њених чланица на ефекте преливања нафтних шокова. Ово истраживање има за циљ да укаже на асиметричне ефекте флуктуација цене нафте на берзанске индексе одабраних чланица ЕУ. Емпиријски налази су базирани на дескриптивној анализи везе између берзанских индекса и флуктуација цена нафте на узорку великих увозника нафте (Немачка, Француска и Холандија) и мањих увозника нафте (Ирска, Бугарска и Хрватска) у временском периоду 2013-2023. Резултати истраживања указују на асиметричан механизам утицаја нафтних шокова на финансијске берзе земаља чланица ЕУ: директно кретање берзанских индекса мањих увозника нафта, односно, инверзно кретање берзанских индекса већих увозника нафте сходно флуктуацијама цене нафте. Емпиријски налази апострофирају рањивост ЕУ као економске уније у контексту изостајања кључних контрацикличних политика као механизма реаговања на аномалије високо интегрисаних тржишта земаља чланица у околностима асиметричних (нафтних) екстерних шокова.

Кључне речи: нафтни шокови, берзански индекси, ЕУ, асиметрични трансмисиони ефекти

ASYMMETRICAL EFFECTS OF OIL PRICE SHOCKS ON STOCK INDICES OF SELECTED EU MEMBERS

Abstract: The process of deepening the economic integration of European economies reached its peak with the formation of a supranational entity for conducting monetary policy. However, the high degree of trade and financial integration of the market also implied the vulnerability of the economic union in terms of reacting to external shocks

with divergent effects, such as oil shocks. Due to the wide use of oil as a production input or even the dependence of production on its import, fluctuating oil prices is a crucial category to which countries around the world are vulnerable, especially European economies with the relatively highest degree of import dependence in the global economy. The lack of prompt reactions of EU supranational bodies to sudden changes in oil prices points to the structural exposure of the economic union and its members to the spillover effects of oil shocks. This research aims to indicate the asymmetric effects of oil price fluctuations on the stock market indices of selected EU member states. The empirical findings are based on a descriptive analysis of the relationship between stock market indices and oil price fluctuations on a sample of large oil importers (Germany, France and the Netherlands) and smaller oil importers (Ireland, Bulgaria and Croatia) in the period 2013-2023. The results of the research indicate an asymmetric mechanism of the impact of oil shocks on the financial markets of EU member states: direct movement of the stock market indices of smaller oil importers, that is, inverse movement of the stock market indices of larger oil importers according to oil price fluctuations. Empirical findings apostrophize the vulnerability of the EU as an economic union in the context of the absence of key countercyclical policies as a mechanism for responding to the anomalies of the highly integrated markets of the member states in the circumstances of asymmetric (oil) external shocks.

Keywords: Oil price shocks, Stock indices, EU, asymmetric spillover effects

Увод

Из историјске перспективе, светска економија се суочавала са различитим типовима глобалних економских криза са трансмисионим ефектима по националне економије. Сходно карактеру саме кризе зависи и јачина њеног утицаја, али и реакција економске политике на структурне ломове или екстерне шокове. Један од круцијалних екстерних шокова са израженом трансмисијом по националне економије представља скок цена нафте (нафтни шок). Значајан број земаља у свету увози велике количине нафте, што у комбинацији са изузетно високим степеном финансијске интегрисаности, чине нафтне шокове значајном егзогеном варијаблом већине земаља учесница глобалне економије (Hammoudeh & Li, 2005).

Раст цена нафте иницира бројне макроекономске реперкусије и дисбалансе по земље увознице нафте. С једне стране, реч је о трансмисији раста цена нафте на смањење економских активности и пораст инфлаторних притисака (дестабилизација интерне равнотеже). С друге стране, раст цена нафте подиже вредност увоза и погоршава салдо текућег дела платног биланса (дестабилизација екстерне равнотеже). Поред трансмисионих ефеката на кључне аспекте интерне и екстерне равнотеже, пораст цена нафте у земљама увозницима изазива и финансијску дестабилизацију, а специфично дестабилизацију финансијских берзи (Morana, 2017; Fang & You, 2014).

Један од инкременталних макроекономских индикатора који је током претходних деценија имао кључну улогу у формирању кретања берзанских индекса широм света јесте цена нафте (Miller & Ratti, 2009). С обзиром да Европа предњачи у глобалној увозној тражњи за нафтом (следи Кина, потом САД), у овом истраживању се испитују управо земље чланице ЕУ са аспекта утицаја нафтних шокова на дестабилизацију берзи. Како је међу земљама чланицама ЕУ евидентна хетерогеност по кључним економским параметрима (Beker Pucar & Glavaški, 2021), између осталог и са аспекта зависности од увоза нафте, европске економије су диференциране у групу мањих (Ирска, Бугарска, Хрватска) и већих увозника нафте (Француска, Немачка, Холандија).

Главна идеја истраживања је идентификација асиметричних ефеката нафтних шокова на финансијске берзе одабраних европских економија, уз потврду веће изложености и рањивости великих увозника нафте. Цена нафте представља инверзан сигнал кретања финансијских берзи оних земаља чије су привреде високо зависне од увоза нафте за разлику од директног утицаја у мање зависним увозницама нафте. Инверзан утицај кретања цене нафте на финансијске берзе већих увозника нафте објашњава се механизмом: скок цена нафте → пораст трошкова производње → дестимулација економских активности и пад берзанских индекса, и *vice versa*. У циљу идентификације утицаја кретања цене нафте на берзанске индексе одабраних европских економија врши се компаративна дескриптивна анализа у периоду 2013-2023.

Рад је структуиран на следећи начин: након уводних разматрања, у првом делу рада је приказан преглед литературе у вези са истраженом везом екстерних (нафтних) шокова и берзанских индекса; у другом делу рада се анализира кретање цена нафте и увоз нафте одабраних економија ЕУ; трећи део рада укључује испитивање везе између цена нафте и берзанских индекса за подгрупу већих увозника нафте (Немачка, Француска, Холандија), потом и мањих увозника нафте унутар ЕУ (Бугарска, Хрватска, Ирска; закључна разматрања су изведена у последњем, четвртом, делу рада.

1. Преглед литературе

Комплексност утицаја промене цене нафте на финансијска тржишта и берзе рефлектује се и на неизвесност у погледу вођења економске политике. Уколико пођемо од тога да флуктуације у цени нафте могу имати асиметричне ефекте на финансијска тржишта и аутпут економије, примена адекватних контрацикличних мера економске политике може бити знатно отежана (Rahman & Serletis, 2010). Узевши у обзир да различити узроци нафтних шокова генеришу диференциране ефекте на економију, одлуке креатора економске политике се још више отежавају.

Од посебног значаја се истиче питање извора нафтног шока. Релација „*supply side vs demand side*" шок одређује да ли глобална цена нафте ендогено расте или егзогено пада (Jiang & Liu, 2021). У ситуацији „*supply side*" шока, када су произвођачи ограничени производњом, долази до раста цена нафте услед мање количине (ендоген раст цене нафте). Са друге стране, пример „*demand side*" нафтног шока представља COVID-19 пандемијска криза (егзоген пад цена нафте). Рапидан пад потрошње резултирао је драстичним падом цене нафте са 61$ по барелу на 12$ по барелу (Husain, Tiwari, Sohag & Shahbaz, 2019; Prabheesh, Padhan & Garg, 2020).

Кључан аспект алтернативних погледа на изворе потенцијалних нафтних шокова указује на тежину контрацикличног одговора на такве проблеме (Kilian & Park, 2007). Велике економије су највећи увозници нафте јер се њихове индустрије највише ослањају на ову сировину у производњи добара и услуга. Када дође до раста цене нафте, велики трошак трпи реална економија јер долази до раста трошкова производње, пада производње, раста незапослености и слабљења активности на тржиштима и берзама (Arouri & Nguyen, 2010). Кретање берзанских индекса за инвеститоре представља рефлексију привредне климе, те уколико је берза у паду, велика је вероватноћа повлачења новчаних средстава у циљу избегавања губитака (Joo & Park, 2021). И у случају мањих увозника нафте ситуација у привреди је такође зависна од нафтних шокова услед великог степена либерализације и протока капитала. Међутим, услед мање зависности од увоза нафте нафтни шокови могу имати супротан утицај на берзе ових земаља у поређењу са великим увозницима нафте.

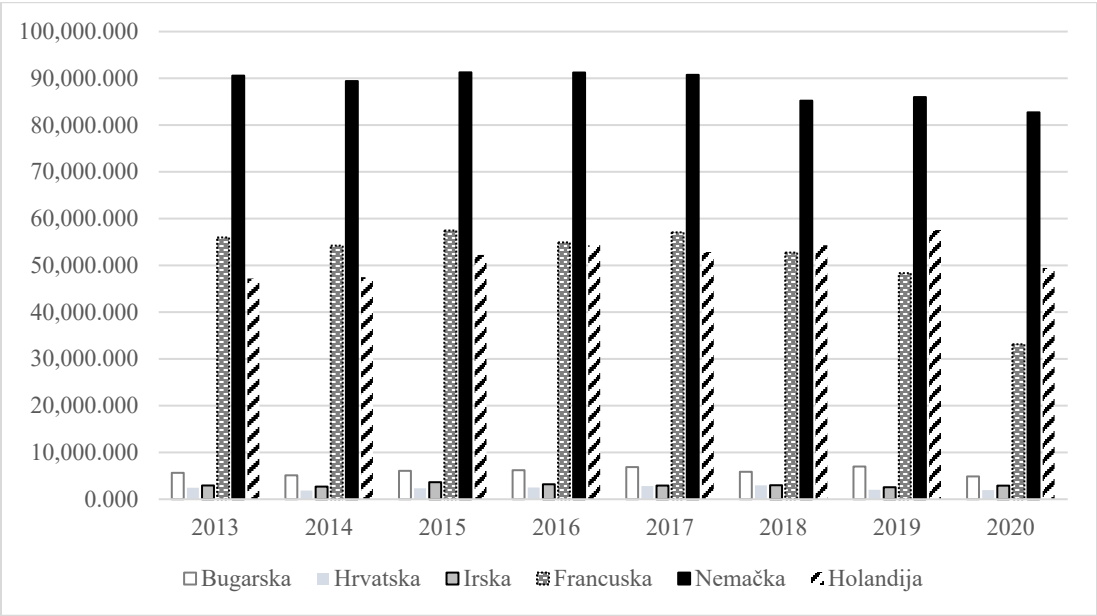
Један од главних разлога појаве светских економских криза јесу „*spillover*" ефекти доминантно трговински и финансијски интегрисаних економија (Stojkov, Beker Pucar & Glavaški, 2022). Уколико је довољно јак негативан утицај нафтног шока на финансијска тржишта и берзе развијенијих земаља, исти се може прелити на тржишта слабије развијених економија (Du & He, 2015). Имајући у виду трансмисију глобалне кризе на националне економије, идентификација окидача или негативних екстерних шокова од кључног је интереса за креаторе економске политике. Дубина кризних последица може се ублажити промптним, контрациклично усмереним и координисаним реакцијама економске политике (Beljić & Glavaški, 2021).

Макроекономске последице волатилности цене нафте отежавају вођење економских политика већ дубоко дивергентног система као што је ЕУ (Cunado & Gracia, 2014). Услед високог степена интегрисаности земаља чланица економске уније, егзогени шок (попут нафтног шока) не само да дестабилизује интерну и екстерну равнотежу земаља чланица, већ и подрива финансијску стабилност целокупног система односно економске уније. Апсорпција егзогеног нафтног шока највише изложених земаља чланица економске уније, изазов је и примарни циљ изразито интегрисаног, али високо хетерогеног система попут ЕУ (Hadulla, Federic, Hubrich & Kirstin, 2017).

2. Флуктуације цена нафте и увоз одабраних чланица ЕУ

Степен трансмисије нафтних шокова на дестабилизацију финансијских берзи у директној је вези са степеном увозне зависности. Услед изражене зависности европског региона од увоза нафте, истраживање се односи на утицај нафтних шокова на дестабилизацију финансијских берзи одабраних земаља чланица ЕУ, с диференцијацијом земаља чланица на веће и мање увознике нафте. Слика 1 приказује компаративни преглед највећих увозника у односу на земље које најмање увозе нафту у ЕУ.

На вертикалној оси слике 1 су приказане количине увоза нафте у хиљадама тона, док је на хоризонталној оси представљано кретање увоза почевши од 2013. године. У посматраном периоду Немачка, Француска и Холандија су значајно већи увозници нафте у односу на Ирску, Бугарску и Хрватску. Као највећи увозник се истиче Немачка са максималним увозом током 2015. године, а најмањим у 2020. години. Са друге стране, у групи најмањих увозника истиче се Хрватска, која најмање увози 2014. а највише током 2015. године. Услед ефеката пандемијске кризе, 2020. је година релативно најмањег увоза нафте унутар групе великих увозника.



Слика 1: Увоз нафте највећих и најмањих увозника чланица ЕУ у периоду 2013-2020.
Извор: Истраживање аутора према подацима Еуростат (2023).

Имајући у виду релевантност кретања цене нафте на глобалну економију слика 2 приказује волатилност њеног кретања током периода 2013-2023.

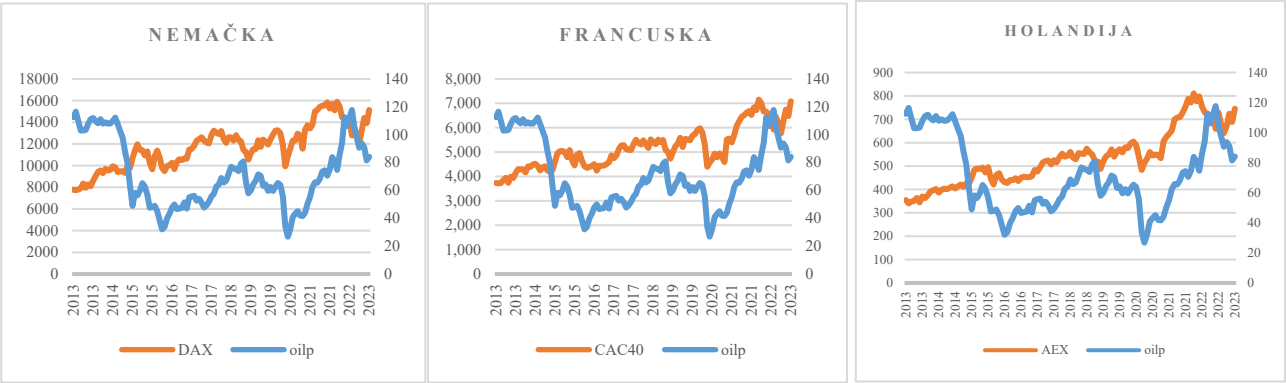
Слика 2: Флуктуације цене нафте у периоду 2013-2023.
Извор: приказ података на бази месечних ФРЕД (2023) података.

На слици 2 се уочава колико често је дошло до флуктуација цене нафте током претходних десет година. Иницијално, цена нафте је достигла ниво од 120$ по барелу што је узроковало оштар пад у њеној потрошњи у наредном периоду (Baffes, Kose, Ohnsorge & Stocker, 2015). У комбинацији са *ex-post* ефектима Велике рецесије цена нафте наставља да пада све до 2015. године када долази до поновне стабилизације њеног кретања. Цена нафте се стабилизовала све до појаве COVID 19 пандемијске кризе 2020. године на око 60$ по барелу нафте. Под утицајем ефеката пандемијске кризе цена нафте пада на ниво близу 20$ по барелу нафте, након чега је евидентан експоненцијални раст на ниво из 2013. од 120$ по барелу. Крај 2022. и почетак 2023. окарактерисан је поновним падом цене нафте на ниво од 80$ по барелу.

3. Веза цена нафте и берзанских индекса

3.1 Случај Немачке, Француске и Холандије

На слици 3 је представљен упоредни приказ кретања берзанских индекса DAX, CAC40 і AEX, Немачке, Француске и Холандије респективно, уз кретање цене нафте у периоду 2013-2023. Вредност берзанских индекса приказана је на левој примарној оси, док је кретање цене нафте приказано на десној секундарној оси.
Почевши од 2013. године долази до рапидног пада цене нафте са 120$ по барелу на 60$ по барелу током 2015. године. У овом периоду, кретање немачког DAX индекса расте са 8000 на 12000 индексних поена, француског CAC40 са 3700 на 5000 индексних поена, док холандски AEX индекс расте са 350 на 500. У периоду који следи, од 2016. године па све до краја 2018. евидентан је скок цене нафте са иницијалних 40$ по барелу на 80$ по барелу, док су берзански индекси одабраних земаља пратили доминантно стационарну путању (DAX флуктуира око 12000 индексних поена, CAC40 око 5500, а AEX око 550).



Слика 3: Флуктуација цене нафте и кретање берзанских индекса за највеће увознике нафте у ЕУ у периоду 2013-2023.
Извор: Приказ аутора на бази месечних података ФРЕД (2023).

Од краја 2018. па све до марта 2020. уочава се пад цене нафте што коинцидира са растом берзанских индекса испитаних европских економија. Почетком 2020. године долази до „*demand-side*“ нафтног шока у виду COVID 19 пандемијске кризе која разара финансијска тржишта уз контракционе реперкусије по реалну економију. У овом периоду берза се креће паралелно са ценом нафте током периода од две године. Цена нафте расте на 120$, док берзански индекси имају тенденцију пада (DAX са 1600 на 1200 индексних поена, CAC40 са 7200 на 5500 и AEX са 800 на 650). Цена нафте од половине 2022. па све до почетка 2023. године има тенденцију пада, док индекси свих земаља у овом периоду расту.
Дескриптивна анализа везе цене нафте и берзанских индекса на узорку одабраних већих увозника нафте међу чланицама ЕУ упућује на негативну односно инверзну везу посматраних макроекономских параметара.
Оцена класичног панел модела $si_{it} = \beta_1 + \beta_2 \cdot oilp_{it} + u_{it}$ за подгрупу већих увозника нафте упућује на статистички значајан и негативан утицај цене нафте (***oilp***) на берзанске индексе (***si***) Немачке, Француске и Холандије (i = 1, 2, 3) у временском периоду 2013M1-2023M1 ($t = 1, 2, \ldots, 121$). Оцењен модел случајних (стохастичких) ефеката гласи[1]:

$$\widehat{si} = 6158{,}43 - 4.83 \cdot oilp$$
$$(p=0.08) \quad (p=0.06)$$

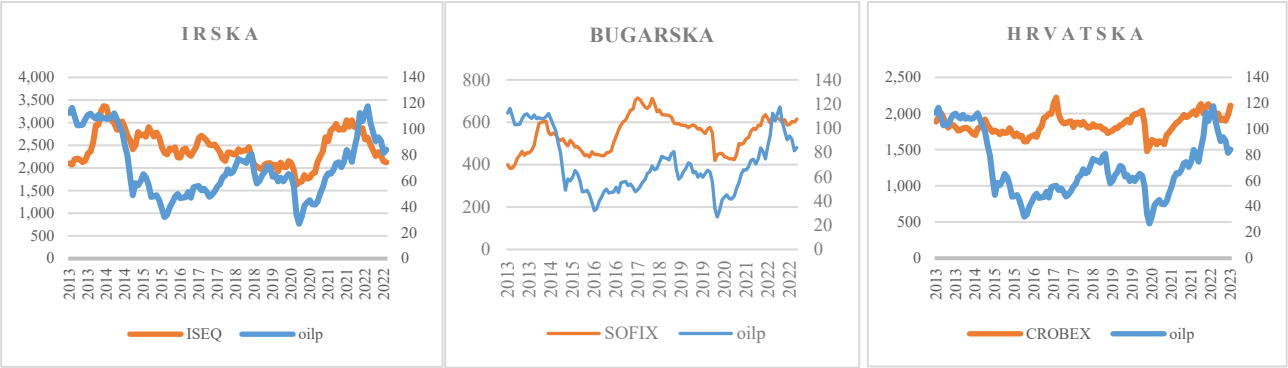
Оцена модела упућује на статистички значајан ($p < 0.10$) и инверзни утицај (-4.83) утицај цена нафте на берзанске индексе. Негативан предзнак оцењеног коефицијента потврђује претходно становиште у вези са инверзним односом цена нафте и берзанских индекса европских економија које су зависније од увоза нафте. Већа зависност од нафте чини истражене економије подложнијим на нафтне шокове, у реалном и финансијском контексту. Истакнути

[1] Модел стохастичких ефеката оцењен је у економетријском софтверу Стата 17.0 Ф-тестом је искључена могућност оцене методом обичних најмањих квадрата (pooled model), те је Хаусмановим тестом одабран модел стохастичких ефеката (*random effect model*) у поређењу са моделом фиксних ефеката.

емпиријски налаз указује на могућност значајне дестабилизације (пада берзанских индекса) у околностима раста цене нафте у Немачкој, Француској и Холандији.

3.2 Случај Ирске, Бугарске и Хрватске

Слика 4 приказује упоредно кретање берзанских индекса и цена нафте сада у земљама ЕУ које су мали увозници нафте. Као и у претходном случају, вредност берзанских индекса приказана је на левој примарној оси, док је кретање цене нафте приказано на десној секундарној оси. За разлику од случаја великих увозника нафте, сада се очитава директан однос између вредности берзанских индекса и цене нафте.



Слика 4: Флуктуација цене нафте и кретање берзанских индекса за најмање увознице нафте у ЕУ у периоду 2013-2023.
Извор: Приказ аутора на бази месечних података ФРЕД (2023).

Од краја 2013. године уочава се оштар пад цене нафте који се наставља до 2016. године, док индекси у овом периоду бележе тенденцију пада: хрватски CROBEX са 2000 индексних поена на 1600, бугарски SOFIX са 620 на 420, а ирски ISEQ са 3500 на 2200. Након поменутог пада следи раст цена нафте све до краја 2018 године. У овом временском интервалу хрватски CROBEX се повећава са иницијалних 1600 на 2300 индексних поена, али се стационира на висини од 2000, бугарски SOFIX расте са 420 на 650 и словеначки ISEQ са 2200 на 2700. Следи пандемијска криза када берза прати кретање цене нафте. Након периода рехабилитације, цена нафте има тренд раста до средине 2022. године, а берзански индекси посматраних земаља такође прате тренд раста (CROBEX са 1500 на 2000, SOFIX са 400 на 620 и ISEQ са 1900 на 2850 индексних поена). Од средине 2022. цене нафте опада што је пропраћено падом берзанских индекса, CROBEX са 2000 на 1800, SOFIX са 620 на 580 и ISEQ са 2850 на 2260.

За разлику од претходно испитане инверзне везе између цене нафте и берзанских индекса на узорку великих увозника нафте, случај мањих увозника нафте унутар ЕУ потврђује позитивну односно директну везу анализираних макроекономских параметара.

Оцена класичног панел модела $si_{it} = \beta_1 + \beta_2 \cdot oilp_{it} + u_{it}$ за подгрупу мањих увозника нафте (Бугарске, Хрватске и Ирске) упућује на статистички значајан и позитиван утицај цене нафте (***oilp***) на берзанске индексе (***si***) мањих увозника нафте (i = 1, 2, 3) у временском периоду 2013M1-2023M1 ($t = 1, 2, \ldots, 121$). Оцењен модел случајних (стохастичких) ефеката гласи[2]:

$$\widehat{si} = 1391{,}37 + 3.10 \cdot oilp$$
$$(p=0.01) \qquad (p=0.00)$$

Оцена модела упућује на статистички значајан ($p<0.05$) и позитивни (3.10) утицај цена нафте на берзанске индексе Бугарске, Хрватске и Ирске. Позитивни предзнак оцењеног коефицијента уз регресор цене нафте потврђује претходно становиште у вези са директним односом цена нафте и берзанских индекса европских економија које су мање увозно зависне нафте. Мања зависност од нафте чини истражене економије отпорнијим на нафтне шокове,

[2] Модел стохастичких ефеката оцењен је у економетријском софтверу Стата 17.0 Ф-тестом је искључена могућност оцене методом обичних најмањих квадрата (pooled model), те је Хаусмановим тестом одабран модел стохастичких ефеката (*random effect model*) у поређењу са моделом фиксних ефеката.

односно берзански индекси неће бити значајно дестабилизовани услед раста цене нафте, насупрот случају Немачке, Француске и Холандије.

4. Закључна разматрања

Флуктуације цена нафте су од есенцијалног значаја за макроекономске перформансе већине земаља света, што се нарочито рефлектује у земљама зависнијим од увоза ове сировине. Нафта је неизоставни ресурс производног процеса са директним реперкусијама по реалну економију, инфлацију и платно-билансу позицију земаља увозница. Историјски посматрано, глобална економија се суочила са неколико нафтних шокова са негативним реалним и монетарним консеквенцама по светску привреду. Свака од претходних нафтних криза имала је специфичан карактер и разликовала се по питању извора настанка. Последња криза изазвана COVID 19 пандемијом имала је карактер „*demand side*“ шока са последичним падом цена нафте.

Скорашње емпиријске студије у вези са тематиком флуктуација цене нафте доминантно се везују за проблематику њене неизвесности. У овом раду се проширује постојећа литература идентификацијом асиметричних ефеката нафтних шокова на берзанске индексе одабраних чланица ЕУ у зависности од степена увозне зависности од нафтног ресурса периоду 2013-2023. Резултати анализе потврђују асиметричан механизам утицаја нафтних шокова на финансијске берзе земаља чланица ЕУ: директно кретање берзанских индекса мањих увозника нафте, односно, инверзно кретање берзанских индекса већих увозника нафте. Инверзан утицај кретања цене нафте на финансијске берзе већих увозника нафте очекиван је с обзиром да скок цена нафте иницира значајан пораст трошкова производње, дестимулацију економских активности и пад берзанских индекса, и *vice versa*.

Идентификован асиметрични утицај нафтног шока на берзанске индексе одабраних чланица ЕУ отежава или чак онемогућава вођење економске политике на супранационалном и националном нивоу. Ситуација на нивоу економске уније је додатно закомпликована чињеницом да је тако дубоку економску интеграцију тешко одржати у околностима асиметричног дејства екстерних (у овом случају нафтних) шокова. Проблематика се везује за дивергентност реаговања високо интегрисаних тржишта земаља чланица економске уније на екстерне нафтне шокове, уз немогућност постављања уницифиране контрацикличне политике. Будући правци истраживања односе се на додатна испитивања трансмисионих ефеката нафтних шокова у смислу (де)стабилизације финансијских тржишта, инфлаторних притисака, економске активности и платнобилансне неравнотеже као круцијалних параметара макроекономске стабилности. Поред додатних варијабли и релација, истраживање се може проширити и на већи узорак чланица ЕУ уз другачији методолошки приступ анализе временских серија и нестационарних, динамичких макро-панел техника анализе.

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УТИЦАЈ РАТА У УКРАЈИНИ НА ПОСТ-COVID ТРЖИШТЕ РАДА СРБИЈЕ

Апстракт: На прве знаке опоравка тржишта рада Србије од утицаја економске кризе из 2008. године, чекало се дуже од 3 године. Упркос јачини утицаја поменуте кризе, тржиште рада Србије је по опоравку бележило позитивна кретања, која су прекинута избијањем пандемије вируса Covid-19. Специфичност кризе изазване вирусом Covid-19, будући да је криза изазвана неекономским фактором, је захтевала другачији приступ ситуацији и другачије прилагођавање тржишта рада и привреде као целине. Мере предузете са сврхом заштите здравља становништва условиле су погоршање перформанси тржишта рада Србије и изазвале смањењу тражње за радном снагом, нарочито у секторима висококонтактиних активности. Криза је испољила различити утицај на различите секторе на тржишту рада, а самим тим и на различите социо-економске и демографске групе. Рањиве категорије становништва на тржишту рада, које су биле у лошијем положају и пре избијања пандемије, осетиле су последице кризе више него други. Излазак из кризе изазване пандемијом вируса, уместо мирним периодом опоравка и јачања нарушених перформанси тржишта рада, замењен је ратом у Украјини. Свет се суочио са најинтензивнијим економским турбуленцијама од Другог светског рата. Период макроекономске нестабилности узроковане геополитичким превирањима и рапидним реструктурирањем енергетских система, чији смо сведоци, испољава јак утицај на економије у свету, а самим тим и на тржишта рада и њихове актере. Сврха овог рада је да укаже на изазове и ризике са којима се суочава тржиште рада Србије у период опоравка од пандемије и периоду изразите геополитичке нестабилности узроковане актуелним ратом у Украјини. У раду је наведено како је Covid-19 криза обликовала тржиште рада Србије и које се промене могу очекивати у текућој и наредним годинама као последица прилагођавања условима раста инфлације, потенцијалног стагфлационог шока, потешкоћама у производњи и снабдевању храном, растом цена енергената и минералног ђубрива.
Кључне речи: тржиште рада, Србија, геополитичка нестабилност, пост- Covid

THE IMPACT OF THE WAR IN UKRAINE ON THE POST-COVID SERBIAN LABOR MARKET

Abstract: The first signs of recovery of the Serbian labor market from the impact of the economic crisis in 2008 have been waiting for more than 3 years. Despite the strength of the impact of the aforementioned crisis, the labor market of Serbia recorded positive trends after recovery, which were interrupted by the outbreak of the Covid-19 virus pandemic. The specificity of the crisis caused by the Covid-19 virus, since the crisis was caused by a non-economic factor, required a different approach to the situation and a different adjustment of the labor market and the economy as a whole. The measures taken with the purpose of protecting the health of the population caused the deterioration of the performance of the Serbian labor market and caused a decrease in the demand for labor, especially in the sectors of high-contact activities. The crisis had a different impact on different sectors of the labor market, and therefore on different socio-economic and demographic groups. Vulnerable categories of the population in the labor market, who were in a worse position even before the outbreak of the pandemic, felt the consequences of the crisis more than

others. The exit from the crisis caused by the pandemic, instead of a peaceful period of recovery and strengthening of the impaired performance of the labor market, was replaced by the war in Ukraine. The world had faced the most intense economic turbulence since World War II. The period of macroeconomic instability caused by geopolitical turmoil and the rapid restructuring of energy systems, which we are witnessing, has a strong impact on the economies of the world, and therefore also on the labor markets and their actors. The purpose of this paper is to point out the challenges and risks facing the Serbian labor market in the period of recovery from the pandemic and the period of marked geopolitical instability caused by the current war in Ukraine. The paper stated how the Covid-19 crisis shaped the labor market of Serbia and what changes can be expected in the current and future years as a result of adjusting to the conditions of inflation growth, potential stagflation shock, difficulties in food production and supply, and rising prices of energy and mineral fertilizers.
Key words: labor market, Serbia, geopolitical instability, post-Covid

1. УВОД

Сведоци смо времена који се убраја у период најдрастичнијих економских турбуленција од периода Другог светског рата до данас. Пандемија изазвана вирусом Covid-19 је, пре непуне четири године, зауставила готово читав свет на тренутак и створила нову реалност, потпуно другачију од свих до сада познатих. До краја марта 2020. године 91% светске популације је било у земљама чије су границе биле делимично или у потпуности затворене. Промене изазване пандемијом су биле корените и утицале су на све области живота и рада. Последице су осетили и осећају сви – појединци, предузећа, привредни системи, државе.

Период опоравка од изненадне пошасти нагло је прекинуо рат у Украјини изазвавши највећи поремећај на глобалним тржиштима у новијој историји. Рат још увек траје и завршетак му је неизвесан, али оно што је извесно је да је изазвао потешкоће у снабдевању храном, минералним и вештачким ђубривима, тешкоће у производњи, као и да је допринео рапидном реструктурирању енергетских система. У комбинацији са пандемијом утицао је на то да светска економија уђе у фазу изразите макроекономске нестабилности што је довело до раста цена и инфлације и економске стагнације (нарочито у европским земљама).

Иако цене енергената (гаса и нафте) тренутно опадају, њихова стабилност није нешто на шта се може рачунати у периоду пред нама. Шта више очекује се и даља нестабилност у погледу кретања цена енергената што ће, заједно са растом цена вештачког ђубрива, водити ка расту цена хране. Процене су да ће произвођачи у другом кварталу 2023. године прелити чак 50% укупних повећања цена набавке на крајње потрошаче. Референтне каматне стопе централних банака и даље расту, а шестомесечни ЕУРИБОР полако, али сигурно тежи да достигне 4%. Све то ће додатно оптеретити и становништво и привреду и изазвати раст притиска на државни буџет земаља.

Србија извози 64,5% производа у Европску унију (ЕУ), а из исте набавља скоро 60% робе. Велики број компанија (близу 11 000) са капиталом из земаља Европске уније ради на тржишту Србије, близу 900 000 људи ради на тржишту рада Србије у компанијама које послују са ЕУ, док преко 24 000 компанија тргује са ЕУ. У последњих 13 година 63% укупних страних улагања у Србију су биле инвестиције из Европске уније. Све наведено наводи на закључак да ће Србија и српско тржиште делити исту судбину у 2023. години као и земље Европске уније. То значи да ће успоравање привреде Европске уније (која упркос свим напорима чланица улази у рецесију) имати јак утицај и на привреду наше земље.

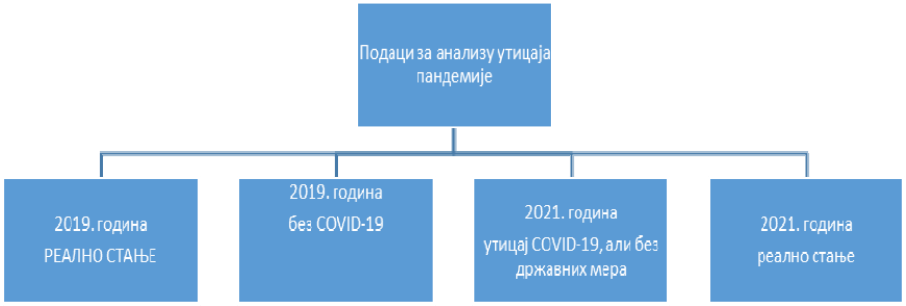
Тешко је сагледати, а још теже измерити све последице на благостање и живот које је изазвала пандемија, а још теже сагледати и сумирати последице тренутно актуелног рата у Украјини. Оно што је могуће и оно што је тема овог рада јесте да се сагледају оне последице које су мерљиве и за које тренутно подаци постоје, а које могу да пруже увид у стање тржишта рада Србије и његове учеснике. Кроз ту анализу могуће је сагледати где смо сада, какав је статус маргинализовани и осетљивих група на тржишту рада, каква је ситуација у погледу регионалне неједнакости која је била присутна на тржишту рада и много пре наведених немилих догађаја, а оно што је најважније је шта урадити да у периоду пред нама изађемо економски јачи и са наученом лекцијом из ових заједничких криза.

2. ПРЕГЛЕД ЛИТЕРАТУРЕ

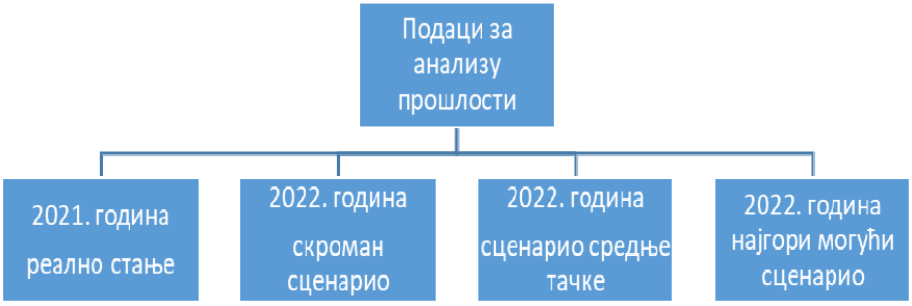
Имајући у виду да је тема овог рада утицај геополитичких превирања на тржиште рада Србије у пост – пандемијским условима, није изненађујућа чињеница да нема пуно радова и истраживања на ову тему, те да је мало доступних и квалитетних података који осликавају претходне четири године у Србији.

Једно од истраживања које заслужује пажњу јесте истраживање које је спровео Универзитет Уједињених нација. Њихов тим истраживача из области социјалне заштите је спровео анкетирање домаћинстава у Србији током 2019. и 2020. године и на темељу резултата спроведене анкете дошао је до података релевантних за процену утицаја пандемије на сиромаштво и неједнакост у Србији.

Процена утицаја пандемије темељила са на четири скупа хипотетичких података заснованим на економским подацима и подацима о тенденцијама те претпостављеним ценама и зарадама у будућности (види слику 1а и 1б).



Слика 1а. Хипотетички скупови података који су се користили за анализу утицаја COVID-19 пандемије
Извор: Аутори на основу УН пројекта „Јачање социјалне заштите у Србији кроз увођење елемената за реаговање на кризу/кризне ситуације“, 2023.



Слика 1б. Хипотетички скупови података који су се користили за анализу прошлости
Извор: Аутори на основу УН пројекта „Јачање социјалне заштите у Србији кроз увођење елемената за реаговање на кризу/кризне ситуације“, 2023.

Резултати спроведеног истраживања су показали да је пандемија прекинула тренд смањења сиромаштва и погоршала неједнакост по неколико критеријума. Да није било пандемије извесно је да би се учесталост тешког сиромаштва смањила. Државне ad hoc мере су у одређеној мери ублажиле раст сиромаштва изазване пандемијом међу децом и одраслима и задржале га на нивоу стања забележеног у 2019. години, док је у случају неједнакости дошло до приметног погоршања ситуације.

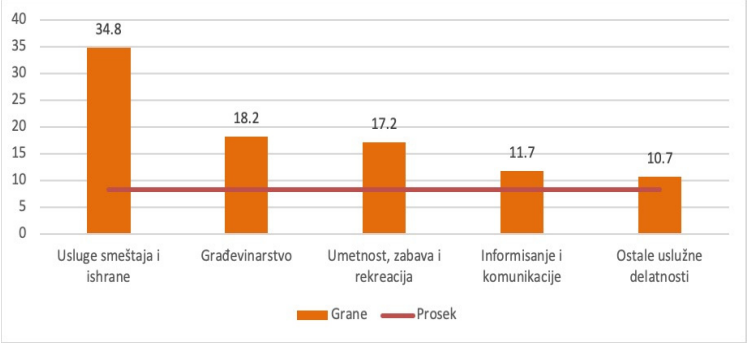
Друго значајно истраживање је истраживање под називом „COVID-19 и запосленост у Србији: утицај пандемије и мера за њено спречавање на запосленост и услове рада“ које је спровела група независних стручњака за развојну иницијативу, SeConS, у периоду између 11. априла 2020. године и 23. априла 2020. године (подаци се нису прикупљали у периоду између 17. априла и 20. априла 2020.године због ускршњих празника). Основ за анализу чинио је репрезентативни узорак од 1600 лица који су у фебруару 2020. године имали запослење. Категорија запослених је посматрану у контексту званичне дефиниције запослених коју примењује Републички завод за статистику (а која је усклађена са дефиницијом запослености Међународне организације рада и Еуростата). То значи да су узорком обухваћена сва пунолетна лица која су у фебруару 2020. године имала не само формално запослење засновано на основу писменог уговора, него и лица која неформално обављају било какву радну активност, укључујући ту и рад на црно за друге и самозапослена лица. Циљ истраживања је био да се сагледа утицај пандемије и државних мера које је Влада Републике Србије спровела у циљу заштите запослених, на запослене, услове рада током врхунца пандемије и трајања ванредног стања и праксе повезане са бригом о члановима породице и домаћинству.

Резултати овог истраживања су указали на рањивост тржишта рада Србије и неједнаку распоређеност терета кризе међу различитим групама/актерима тржишта рада. Главни закључци до којих су дошли стручњаци који су спровели ову студији биће предочени у наредном поглављу.

3. ТРЖИШТЕ РАДА СРБИЈЕ У ПОСТ-COVID УСЛОВИМА

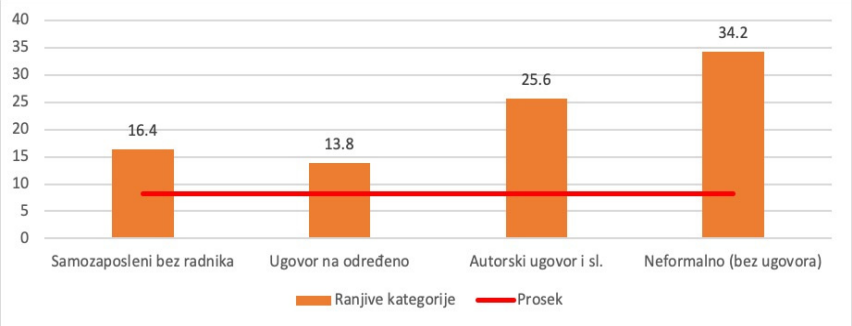
Неповољан утицај пандемије на запосленост становништва је појава присутна у целом свету. Према подацима Међународне организације рада (ILO) у прва три месеца ове године у свету је изгубљено око 130 милиона радних места са пуним радним временом (4,5% радних сати). Промене у привредном и социјалном миљеу Србије под утицајем пандемије прекинуле су тренд смањена неједнакости и сиромаштва, те тренд раста стопе запослености и нето зарада који је био присутан у претходној деценији.

Резултати раније поменутог истраживања које је спровео SeConS показали су да је свака дванаеста особа (укупно око 200 000 људи) која је у фебруару 2020. године имала посао у непољопривредном сектору, два месеца касније остала без запослења (укупно 8,2% лица обухваћених анкетом укључујући и оне који би свакако изгубили посао услед кретања на тржишту рада, а не искључиво под утицајем пандемије). Натпросечни губитак запослења забележен је у тзв. високо-контактним привредним гранама попут угоститељства, грађевинарства, уметности, забаве, рекреације, информисања и комуникације (види слику 2.). У оквиру ових привредних грана лица на позицијама руководилаца, техничара и стручњака су у мањој мери губила запослење, док то није био случај са мануелним радницима без квалификација и услужним и угоститељским кадром.



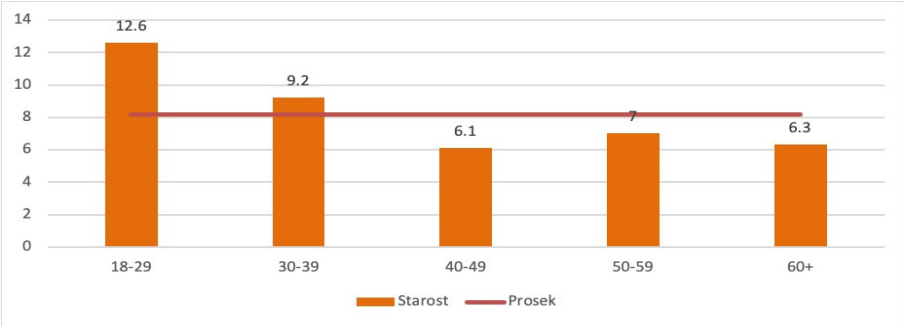
Слика 2. Привредне гране са натпросечним уделом лица који су изгубили посао у 2020. години (%)
Извор: SeConS, COVID-19 и запосленост у Србији, 2020.

Иако су последице пандемије на тржишту рада Србије осетили сви, свакако најјачи утицај су осетиле најрањивије категорије на тржишту рада. Резултати истраживања показују да је свака трећа особа из категорије неформално запослених која је била запослена у фебруару 2020. године, два месеца касније била без посла (види слику 3.). Поред наведене рањиве категорије запослених на тржишта рада, пандемија је утицала на натпросечни губитак самозапослених лица, лица запослених по основу уговора на одређено време и лица запослених по основу уговора за ауторско дело



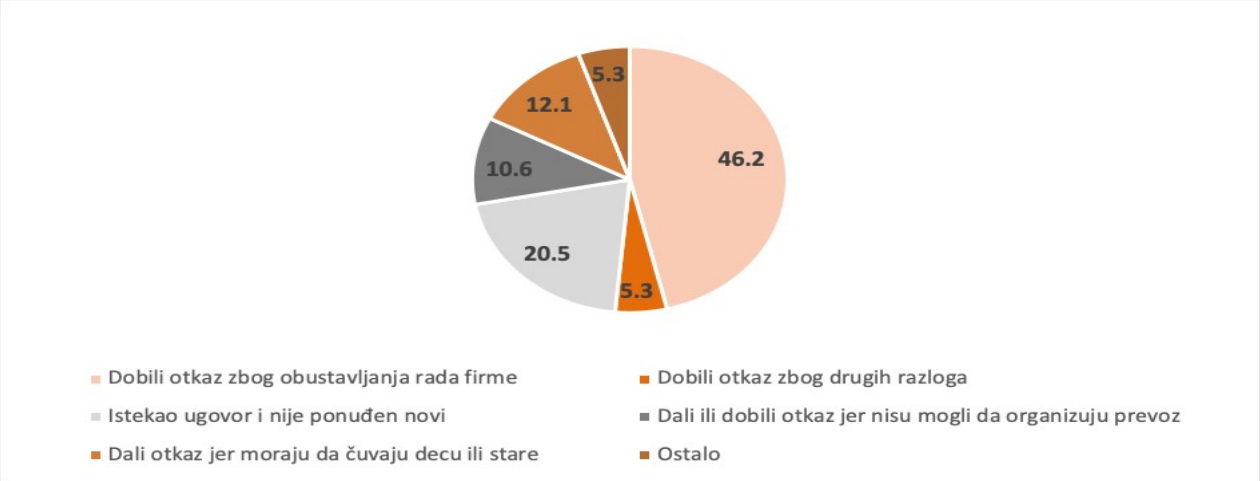
Слика 3. Губитак запослења међу рањивим категоријама на тржишту рада (%)
Извор: SeConS, COVID-19 и запосленост у Србији, 2020.

Губитак посла изазван пандемијом јаче су осетили запослени у приватном сектору у односу на јавни сектор, запослени становници сеоских подручја у односу на запослене у градовима, те млади у односу на старије запослене (види слику 4).



Слика 4. Губитак запослења по старосним групама (%)
Извор: SeConS, COVID-19 и запосленост у Србији, 2020.

Натпросечни губитак запослења младих старосне доби између 18 и 29 година објашњава се чињеницом да су управо они у највећој мери запослени у привредним гранама које су најјаче погођене пандемијом (угоститељство, грађевинарство, туризам).
Највећи проценат запослених, обухваћених истраживањем (46.2%), остало је без посла због обустављања рада фирме (види слику 5) у којој су били запослени (упркос заштитним мерама државе спроведеним са циљем очувања запослених). Због истека уговора без посла је остало 20,5% лица, а 12.1% лица је било принуђено да бира између посла и породице, те је дало отказ како би водили бригу о деци или старим и немоћним члановима домаћинства.



Слика 5. Разлози за губитак запослења (%)
Извор: SeConS, COVID-19 и запосленост у Србији, 2020.

На слици 6а и 6б дат је приказ различитог утицаја кризе изазване пандемијом на економске секторе у Србији посматрано на кратак (слика 6а) и средњи рок (слика 6б). За оцену утицаја кориштена је петостепена градација утицаја пандемијске кризе (низак, низак до средњи, средњи, средњи до висок и висок утицај).

Слика 6а. Утицаја кризе изазване пандемијом на економске секторе у Србији посматрано на кратак рок

Извор: Аутори на основу резултата истраживања SeConS, COVID-19 и запосленост у Србији, 2020.

У секторима који се налазе у групи високог ризика (слика 6а) запослено је 44,4% регистрованих запослених лица у Србији, а у секторима из групе средњег до високог ризика 7,4% од укупно регистрованих запослених лица. Преко 50% од укупног броја регистрованих запослених на тржишту рада Србије ради послове у секторима који су под јаким утицајем кризе изазване пандемијом, посматрано на кратак рок.

Слика 6б. Утицаја кризе изазване пандемијом на економске секторе у Србији посматрано на средњи рок

Извор: Аутори на основу резултата истраживања SeConS, COVID-19 и запосленост у Србији, 2020.

У случају процене утицаја пандемијске кризе на средњи рок, ствари се мењају. Свега 3,9% од укупног броја регистрованих запослених ради у сектору Услуге смештаја и исхране који ће и даће остати изложен великом ризику, док ће број запослених у секторима изложених средњем до високом ризику порасти на 27,2 %.

Занимања која су по природи таква да се у великој мери могу обављати од куће су заштићена од шока понуде и с тога боље плаћена у односу на занимања где је присуство радника на радном месту императив и услов без кога се не може. (Dingel and Neiman, 2020). Имајући ово у виду долази се до закључка да би реструктурирање радних места унутар посматраних сектора, а све са намером да се редукују последице утицаја кризе, додатно угрозио запослене на ниско плаћеним високо-контактним пословима.

Пандемија је изнедрила рад на даљину као флексибилну форму рада која пружа могућност запосленима да раде од куће, али и са било ког места у свету. Са друге стране, компаније су захваљујући раду на даљину успеле да привуку нове и задрже постојеће таленте међу редовима својих запослених будући да рад на даљину не умањује квалитет радног процеса у односу на рад са радног места. Рад на даљину је и даље присутан, али није више доминантан као у годинама иза нас. Заменио га је хибридни рад као својеврсна комбинација рада од куће и рада на радном месту. Ова флексибилна структура обављања радних задатака је најбоље решење компанијама у актуелним условима пословања, будући да се кроз овај вид рада постиже боља организација и баланс приватног и пословног живота запослених, што свакако утиче на продуктивност и мотивисаност радника.

Опште је позната чињеница да је географско-демографска слика Србије регионалног карактера са изразитом неједнакошћу региона у сваком смислу. Ова неједнакост није новијег датума (присутна је деценијама уназад), али је након завршетка пандемије још више дошла до изражаја. Регионалне разлике су видљиве у погледу сировинске базе, географског положаја, нивоа социјално-економског развоја, сиромаштва и развијености инфраструктуре. Многе регије карактерише изразита етничко-конфесионална шароликост и различита привредна динамика. Свака акција усмерена на решавање проблема привредног заостајања неразвијених региона је немогућа без јачања прилива страног капитала и инвестиција као покретачких снага за модернизацију неразвијеног Југа Србије. Атрактивност неразвијеног Југа се може постићи кроз смањење инвестиционог и кредитног ризика, те смањење трошкова пословања у односу на остатак Србије. Стварање имиџа стабилне регије уз све наведено учиниће неразвијене регионе атрактивним страним инвеститорима и привући преко потребна новчана улагања. Квалификациона структура становништва је неповољна, те је изградња квалификованог кадра способног да се брзо прилагоди потребама тржишта рада у измењеним условима, на дуг рок гледано, једнако важна као и градња перспективног имиџа за који Југ Србије итекако има основа, нарочито ако се у обзир узму његов стратешки погодан положај и погодно тло за долазак предузећа из области са високим издацима.

4. УТИЦАЈ РАТА У УКРАЈИНИ НА ТРЖИШТЕ РАДА СРБИЈЕ

Рат у Украјини је допринео, између осталог, расту трошкова живота који ће засигурно премашити раст зарада у већини домаћинстава и посебно утицати на маргинализоване заједнице на тржишту рада Србије, те повећати удео лица који живе у сиромаштву. Државне мере спроведене за време пандемије са циљем заштите благостања становништва су се показале као ефикасне, али и скупе и на средњи рок неиздрживе.

Утицај кризе изазван геополитичким превирањима испољава се на Србију двојако:

а) директно кроз раст цена сировина и енергената и кроз поремећај у снабдевању природним гасом (Србија се скоро у потпуности ослања на Русију у погледу увоза природног гаса)

б) индиректно кроз успоравање у еурозони (око 63% извоза из региона Западног Балкана се пласира у еурозону, више од половине директних страних инвестиција у регион је из еурозоне као и две трећине дознака).

Економска криза коју су генерисали ратни сукоби у Украјини у највећој мери утиче на произвођаче хране (пре свега воћа) будући да се већина пласмана извози на руско тржиште које је услед ратних сукоба недоступно. Раст цена енергената и вештачког ђубрива додатно угрожава пољопривредну производњу. Када се ту придода инфлаторни притисак и неминовни улазак у период стагфлације, редукција производње или чак и обустава исте су сценарији коју су врло извесни. На исти проблем наилазе и произвођачи ауто делова, фирме из сектора текстилне и хемијске индустрије. Фирме из наведених сектора свакако да разматрају опцију преусмерења пласмана на друга тржишта, али још увек не одустају од руског тржишта будући да су на исто оријентисане у великој мери.

Српске фирме у Русију (6. извозно тржиште) највише пласирају јабуке, хулахопке и аутомобилске гуме, а највише увозе, као што је већ поменуто, нафту и гас. У Украјину (29. извозно тржиште) српске фирме највише извозе минерално и хемијско ђубриво, бели лим и покривач подова, а највише увозе руду гвожђа.

Србија има закључене споразуме о слободној трговини са великим бројем земаља из Западне Европе и као таква била је привлачна дестинација за бројне инвеститоре. Криза изазвана ратом у Украјини због своје политичке ноте сматра се чак и опаснијом од кризе изазване пандемијом будући да управо због политичких притисака Србију може постати мање пожељна у инвестиционом смислу. Економске последице рата ће бити

дуготрајне чак и да се рат завршити данас. Крај рата је неизвестан, али је пад БДП-а испод пројектованих 4,5% сигуран, као и улазак у дубљу рецесију. Томе доприносе инфлаторни притисци који су били присутни и пре избијања рата, али су сада услед сталног раста цена сировина, енергената и финалних производа, још интензивнији и прете да буду у дужем периоду присутни. Стално висока инфлација намеће потребу строге монетарне политике што је свакако изазов за спровести у тешким временима као што су ова чији смо сведоци.

5. ЗАКЉУЧАК

Иако се у свету спроводе бројна истраживања на тему утицаја кризе изазване пандемијом на економије, једна од главних препрека када је анализа утицаја геополитичких превирања и последица утицаја пандемије на тржиште рада Србије у питању, јесте недостатак адекватних података и мали број релевантних истраживања на дату тему. С тога је, у наредном периоду, акценат потребно ставити, између осталог и на координисано и усаглашено прикупљање податка, потребних за анализу и озбиљан рад на доступношћу истих.

Управо, горе поменути недостатак валидних података, као и присуство великог броја варијабли који испољавају утицај на глобалну економију у наредном периоду, чини сваку предикцију будућег стања привреде и тржишта рада Србије упитном. Део стручњака заступа тезу да ће опоравак света од утицаја пандемије водити ка наставку раста у наредној години, али са друге стране многи су скептични услед растуће инфлације, трговинске тензије и стално присутне геополитичке нестабилности. Оно што је извесно је да ће текућа и наредна година захтевати од креатора политика и свих актера тржишта рада високу флексибилност и пажљиво праћење развоја ситуације, јер сви стручњаци су сагласни да смо ушли у период рецесије, само је питање колико дубоко.

Да би се неједнакост регионалног типа ублажила и на послетку редуковала потребно је кроз партнерство јавног и приватног сектора обезбедити флексибилно тржиште рада, усаглашеност образовања са потребама привреде, стимулативну фискалну политику и адекватну саобраћајну и телекомуникациону инфраструктуру. Постизање равнотеже између функционалне централне власти на једној страни и децентрализације и јачању локалне самоуправе на другој страни је изазов са којим се Србија тренутно суочава и циљ коме се у будућности тежи, а све у духу одговорности према неразвијеним регионима и погођеној популацији. Србија као целина ће бити јака и успешна колико су јаки и успешни сви њени делови.

Наивно би било очекивати да ће се престанком рата у Украјини и проглашењем краја пандемије ситуација на тржишту рада Србије стабилизовати и вратити у стање пре кризе будући да стабилност и стање тржишта рада Србије зависи и од стања и привредног раста свих земаља са којима Србија има јаке економске везе.

Европска унија је годинама уназад најважнији трговински партнер Србије и српске компаније су везане за компаније на европским тржиштима. Да ли ће последице пандемије и рата у Украјини бити само привремени шок за српско тржиште рада и спрску привреду или ће последице бити трајне показаће време.

Јак инфлаторни притисак условљен дисбалансима до којих је довела криза изазвана пандемијом, рат у Украјини је додатно појачао. Раст инфлације ће неминовно довести до раста цена рада на тржишту рада као процес усклађивања са актуелном ситуацијом, али будући да је трајање инфлаторног притиска неизвесно, може довести и до губитка послова и обарање цене рада услед повећања понуде на страни запослених.

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СТРАТЕГИЈСКО ОБЕЗБЕЂЕЊЕ НЕОПХОДНИХ МИНЕРАЛНИХ СИРОВИНА ЗА ПРИВРЕДНЕ И НАЦИОНАЛНЕ ПОТРЕБЕ

Апстракт: Актуелни геополитички услови, тржишне промене и отежано обезбеђење потребних минералних сировина, условили су неповољну позицију произвођача у набавци минералних производних инпута, нарочито отежаних услова њихове куповине, затим повишења трошкова производње и поскупљења коначних тржишних производа. Као посебно изражен пословни проблем испољено је обезбеђење потребних количина и квалитета минералних сировина неопходних за пословање и производњу по одговарајућим тржишним ценама. Стратегијско планирање потребних минералних сировина на националном нивоу захтева израду актуелног геолошко-економског стања минералних резерви на нивоу националне минералне економије и праћење тржишних кретања на специфичном минералном тржишту на основу економске оцене минералних резерви. Метода експертне економске оцене омогућује потпуно актуелно економско утврђивање и квалитативно-квантитативно дефинисање националног стања минералних резерви, као полазне основе за потребне стратегијске одлуке у домену минералне производње и обезбеђења привреди потребних главних минералних сировина.

Кључне речи: стратегијско обезбеђење потреба, минерална сировина, минерална производња, експертна економска оцена.

STRATEGIC PROVISION OF NECESSARY MINERAL RAW MATERIALS FOR ECONOMIC AND NATIONAL NEEDS

Abstract: The current geopolitical conditions, market changes and difficult provision of the necessary mineral raw materials, caused the unfavorable position of producers in the procurement of mineral production inputs, especially difficult conditions for their purchase, followed by an increase in production costs and an increase in the price of final market products. Ensuring the necessary quantities and quality of mineral raw materials necessary for business and production at appropriate market prices was manifested as a particularly pronounced business problem. Strategic planning of the required mineral raw materials at the national level of national mineral needs requires preparation of the current geological-economic state of mineral reserves at the level of the national mineral economy and monitoring of market trends on the specific mineral market based on the economic evaluation of mineral reserves. The method of expert economic evaluation enables a completely up-to-date economic determination and qualitative-quantitative definition of the national state of mineral reserves, as a starting point for the necessary strategic decisions in the field of mineral production and provision of the main mineral raw materials needed by the economy.

Key words: strategic provision of needs, mineral raw materials, mineral production, expert economic evaluation.

1. УВОД

Минерална економија земље и домаћи минерални сектор су под веома значајним утицајем актуелних геополитичких догађања, која показују изражене рефлексије на рад, функционисање и материјално и ценовно кретање специфичног минералног тржишта. Као најважнија последица геополитичких догађања са веома значајним економским димензијама је отежано снабдевање предузећа и привреда многих земаља одређеним стратегијски значајним минералним сировинама. При томе се могу издвојити четири најзначајнија геополитичка догађаја, и то: (а) војно-ратна дејства Русије на подручју Украјине; (б) заједничко стратешко деловање САД и ЕУ; (в) увођење санкција Русији од стране САД и ЕУ; и (г) јачање економских веза земаља BRICS-а. Иако је спектар економског утицаја веома широк, посебно је испољен проблем обезбеђења потребних количина нафте и гаса, као кључних енергетских минералних сировина, затим угља, али и читавог низа металичних и тзв. критичних минералних сировина. У таквим новонасталим околностима до изражаја посебно долази потребан приступ стратегијском планирању функционисања економије директно зависног од неопходних минералних сировина (Тошовић, 2022а).

Актуелна догађања у минералном сектору земље су у први план довела незаобилазна питања минералне политике и минералне стратегије земље (Тошовић, 2014, 2022б). У домену минералне политике, а у складу са основним принципима минералне економије и економске геологије (Тошовић, 2006, 2014, 2022в), кључно питање је да ли ће се привредне и друштвене потребе за минералним сировинама подмиривати из: (а) домаће минерално-сировинске базе; или (б) увозом минералних сировина са светског минералног тржишта. За сваку од варијанти је неопходна одговарајућа минерална стратегија, која ће омогућити адекватну стратегијску реализацију. У зависности од значаја минералних сировина, који се може третирати као: (а) комерцијални или (б) национални значај (Тошовић, 2006, 2016а) неопходно је дефинисање одговарајућег стратегијског приступа који је важан за привредне или националне потребе.

Комплексност разматрања привредних и националних потреба за металичним, неметаличним и енергетским минералним сировинама у актуелним условима захтева стручни, систематски и поуздан приступ, са реалним сагледавањем: (а) сопствене минерално-сировинске базе; (б) могућности остваривања одређеног обима минералне производње и (в) економских ефеката предметне минералне производње. За овакво сложено економско-производно и минерално-сировинско разматрање потребно је прикупљање и обрада великог броја разноврсних полазних података, односно показатеља, натуралног, вредносног и синтетског карактера, за шта је посебно повољно коришћење методе експертне економске оцене минералног лежишта, развијане и рађене у националној Београдској школи економске геологије (Тошовић, 2006, 2014, 2016а, 2016б, 2016в, 2016г; Јанковић и Миловановић, 1985). Предметно аналитичко разматрање се реализује у складу са позитивним искуствима, праксом и нивоом рада на савременој економској оцени минералних ресурса у развијеним минералним економијама (Тошовић, 2022а, 2022б; Cehlar et al., 2014; Rudenno, 2012; Rundge, 1998; Torries, 1998; Wellmer et al., 2010). Основни циљ овог рада је да истакне место, улогу и значај стратегијског разматрања, планирања и обезбеђења неопходних минералних сировина за привредне и националне потребе, како у делу који обухвата потребе предузећа, као основног субјекта привређивања, тако и агрегатно на нивоу привреде земље, али и задовољења националних потреба друштвене заједнице, полазећи од стратегијског значаја минералне економије и минералне производње у актуелним кризним условима.

2. СТРАТЕГИЈСКИ ИЗВОРИ ПОДМИРЕЊА ПОТРЕБА ЗА МИНЕРАЛНИМ СИРОВИНАМА

Пословна активност у бројним привредним гранама у савременим условима разноврсних облика производње, показује веома изражену зависност од различитих металичних, неметаличних и нарочито енергетских минералних сировина. При томе основно истраживачко-аналитичко питање није да ли постоји потреба да се одређене минералне сировине користе, јер без њих нема производње бројних производа за пословне и личне потребе, већ су базична питања: (а) из којих извора; (б) под којим условима; и (в) на који начин ће се те потребе задовољити.

У разматрању извора обезбеђења минералних сировина могу се издвојити: (а) домаћи извори, односно домаћа производња из сопствених рудних лежишта; и (б) страни извори, односно минералне сировине из увоза. При томе се морају имати у виду два додатна аналитичка аспекта, и то: (а) постојање минералне сировине у домаћој минерално сировинској бази, односно на подручју земље, с обзиром на геолошку грађу и степен геолошке истражености; и (б) економска ограничења с обзиром на тржишну цену предметне минералне сировине. Дела минералних сировина потребних привреди нема на подручју Србије или, ако их има нису производно активне, због чега се као једини извор снабдевања у таквом случају намеће њихов увоз.

Економски посматрано за бројне неметаличне минералне сировине, чија тржишна цена је релативно ниска, постоји ограничење, које се односи на лимитирано транспортно растојање до тзв. прохибитивне даљине, како трошкови транспорта не би превазишли тржишну цену. У наведеном случају предметно ограничење се последично одражава на немогућност увоза ових минералних сировина, што првенствено обухвата део индустријских минерала и део грађевинских материјала. Међу њима се као веома илустративни примери могу

навести песак, шљунак, опекарске сировине, кречњак као технички камен и др., који се морају обезбедити на локалним подручјима и тржиштима у одговарајућој близини места потрошње.
У минералној економији земље је посебно специфична позиција минералних сировина, које постоје у структури минерално-сировинске базе, у два карактеристична случаја, и то: (а) постојање рудних лежишта, која из одређених разлога нису активна; и (б) постојање актуелне производње минералних сировина, али недовољне с обзиром на већу тражњу одређених привредних грана. У оба наведена случаја се као незаобилазна намеће варијанта делимичног или потпуног увоза минералних сировина из страних извора.
Правилан стручни, инжењерски и економски приступ у минералном сектору и анализа у склопу минералне економије Србије захтевају дефинисање одговарајуће стратегије подмирења потреба за минералним сировинама у складу са специфичностима минералне производње и домаће или берзанске доступности минералних сировина. У склопу неопходне стратегијске анализе изузетно је значајно место, улога и значај експертне економске оцене предметних минералних ресурса и, у склопу ње, посебна економска анализа коначне цене једне тоне увезене минералне сировине у односу на цену једне тоне домаће произведене минералне сировине. Шири оквир економске анализе обухвата и питање извора и начина обезбеђења потребних финансијских средстава за увоз, нарочито у условима веома израженог спољнотрговинског дефицита Србије, као и висине девизне задужености земље.

3. СТРАТЕГИЈСКО ОБЕЗБЕЂЕЊЕ МИНЕРАЛНИХ СИРОВИНА ЗА ПРИВРЕДНЕ И НАЦИОНАЛНЕ ПОТРЕБЕ

Задовољење потреба производних предузећа за одређеним металичним, неметаличним и енергетским минералим сировинама се може разматрати са два битна становишта, и то: (а) привредних потреба на нивоу појединачних предузећа; и (б) националних потреба на нивоу земље. Иако су међусобно повезана, оне имају своје специфичности са стратегијског, планског и економског становишта.
Актуелни геополитички услови констатовани у уводном разматрању, затим тржишни проблеми и тржишне промене, нарочито отежано обезбеђење потребних минералних сировина, услед војно-ратних дејстава Русије и Украјине, али и индиректног укључивања других земаља и административно-санкцијских ограничења САД и ЕУ условили су прилично неповољну позицију различитих произвођача у набавци потребних минералних производних инпута. Стратегијско планирање набавке потребних минералних сировина или минералних компонената за производне процесе у предузећу, као основном привредном и економском субјекту, врши се у складу са врстом минералне сировине и могућностима набавке на домаћем или страном минералном тржишту. Оне су у потпуности предмет пословног планирања на нивоу предузећа, у складу са актуелним тржишним подацима прикупљеним од стране комерцијалне и набавне службе. При томе су сходно принципима стратегијског планирања неопходне полазне анализе, с једне стране, набавки минералних сировина и минералних производа у претходном периоду, затим количина и цена, а с друге стране потребних планских количина и прогнозних цена за наредни плански период.
У дугорочном стратегијском планирању од посебног значаја могу бити подаци о ценама коштања и продајним ценама минералних сировина из домаћих лежишта и са домаћом минералном производњом, које су директно садржане у експертној економској оцени минералних ресурса. Оне се нарочито односе на неметаличне минералне сировине, које имају нижу тржишну цену и које су ограничене прохибитивним транспортним растојањем, а тиме и набавком на домаћем минералном тржишту. Ове минералне сировине нарочито обухватају: песак, шљунак, опекарске сировине, керамичке сировине, технички камен (тзв. туцаник), млевени кречњак за пољопривредну производњу и део украсног камена који се производи у Србији. Предмет набавки обухвата и део металичних минералних сировина, у које се, зависно од потреба производног асортимана, могу уврстити: бакар, челик, полупроизводи од увозног алуминијума и др. Од енергетских минералних сировина предмет набавки су првенствено нафтни деривати, који се набављају из домаће НИС а.д. Петрол Рафинерије нафте Панчево, која је у власништву НИС Групе, а која има максимални пројектовани годишњи капацитет од 4,9 милиона тона. С друге стране набавка гаса се врши од домаћих дистрибутера увозног гаса, међу којима је највећи ЈП Србијагас. Постојеће потребе за нафтом и гасом се само једним делом, оквирно око 20% подмирују из домаће производње, која се остварује у НИС а.д. Нови Сад из лежишта нафте и гаса на подручју Војводине. Појединачна предузећа, којих је мали број, као термоенергент набављају угаљ или мазут, иако је као део енергетске транзиције из еколошких разлога тенденција замене ових фосилних горива гасом или прикључењем на локалне системе централног грејања. Набавка угља се претежно врши из домаћих лежишта, првенствено Колубаре и Костолца, иако је било одређених техничко-технолошких проблема у њиховој производњи. Набавка мазута се врши такође из домаће производње, јер је због повећане тражње након почетка војно-ратног руско-украјинског сукоба обновљена производња овог термоенергента од стране НИС-а.
Сходно важећој економској класификацији минералних сировина (Тошовић, 2016в) предметне минералне сировине потребне предузећима за производне и пословне процесе припадају групи минералних сировина са комерцијалном, односно тржишном исплативошћу (Тошовић, 2016а). Стратегијски интерес је да се предметне потребе предузећа, колико је могуће, покрију из домаћих минералних и производних извора, јер се тиме ангажују и упошљавају домаћи производни субјекти, обезбеђује упошљеност домаће радне снаге, даје активан

допринос повећању домаћег GDP и смањује постојећи спољно-трговински дефицит земље. Осим тога једна од поставки минералне економије (Тошовић, 2006, 2014), нарочито у кризним условима је да је најјефтинија сопствена минерална сировина, уз услов поштовања базичних принципа економије у њиховој производњи уз најмање реалне трошкове. Економска основа наведеног је у чињеници да се приликом сопствене производње може утицати на смањење трошкова и тиме на повећање добити по јединици производа у односу на упоредну продајну цену, односно при задржавању истог нивоа добити може се остварити конкурентнија продајна цена једне тоне минералне сировине. При томе треба имати у виду да конкурентност на светском тржишту и процес глобализације минералне економије може довести и до појављивања ниже продајне цене минералних сировина на међународном минералном тржишту у односу на домаће, односно домицилно тржиште.

Стратегијско разматрање набавке појединих минералних сировина на нивоу националних потреба земље је специфично, јер се везује за државни плански ниво, уместо за плански ниво на нивоу појединачног предузећа, иако се на исти посредно одражава. Сходно важећој економској класификацији минералних сировина (Тошовић, 2016в) предметне минералне сировине потребне предузећима за производне и пословне процесе припадају групи минералних сировина са националном, односно друштвеном или социјалном исплативошћу (Тошовић, 2016а). Као посебно карактеристичан пример у садашњим околностима може се навести угаљ као електроенергетска минерална сировина у Србији, неопходна за производњу електричне енергије у систему ЕПС-а. Позиција угља се делом променила после почетка руско-украјинског војно-ратног сукоба. Претходна званична политика ЕУ дефинисана зеленом енергетском транзицијом, која је постала обавезујућа и за Србију као земљу у поступку придруживања, означила је фосилна горива, као дугорочно еколошки неприхватљива и стратегијски трасирала обавезу замене обновљивим изворима енергије. Са објављивањем санкција САД и ЕУ на увоз руске нафте и гаса појавили су се озбиљни материјални и економски проблеми у снабдевању потребним енергентима, због чега су неке земаље (нпр. Немачка) започеле експертно-студијска разматрања услова поновне валоризације затворених рудника угља. Србија је у специфичној ситуацији јер је стратегијски дугорочно минерално-сировинском базом за електроенергетику, директно везана за постојеће резерве угља у Колубарском и Костолачком басену и у том делу производње стратегијски је веома тешко у кратком временском периоду обезбедити заменске алтернативне изворе енергије. На тај начин је тзв. црни и недозвољени енергент, са тенденцијом потпуног избацивања из производње, бар на ограничено време постао економски интересантан и енергетски прихватљив, упркос одређеним еколошким утицајима на животну средину (Тошовић, 2023а).

Минерална економија Србије, у актуелном кризном периоду, нашла се у додатном специфичном проблему, јер је због недовољног нивоа одржавања техничких капацитета производња угља смањена крајем 2021. године. Због тога је Србија била приморана да се окрене увозу недостајућих количина угља из земаља региона (Републике Српске и Црне Горе), што је значило ванредне трошкове, проблем додатних финансијских средстава и даље кредитно задуживање земље у веома неповољној економској ситуацији. Донете одлуке о предузимању потребних активности у минералном сектору у Србији на враћању производње угља на пређашњи ниво из стратегијских, економских и енергетских разлога не могу дати тренутне резултате, већ су превасходно усмерене на средњерочну реализацију. Иако исте не иду у прилог зеленој економији и енергетској транзицији на зелену енергију, ове одлуке имају вишеструке позитивне ефекте на енергетску безбедност и сигурност, који су важни за превазилажење кризног периода и за даљи привредни, економски и друштвени развој земље (Тошовић, 2023а).

Упркос сложеној енергетској ситуацији и ванредним мерама у кризном периоду због веома важних еколошких, одрживо-развојних и егзистенцијалних разлога на снази остаје дугорочна оријентација на наставак енергетске транзиције на зелену енергију и развој економије у правцу зелене економије. У сагледавању позитивних страна овакве генералне оријентације значајно помажу и рачуноводствени подаци зелених финансија у оквиру економске оцене минералних ресурса. Они кроз одговарајућу анализу фактора економске оцене и нарочито са њима повезаних вредносних показатеља, изражених кроз одговарајуће трошкове везане за еколошке аспекте валоризовања минералних сировина, али и уштеде односно приходе по основу коришћења зелених енергија, омогућују одговарајуће квантитативно изражавање и одређене облике зеленог вредновања. У том делу доприноса минералног сектора зеленој економији у склопу експертне економске оцене (Тошовић, 2011, 2016в) посебно су значајни: (а) геолошки; (б) рударски; (в) технолошки; и нарочито (г) геоеколошки фактори. Прве три групе фактора су базичне за процес минералне производње са различитих процесно-стручних аспеката и омогућују сагледавање услова за смањење утицаја на животну средину и трошковно дефинисање у склопу зелених финансија. Четврта група фактора даје комплетну геоеколошку анализу карактеристика минералне сировине, еколошког стања пре, за време и после процеса експлоатације са аспектима утицаја на медијуме животне средине. Предметни подаци и информације економске оцене омогућују зелено квантификовање и стручно-експертни израз доприноса минералне економије целини развоја зелене економије чији је недвојиви део (Тошовић, 2023б).

4. ЕКСПЕРТНА ЕКОНОМСКА ОЦЕНА У ОБЕЗБЕЂЕЊУ ПОТРЕБНИХ МИНЕРАЛНИХ СИРОВИНА

У савременим условима привредно-економских анализа у минералној економији, посебно је практично значајна експертна економска оцена, која у најширем смислу представља један од специфичних облика геолошко-економске оцене минералних резерви (Tošović, 2011, 2016в, 2021; Fedorčuk, 1991). Она је је стратегијски и оперативно посматрано (Tošović, 2021) веома примењива, нарочито у садашњим кризним околностима пословања минералног сектора земље и отежаним условима обезбеђења минералних сировина за производна предузећа. Други познатији облици специјализоване оцене, који су у примени у минералном сектору и оцени минералних лежишта, обухватају следеће врсте: геолошку, економску (вредносну), техничко-економску, технолошку и др. оцене. Свака од ових појединачних оцена има своју специфичну функцију, задатке, методе и прецизан циљ и може се укључити у одговарајуће економске анализе по одређеним аспектима у одговарајућу економску оцену. Експертна економска оцена има развијену структуру, коју чине одговарајући фактори (металогенетски, геолошки, техничко-експлоатациони, технолошки, регионални, тржишни, социјално-политичко-економски, законодавно-правни и геоеколошки), као и сет натуралних, сет вредносних и сет синтетских показатеља (Тошовић, 2006). Најважнија разлика експертне геолошко-економске оцене од класичне геолошко-економске оцене је што се иста ради, од стране искусног експерта, без икаквих додатних истражних радова, само на основу анализе постојећег пресека стања података и информација, а по сету фактора оцене и сетовима показатеља оцене (Tošović, 2021).

Експертна економска оцена је у суштини комплексан методски поступак, чији је основни циљ утврђивање економског значаја лежишта као основног економски оцењиваног објекта (Tošović, 2015), из кога се врши производња и валоризација минералне сировине или минералних производа. При томе експертна економска оцена потпуно покрива сложену структуру, врсту и обим минералне производње, у минералном сектору земље којом, према искуствима развијених земаља, треба на специфичан начин стратегијски управљати. Посебан стратегијски однос према минералним сировинама, као специфичним тржишним производима минералног сектора, који су почетна карика у ланцу материјалне производње многих производа, директно проистиче из три битна разлога: (а) необновљивог и исцрпивог карактера минералних сировина; (б) остваривања минералне производње према потребама тржишта и привредних субјеката потрошача минералних сировина; и (в) примене обавезујућег концепта одрживог коришћења минералних ресурса (Tošović, 2021).

Експертна економска оцена омогућује праћење великог броја података и информација о металичним, неметаличним и енергетским минералним сировинама на два карактеристична нивоа, како производње, тако и потрошње, и то на: (а) микро нивоу и (б) макро нивоу. Поред економске, производне и материјалне повезаности, према дефинисаној тематици овог рада у фокусу је првенствено потрошња минералних сировина, која на микро нивоу обухвата потрошњу појединачног предузећа у склопу привредних потреба и економских активности, а на макро нивоу националну потрошњу у склопу националних потреба и економских активности.

Са стратегијског аналитичког становишта минералне економије и конкретних потреба одређених минералних металичних, неметаличних и енергетских минералних сировина, полазно аналитички се као најважније може издвојити: (а) тражња минералних сировина; (б) домаћа понуда минералних сировина; (в) страна понуда минералних сировина; и (в) домаћа минерална производња. Појединачна и комплетна анализа наведених аналитичких елемената се директно обухвата у склопу економске анализе тржишних фактора експертне економске оцене, као једне од девет група претходно наведених фактора. Сходно принципима економске геологије и методици експертне економске оцене комплетан аналитички опис се своди и директно изражава преко одговарајућих показатеља из три сета наведених показатеља. За потребе аналитичко-истраживачког разматрања у овом циљно постављеном раду по сваком сету се издвајају само најважнији.

За праћење стања минералне производње и стратегијски значајног обезбеђења потребних минералних сировина међу натуралним показатељима посебно су значајни: (а) обим годишње минералне производње (Q); (б) минералне резерве (R); и (в) предвиђени век њихове експлоатације (t). Међу вредосним показатељима посебно су значајни; (а) појединачни трошкови (T); (б) цена коштања (C_k); и (в) продајна цена минералне сировине или минералног производа (C_p). Међу синтетским показатељима посебно су значајни: (а) вредност минералних резерви (V); и (б) профитабилност, односно рентабилност предметне минералне производње (Rb). (Tošović, 2021)

Као илустративни практични појединачни пример може се навести праћење предметних показатеља експертне економске оцене на лежишту опекарске сировине (Tošović, 2023в), које је у активној производњи за потребе израде пуних и шупљих дебелостенских опекарских производа изузимајући фасадне елеменете (због нешто слабијег квалитета опекарске сировине). Предметни показатељи се односе на стање експертне економске оцене по временском пресеку 31.12.2022. године. У предметном случају конкретне вредности појединачних издвојених најважнијих натуралних показатеља су следећи (Tošović, 2023в):

(а) обим годишње минералне производње (Q): 20.000 m^3, односно 38.000 t опекарске сировине;

(б) минералне резерве (R): билансне резерве од 427.378 m^3, односно 812.018 t опекарске сировине и експлоатационе резерве од 396.214 m^3, односно 752.806 t опекарске сировине;

(в) предвиђени век експлоатације минералних резерви (t): 20 година.

Међу појединачним издвојеним најважнијим вредносним показатељима конкретне вредности су следеће (Tošović, 2023в):

(а) појединачни трошкови (Т); Т геолошких истраживања 3,16 дин/t; Т пројектне документације 0,32 дин/t; Т инвестиција 0,50 дин/t; Т експлоатације 523,77 дин/t; Т инвестиционог и текућег одржавања 70,00 дин/t; Т амортизације 210,00 дин/t; Т рекултивације 3,00 дин/t; Т заштите животне средине 14,27 дин/t; Т рудничке ренте 17,00 дин/t; и Т остали 2,00 дин/t.

(б) цена коштања (C_k): 844,02 дин/t; и

(в) продајна цена минералне сировине или минералног производа (C_p): 1.050,00 дин/t.

Међу појединачним издвојеним најважнијим синтетским показатељима конкретне вредности су следеће (Tošović, 2023в):

(а) вредност минералних резерви (V): V без узимања временског фактора у обзир 155.062.979,88 дин; V према методи NPV са дисконтном стопом од 12% је 12.921.914,99 дин; V према методи IRR је 21 %; и

(б) профитабилност, односно рентабилност предметне минералне производње (Rb): 0,2441 или 24,41 %.

У практичној и стратегијској примени елемената експертне економске оцене за потребе обезбеђења производно потребних минералних сировина треба имати у виду два битна аспекта: (а) привремени карактер предметне оцене; и (б) потребу компаративне анализе експертних економских оцена за већи број рудних лежишта као извора добијања минералних сировина. Привремени карактер значи економску актуелност урађене оцене са временским пресеком важења анализираних фактора и показатеља, са чијом променом се оцена мора преиспитати и сходно изменама кориговати и допунити. Аналитика прикупљања и измене података се врши по приказаном моделу и структури експертне економске оцене. У сукцесивној анализи се касније могу укључити и нови временски пресеци и нове вредности по разматраним показатељима, на основу којих се врши потребан економски мониторинг (Тошовић, 2020) у складу са променама услова производње, тржишних прилика и потреба за одређеним минералним сировинама. Компаративна анализа се врши на основу података већег броја експертних економских оцена, које се односе на различита рудна лежишта исте минералне сировине, како би се кроз упоређивање најважних економских елемената могла сагладати економски најповољнија опција обезбеђења потребних количина минералних сировина за одређене облике производње за привредне или националне потребе. На основу резултата компаративне анализе могу се донети одговарајуће стручне, менаџерске и пословне одлуке о оперативном, као и стратегијском обезбеђењу потребних минералних сировина за одговарајућу производњу, што је веома значајно за обезбеђење релативне стабилности у кризним условима пословања предузећа и целокупне привреде земље.

На наведеном практичном примеру су приказане предности практичне примене експертне економске оцене, која олакшава како праћење конкретних позатеља, тако и дефинисање стања по одговарајућем временском пресеку и, нарочито битно, промену тог стања и утицај на производњу и пословање, као и њихове генералне трендове у захтевима за одређеним количинама минералних сировина. Неопходно је напоменути да је комплетна експертна економска оцена знанто шира, и да има много већи број натуралних, вредносних и синтетских показатеља (Tošović, 2016в, 2021), који свестраније, потпуније и комплетније описују стање и његове промене у предузећу, односно на руднику, на коме се производи одређена минерална сировина. Из практичних разлога и због ограничења у овом раду извршен је избор и приказ најважнијих показатеља по три постојећа сета показатеља, при чему натуралних укупно има 27, вредносних 8, а синтетских 4 показатеља (Tošović, 2016в, 2021). Извршена анализа јасно илуструје све предности примене експертне економске оцене лежишта минералних сировина, као важног стручног геолошког, рударског, технолошког и економског, али и менаџерског алата, који омогућује брже, једноставније, квалитетније и потпуније добијање потребних података за одговарајуће стручне, економске и менаџерске одлуке, значајне у минералној производњи, њеном планирању, праћењу и унапређењу у склопу стратегијског функционисања минералног сектора и припадајућих, али и производно зависних предузећа (Tošović, 2021).

5. ЗАКЉУЧАК

Актуелна геополитичка и тржишна догађања имају веома изражене рефлексије на рад и функционисање минералне економије земље и домаћи минерални сектор, нарочито на материјално и ценовно кретање специфичног минералног тржишта. У таквим кризним околностима отежаног снабдевања предузећа различитих привредних грана потребним минералним сировинама и минералним компонентама посебно до изражаја долази неопходан приступ стратегијском планирању и функционисању минералне економије и обезбеђењу услова предметне материјалне производње.

У стратегијском аналитичком разматрању извора обезбеђења привредно и национално потребних минералних сировина могу се издвојити: (а) домаћи извори, односно домаћа производња из сопствених рудних лежишта; и (б) страни извори, односно минералне сировине из увоза. У минералној економији земље је посебно специфична позиција постојећих минералних сировина, у два карактеристична случаја: (а) постојања рудних лежишта, која нису активна; и (б) постојања недовољне актуелне производње минералних сировина.

Стратегијско задовољење потреба производних предузећа за одређеним металичним, неметаличним и енергетским минералим сировинама се може разматрати са два битна становишта: (а) привредних потреба на нивоу појединачних предузећа; и (б) националних потреба на нивоу земље. Иако су међусобно повезана, оне имају своје специфичности са стратегијског, планског и економског становишта.

У дугорочном стратегијском планирању од посебног значаја могу бити подаци о ценама коштања и продајним ценама минералних сировина из домаћих лежишта и са домаћом минералном производњом, које су директно садржане у експертној економској оцени минералних ресурса. Стратегијско разматрање набавке појединих минералних сировина на нивоу националних потреба земље је специфично, јер се везује за државни плански ниво, уместо за плански ниво на нивоу појединачног предузећа. Прво се повезује са националном, односно друштвеном или социјалном исплативошћу, а друго са комерцијалном, односно тржишном исплативошћу.

У савременим условима привредно-економских анализа у минералној економији и стратегијском планирању развоја минералног сектора, посебно је практично значајна експертна економска оцена, са одговарајућом структуром фактора и сетовима показатеља. Експертна економска оцена омогућује праћење великог броја података и информација о металичним, неметаличним и енергетским минералним сировинама на два карактеристична нивоа, како производње, тако и потрошње: (а) микро нивоу и (б) макро нивоу. Потрошња минераланих сировина на микро нивоу обухвата потрошњу појединачног предузећа у склопу привредних потреба и економских активности, а на макро нивоу националну потрошњу у склопу националних потреба и економских активности.

За праћење стања минералне производње и стратегијски значајног обезбеђења потребних минералних сировина међу натуралним показатељима посебно су значајни: (а) обим годишње минералне производње (Q); (б) минералне резерве (R); и (в) предвиђени век њихове експлоатације (t). Међу вредосним показатељима посебно су значајни; (а) појединачни трошкови (T); (б) цена коштања (C_k); и (в) продајна цена минералне сировине или минералног производа (C_p). Међу синтетским показатељима посебно су значајни: (а) вредност минералних резерви (V); и (б) профитабилност, односно рентабилност предметне минералне производње (Rb).

У практичној и стратегијској примени елемената експертне економске оцене за потребе обезбеђења производно потребних минералних сировина треба имати у виду два битна аспекта: (а) привремени карактер експертне економске оцене; и (б) потребу компаративне анализе експертних економских оцена за већи број рудних лежишта као извора добијања минералних сировина. Извршена анализа јасно илуструје све предности примене експертне економске оцене лежишта минералних сировина, као важног стручног геолошког, рударског, технолошког и економског, али и менаџерског алата.

Експертна економска оцена омогућује брже, једноставније, квалитетније и потпуније добијање потребних података за одговарајуће стручне, економске и менаџерске одлуке, значајне у минералној производњи, њеном планирању, праћењу и унапређењу у склопу стратегијског функционисања минералног сектора и припадајућих, али и производно зависних предузећа. Стратегијска примена експертне економске оцене, у кризним условима треба да обезбеди сигурније предуслове за успешну минералну производњу и обезбеђење привредно и национално значајних количина минералних сировина, важних за успешније функционисање, како минералне економије, тако и целокупне економије у предстојећем периоду друштвеног, привредног и економског развоја земље.

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УТИЦАЈ СПОЉНОТРГОВИНСКЕ РАЗМЕНЕ АГРАРНИХ ПРОИЗВОДА НА ПРЕХРАМБЕНУ СИГУРНОСТ У УСЛОВИМА КРИЗЕ: СТУДИЈА СЛУЧАЈА РЕПУБЛИКЕ СРБИЈЕ

Апстракт: Стабилност ланаца снабдевања храном је кључна за прехрамбену сигурност људи широм света. Од почетка 2020. године, стабилност ланаца снабдевања храном се налази под великим тестом као последица притиска пандемије COVID-19 и рата између Русије и Украјине. Кризе су се претвориле у економску претњу на прехрамбену сигурност на глобалном нивоу јер су довеле до затварања, економског пада, ограничења трговине храном и растуће инфлације хране. Велики број земаља зависи од увоза аграрних производа, па поремећаји у ланцу снабдевања могу значајно да угрозе ниво њихове прехрамбене сигурности. Циљ рада је анализа изазова одржавања прехрамбене сигурности у периодима кризе у Републици Србији и утицаја спољнотрговинске размене на ниво прехрамбене сигурности. У циљу утврђивања да ли је Република Србија у стању да обезбеди довољне количине хране у кризним периодима, израчунат је коефицијент прехрамбене самодовољности (SSR) за житарице, као једне од најзначајнијих група аграрних производа када је реч о димензији доступности у оквиру прехрамбене сигурности. Додатно, анализирана је спољнотрговинска размена житарица путем сагледавања откривених компаративних предности (RCA), а њена веза са нивоом прехрамбене сигурности сагледана је путем коефицијената корелације. Подаци за истраживање преузети су из базе података ФАОСТАТ и базе података Светске банке. Рад пружа доказе о степену прехрамбене сигурности и тенденцијама у трговини током кризних периода, што може послужити за креирање одговарајућих мера и политика које могу ублажити негативне ефекте кризе.

Кључне речи: кризе, прехрамбена сигурност, трговина, Република Србија.

INFLUENCE OF FOREIGN TRADE OF AGRI-FOOD PRODUCTS ON FOOD SECURITY IN CRISIS CONDITIONS: EVIDENCE FROM SERBIA

Abstract: The stability of food supply chains is crucial to the food security of people around the world. Since the beginning of 2020, the stability of food supply chains has been undergoing one of the most pressure tests ever due to the COVID-19 outbreak and the Russia-Ukraine war. Crises have turned into an economic threat to food security globally in the forms of lockdowns, economic decline, food trade restrictions, and rising food inflation. A large number of countries are dependent on the import of agri-food products, so disruptions in the supply chain can significantly threaten their level of food security. The aim of the paper is to analyze food security challenges in the crises period in the Republic of Serbia and the influence of foreign trade on the level of food security. To determine whether the Republic of Serbia is able to provide enough food during crisis periods, the food self-sufficiency ratio (SSR) was calculated for cereals, as one of the most important groups of agricultural products when it comes to the dimension of availability within food security. In addition, the foreign trade exchange of cereals was analyzed by

analysing the Revealed Comparative Advantages (RCA), and its relation with the level of food security was analyzed by correlation coefficients. Data for this research were taken from the FAOSTAT, and World Bank database. The paper provides evidence about the level of food security and tendencies of trade in the crisis period, which can serve to create appropriate measures and policies which can mitigate the negative effects of the crisis.

Keywords: crises, food security, trade, Republic of Serbia.

1. УВОД

Пандемија COVID-19 и сукоб између Русије и Украјине довеле су до повећање прехрамбене несигурности и поремећаја у ланцима снабдевања аграрних производа. Под утицајем кризе посебно су погођене земље које зависе од увоза аграрних производа и пољопривредних инпута, а Русија и Украјина су два главна извозника пшенице, кукуруза, јечма, јестивог уља, горива и ђубрива на глобалним тржиштима. Сукоб између Русије и Украјине је довео до великих поремећаја трговинских токова из ове две земље на међународним тржиштима, а кретања међународних цена житарица већ одражавају ове поремећаје (FAO, 2022). Уједињене нације су упозориле да је комбинација пандемије COVID-19 и руско-украјинске кризе довела до највеће прехрамбене кризе после Другог светског рата, будући да је чак 1,7 милијарди људи гладно и сиромашно, чији је ниво тренутно на новом врхунцу (Lin, Li, Jia, Feng, Huang, Huang, Fan, Ciais, Song, 2023).

У условима кризе постизање прехрамбене самодовољности, обезбеђивање адекватне понуде аграрних производа и одржавање одговарајућег нивоа прехрамбене сигурности је један од главних циљева свих држава. *Прехрамбена сигурност* постоји на „индивидуалном, нивоу домаћинства, националном, регионалном и глобалном нивоу, када сви људи, у сваком тренутку, имају физички и економски приступ довољној, безбедној храни адекватне нутритивне вредности како би задовољили своје прехрамбене потребе и преференције неопходне за активан и здрав живот" (FAO, 1996). Истовремено је установљено да прехрамбена сигурност има четири димензије: доступност (која се односи на обезбеђивање довољне количине хране одговарајућег квалитета); приступ (који је осигуран када домаћинства (и/или појединци) располажу ресурсима за обезбеђивање адекватне исхране); коришћење (односи се на начин припреме хране уз уважавање принципа здравствене заштите) и стабилност (стабилност понуде и тражње) (Babu, Gajanan, Sanyal, 2014). Прехрамбена сигурност је после вишедеценијског пада и пет година релативне стабилности од 2014. године, нагло погоршана. Глобални показатељ прехрамбене сигурности - ниво преваленције неухрањености (prevalence of undernourishment (PoU)) је нагло порастао након 2019. године (8%), у 2020. години (9,3%), у 2021. године (10%) као последица COVID-19 (FAO, 2022).

Имајући у виду потенцијална ограничења криза на ниво прехрамбене сигурности земаља, све више земаља данас тежи достизању *прехрамбене самодовољности*. Према FAO (1998) „концепт прехрамбене самодовољности представља обим у коме земља може да задовољи своје потребе за храном из сопствене домаће производње". Прехрамбена самодовољност представља потенцијал домаћинства, региона или земље да из сопствене производње подмири потребе потрошње, уместо из увоза (Brankov, Matkovski, Jeremć, Đuric, 2021; Minot, Pelijor, 2010).

Тренутна криза је утицала на све димензије прехрамбене сигурности, а од 2022. године посебно је погођен сектор житарица. Стога је *циљ рада* анализа изазова одржавања прехрамбене сигурности у периодима кризе у Републици Србији и утицаја спољнотрговинске размене на ниво прехрамбене сигурности, кроз сагледавање ситуације на тржишту житарица у Србији. Имајући у виду значај прехрамбене самодовољности житарица у кризним ситуацијама, у оквиру рада сагледано је стање пре кризе, кроз анализу степена самодовољности житарица. Житарице су једна од есенцијалних компоненти у исхрани становништва, те поремећаји на тржишту могу довести до прехрамбене несигурности. Додатно, овим радом сагледана је спољнотрговинска размена житарица кроз анализу компаративних предности у извозу житарица из Србије, као једном од начина апроксимације конкурентности на макро нивоу. Конкурентност земље, односи се на „степен до којег, под условима отвореног тржишта, земља може производити робу и услуге које испуњавају захтеве иностране конкуренције, док истовремено постиже одржавање и ширење домаћег реалног прихода" (OECD, 1992). У литератури традиционални RCA индекс се широко користи за анализу компаративних предности (Matkovski, Kalaš, Zekić, Jeremić, 2019).

Овај рад структуриран је у четири секције. Након увода, представљени су материјал и методе рада којима је дефинисана основна методологија истраживања, базе података, као и период анализе. У оквиру првог дела резултата истраживања сагледани су потенцијали за производњу житарица, те је графички приказан коефицијент прехрамбене самодовољности (SSR). Након тога сагледане су спољнотрговинске могућности кроз приказивање индекса оквирних компаративних предности (RCA). Утврђивање повезаности између SSR и RCA, али и других варијабли које могу имати утицаја на прехрамбену сигурност у условима кризе сагледана је корелационом анализом. На крају је дат закључак заједно са препорукама за даљу анализу.

МАТЕРИЈАЛ И МЕТОД РАДА

У оквиру рада израчунат је кључни индикатор прехрамбене самодовољности - коефицијент прехрамбене самодовољности. Коефицијент прехрамбене самодовољности може да се израчуна за различите групе производа, а у оквиру рада израчунат је за житарице, с обзиром на њихову важност за постизање прехрамбене самодовољности:

$$SSRfood = Pfood/Dfood \times 100\%$$

где је:
SSRfood - коефицијент прехрамбене самодовољности житарица; Pfood - укупна домаћа производња житарица; и Dfood - укупна понуда житарица.

Укупна понуда представља (FAO, 2011):

$$Dfood = Pfood - Efood + Zfood + Ifood$$

где је:
Efood - извоз житарица; Zfood - промене залиха (смањење или повећање) и Ifood – увоз житарица.

Као погодан параметар за мерење конкурентности на макро нивоу кроз тенденције у спољнотрговинским токовима у оквиру рада израчунат је индекс оквирних компаративних предности (Revealed Comparative Advantages (RCA)). Индекс оквирних компаративних предности развио је Balassa (1965), који гласи:

$$RCA_{ij} = \frac{\frac{X_{ij}}{X_{it}}}{\frac{X_{nj}}{X_{nt}}}$$

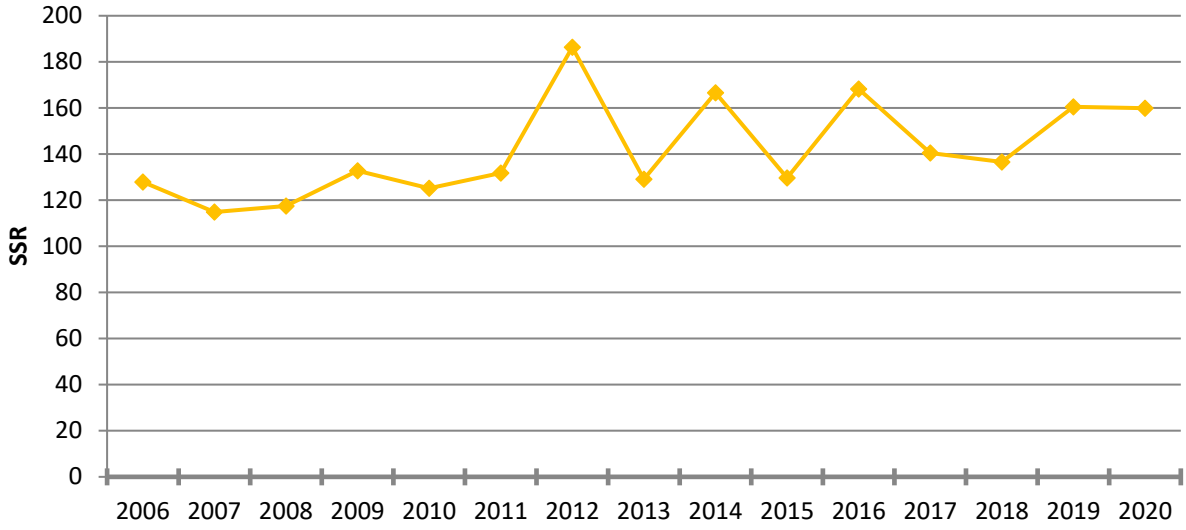
где је:
X - извоз; i - земља; j - сектор; t - укупан извоз; и n – група извозних земаља.

Уколико је RCA>1 тада постоје компаративне предности. Компаративне предности су јаке када је вредност RCA>3, вредности индекса RCA између 2 и 3 указују на значајне компаративне предности, док вредности RCA 1 и 2 указују на задовољавајуће компаративне предности (Matkovski, Zekić, Đokić, Jurjević, Đurić, 2022).
У оквиру рада спроведена је корелациона анализа, како би се сагледала статистичка повезаност између појединих варијабли. Испитана је веза између следећих варијабли: коефицијента прехрамбене самодовољности (SSR), индекса оквирних компаративних предности (RCA), бруто домаћег производа *per capita* (GDP), инфлације (INFLATION), варијабилности у производњи аграрних производа (FPV), пољопривредног земљишта (LAND), варијабилности у понуди аграрних производа (FSV), политичке стабилности (PS), руралне популације (RURAL POP) и увоза аграрних производа (IMP). Подаци за анализу прикупљени су из базе података Светске банке (World Bank, 2023) и FAOSTAT базе података (FAOSTAT, 2023) за период од 2006. до 2020 године.
У циљу припреме података за даљу анализу испитана је повезаност између укључених показатеља. Анализа је показала да варијабле немају нормалан распоред, због тога је извршена логаритамско трансформисање података (*Log*). Имајући у виду да су варијабле укључене у истраживање на интервалном, односно рацио нивоу мерења употребљена је Пирсонова линеарна корелација за испитивање повезаности између истих.

РЕЗУЛТАТИ ИСТРАЖИВАЊА И ДИСКУСИЈА

Република Србија има повољне агроеколошке услове за пољопривредну производњу. Површина коришћеног пољопривредног земљишта (КПЗ) износи око 3,5 милиона ha, што чини око 40% укупне површине, односно 68% расположивог земљишта (Национални програм за пољопривреду, 2022). Пољопривреду Србије одликује екстензивна производња (висок удео у биљној производњи, 70%), а оваква структура производње изазива велику зависност од временских услова и релативно велику варијабилност производње. У производњи доминирају житарице (кукуруз и пшеница како по површини, тако и по производњи), уљарице и шећерна репа. У 2020. години производња житарица у Републици Србији се обављала на површини од око 1,7 мил. ha, производња је износила око 11,4 мил. тона, уз просечан принос од 6,6 t/ha (Национални програм за пољопривреду, 2022), што омогућава остваривање прехрамбене самодовољности када су у питању житарице (Brankov, Matkovski, Jeremic, Đuric, 2021). На основу Графикона 1 може се закључити да је у Републици Србији забележена висока вредност индекса прехрамбене самодовољности када су у питању житарице, будући да су

вредности забележеног индекса веће од 100%. Висок ниво прехрамбене самодовољности житарица је потврђен и у раду Brankov, Matkovski, Jeremić, Đuric, (2021).

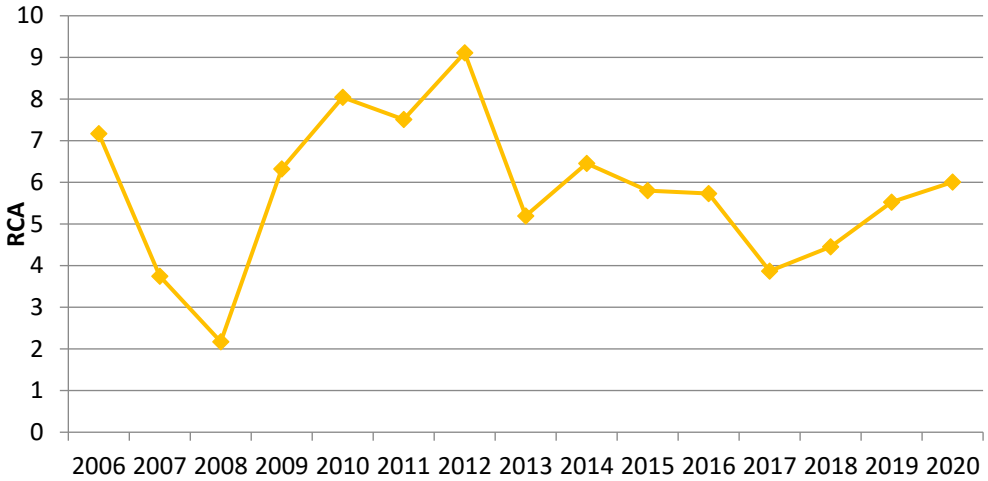


Графикон 1: Коефицијент прехрамбене самодовољности (SSR) за житарице у Србији
Извор: Калкулација аутора на основу података FAOSTAT, 2023.

Међутим, у Републици Србији велики проблем представља неповољна структура пољопривредних газдинстава. Како се наводи у Анкети о структури пољопривредних газдинстава 2018, чак 99,7% пољопривредних газдинстава у Србији су породична пољопривредна газдинства која користе 84% КПЗ (Национални програм за пољопривреду, 2022). Мала газдинства карактеришу ниски приходи и низак степен акумулације капитала, високи трошкови производње и нерационално коришћење ресурса, као и ниска продуктивност у производњи која негативно утиче на ценовну конкурентност производње и доводи просечног пољопривредног произвођача у тежак положај на тржишту (Matkovski, Đokić, Zekić, Jurjević, 2020; Nestorov-Bizonj, Kovljenić, Erdelji, 2015; Popović, Kovljenić, 2017).

Република Србија је нето извозник аграрних производа, а сам удео пољопривреде у укупној вредности извоза привреде Републике Србије износи око 20% (Национални програм за пољопривреду, 2022). Уједно, укупан обим трговине аграрних производа је у сталном порасту. Политика Републике Србије усмерена је ка усаглашавању са захтевима Европске уније (ЕУ), међутим већ дуже време долази до бројних промена на тржишту пољопривредно-прехрамбених производа, што је имало импликације на њихову конкурентност (Matkovski, Zekić, Đokić, Jurjević, Đurić, 2022).

Када је у питању индекс компаративних предности житарица (RCA) Република Србија је у посматраном периоду од 2006. до 2020. године забележила високе вредности RCA житарица. Вредности RCA>3 су забележене у свим годинама, сем у 2008. години, када је вредност RCA<3 (Графикон 2). Ниже вредности у 2008. години свакако су великим делом биле последица Светске економске кризе, која је значајно довела до опадања иностране тражње и извоза.



Графикон 2: Индекс компаративних предности (RCA) за житарице у Србији

Извор: Калкулација аутора на основу података FAOSTAT, 2023.

У оквиру наредног дела приказани су резултати корелационе анализе (Табела 1). Резулатати истраживања су показали да постоји јака позитивна корелација између коефицијента прехрамбене самодовољности и политичке стабилности. Такође, позитивна корелација је остварена између коефицијента прехрамбене самодовљности, индекса оквирних компаративних предности и бруто домаћег производа *per capita*. Остварене корелације су и очекиване јер са повећањем нивоа политичке стабилности, очекује се стабилност у ланцима снабдевања што ће позитивно утицати на прехрамбену самодовољност. Уједно, политичка стабилност ће позитивно утицати на економски и физички приступ становништва аграрним производима, што ће директно утицати и на повећање нивоа прехрамбене сигурности. Позитивна корелација између коефицијента прехрамбене самодовољности и бруто домаћег производа *per capita*, указује на већи економски приступ становништа аграрним производима. Такође, позитивна корелација између коефицијента прехрамбене самодовљоности и индекса оквирних компаративних предности је очекивана. Будући да се компаративна предност односи на степен до којег земља може производити робу и услуге које испуњавају захтеве иностране конкуренције, подразумева се да је земља пре свега у стању да задовољи потребе за аграрним производима из сопствене домаће производње. Република Србија има висок ниво компаративних предности пољопривредно-прехрамбеног сектора како на глобалном, тако и регионалном тржишту (Matkovski, Zekić, Đokić, Jurjević, Đurić, 2022).

Табела 1: Корелациона анализа

	SSR	RCA	GDP	INF	FPV	LAND	FSV	PS	RURAL POP	IMP
SSR	1	0,470*	0,486*	-0,515**	0,215	0,307	-0,095	0,598**	-0,601**	0,401
RCA	0,470*	1	-0,133	-0,013	-0,201	-0,226	-0,056	0,159	-0,047	-0,210
GDP	0,486*	-0,133	1	-0,753***	0,561**	0,888***	-0,067	0,700***	-0,955***	0,869***
INFLATION	-0,515**	-0,013	-0,753***	1	-0,688***	-0,617**	-0,122	-0,798***	0,832***	-0,746***
FPV	0,215	-0,201	0,561**	-0,688***	1	0,377	0,238	0,772***	-0,655***	0,570**
LAND	0,307	-0,226	0,888***	-0,617**	0,377	1	-0,288	0,555**	-0,815***	0,849***
FSV	-0,095	-0,056	-0,067	-0,122	0,238	-0,288	1	0,262	-0,048	-0,054
PS	0,598**	0,159	0,700***	-0,798***	0,772***	0,555**	0,262	1	-0,865***	0,724***
RURAL POP	-0,601**	-0,047	-0,955***	0,832***	-0,655***	-0,815***	-0,048	-0,865***	1	-0,872***
IMP	0,401	-0,210	0,869***	-0,746***	0,570**	0,849***	-0,054	0,724***	-0,872***	1

** ниво статистичке значајности од 10%*
*** ниво статистичке значајности од 5%*
**** ниво статистичке значајности од 1%*

Извор: Калкулација аутора на основу података FAOSTAT и Светске банке, 2023.

Јака негативна корелација је забележена између прехрамбене самодовољности, инфлације и руралне популације. Већа инфлација негативно утиче на ниво прехрамбене сигурности, будући да долази до повећања цене аграрних производа и инпута што се негативно одражава и на прехрамбену самодовољност. Такође, прехрамбена несигурност је већа код руралног становништва које живи у руралним областима на мање повољном пољопривредном земљишту које је подложно ниској продуктивности (Brankov, Matkovski, 2022). Стога је очекивана негативна корелација између прехрамбене самодовољности житарица и величине руралне популације.

ЗАКЉУЧАК

Тренутна криза утицала је на све димензије прехрамбене сигурности, а у оквиру рада приказане су неке од најзначајнијих варијабли на које је она имала утицај: коефицијент прехрамбене самодовољности, индекс оквирних компаративних предности, бруто домаћи производ *per capita*, инфлацију, варијабилност у производњи аграрних производа, пољопривредно земљиште, варијабилност у понуди аграрних производа, политичку стабилности, руралну популацију и увоз аграрних производа.

Прехрамбена самодовољност представља прву димензију прехрамбене сигурности, а то је доступност (која се односи на обезбеђивање довољне количине хране одговарајућег квалитета). Република Србија има задовољавајући ниво прехрамбене самодовољност када су у питању житарице. Међутим, неопходно је истаћи да иако је обезбеђена прехрамбена самодовољност, неопходно је да постоји и одговарајући приступ аграрним производима, како би се омогућило остваривање прехрамбене сигурности. Криза је значајно утицала на приступ аграрним производима, кроз смањење бруто домаћег производа и повећања цене основних прехрамбених намирница, што се одразило и на повећање прехрамбене несигурности.

Извозне перформансе пољопривредног сектора у великој мери су везане за производне перформансе пољопривреде, које су снажно детерминисане агроеколошким условима за производњу (Matkovski, Zekić, Đokić, Jurjević, Đurić, 2022). Иако су у Републици Србији у посматраном периоду забележене високе вредности RCA житарица, присутна је екстензивност пољопривредног сектора, слабост прерађивачке индустрије, високи трошкови производње, нерационално коришћење ресурса, као и ниска продуктивност. Стога је унапређење

конкурентности у пољопривредно-прехрамбеном сектору неопходно како би се издржао притисак са тржишта ЕУ.

На основу добијених резултата корелационе анализе може се закључити да између већине варијабли постоји значајна корелација, што омогућава апроксимацију прехрамбене сигурности у Републици Србији. Резултати истраживања су показали да постоји позитивна корелација између коефицијента прехрамбене самодовољности и политиче стабилности, индекса оквирних компаративних предности и бруто домаћег производа *per capita*. Негативна корелација је забележена између прехрамбене самодовољности, инфлације и руралне популације.

Спроведено истраживање има одређена ограничења. Будући да је извршена анализа у једној земљи, у Републици Србији, и да је питању мањи узорак, регресиона анализа није била погодна за ову врсту истраживања. Спроведено истраживање представља основу за будућа истраживања у којем ће бити обухваћен већи број варијабли и у којем ће бити спроведена регресиона анализа, на основу које би се могло закључити о утицају најзначајнијих фактора на ниво прехрамбене сигурности у Републици Србији у условима кризе. Подаци о најзначајнијим факторима од утицаја на ниво прехрамбене сигурности могу послужити креаторима политика у креирању одговарајућих мера и политика, чиме би се утицало на ублажавање негативних последица кризе.

ЗАХВАЛНИЦА

Ово истраживање подржао је Покрајински секретаријат за високо образовање и научноистраживачки рад Аутономне покрајине Војводине кроз пројекат: Моделирање прехрамбене сигурности у условима кризе, број пројекта: 142-451-2966/2022-03.

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REGIONAL BALANCED DEVELOPMENTS IN NORTH MACEDONIA. CHALLENGES, TRENDS AND PERSPECTIVES

Abstract: Regional economic development is considered as an important feature for enriching the economic cohesion policy. Regional development policy for North Macedonia implies a state institutional effort for settling a national priority within the framework of EU's policy for promoting economic and social cohesion, derived from the Lisbon Strategy, aimed at reducing regional disparities with respect to socio-economic development level in between North Macedonia's statistical regions. For the purpose of addressing regional disparities and stimulating a sustainable economic development, North Macedonia, adapted a law on balanced regional development in 2007 and went through many subsequent legislative acts in the years to come with the aim of improving the long-lasting deficiency of a sustainable regional development gaps in the country. This policy-oriented paper, based on the regional statistical data of North Macedonia from a retrograde perspective, covering in principle the past twenty years, 2000-2020, analyzes a set of economic development indicators, using a panel level data for the 8 statistical regions in North Macedonia. Based on a econometric assessment of Fixed Effect with Driscoll and Kraay standard errors, using regional fixed effects, the study will try to identify the economic factors which may contribute to reducing the regional economic disparities within the country. The results of the study will provide relevant policy recommendations to the authorities and interested parties for establishing a productive institutional action on identifying the challenges, trends and perspectives in the policy of a balanced regional development.

Keywords: North Macedonia, Regional development, Fixed Effects with Driscoll and Kraay standard errors.

1 1. INTRODUCTION

During the years of 90th, North Macedonia was one of the most fiscally centralized country in Europe where most of the municipalities did not have sufficient fiscal space for generating their own financial resources, leading to uneven development level of the country on regional grounds, thus, raising the concerns of economic disparities between country regions and municipalities. Regional economic development on equal basis is considered as a catalyst factor for enriching a suitable level of the socio-economic cohesion policy within the state. The enhancement of balanced regional development means improvement of socio-economic welfare associated with significant reduction of regional disparities. Regional development policy[1], for North Macedonia implies a state of institutional effort for settling a national priority within the framework of EU's policy for promoting economic and social cohesion, derived from the Lisbon Strategy (European Commission, 2020)[2]. For the purpose of addressing regional disparities and stimulating a sustainable economic development, North Macedonia, adapted a law on balanced regional development in 2007 and went through many subsequent legislative acts in the years to come, with the aim of improving the long-lasting deficiency of a sustainable regional development gaps in the country (Trenovski and Panev, 2017). *Lately, aiming at the*

[1]This arrangement was endorsed for the enhancement of socio-economic development of the planning regions in North Macedonia, in line with the EU guidelines where the self-government units of the country will be able to utilize relevant components of IPA funds, available for the country.
[2] https://portal.cor.europa.eu/europe2020/Profiles/Pages/TheLisbonStrategyinshort.aspx.

reduction of regional disparities in between and within regional planning centers in the country, the state relevant institutions, introduced an action plan for allocating the budgetary funds at the level of at least, 1 percent of GDP, to undeveloped regions. This policy-oriented paper, based on the regional statistical data of North Macedonia from a retrograde perspective, covering in principle the past twenty years, 2000-2020, analyzes a set of economic and demographic development indicators, as crucial for inequality concern in North Macedonia. The paper will try to outline a summary of results, which detect the development gaps within and in between the planning regions of North Macedonia. The results of the study will provide relevant policy recommendations to the authorities and interested institutional bodies for establishing productive institutional actions on identifying the challenges, trends and perspectives in the policy of a balanced regional development.

2 THEORY OVERVIEW ON MEASURING REGIONAL INEQUALITY

To capture inequality measurement indicators, regional disparities GDP per capita will be used in the current study. For this purpose, the study will rely on one widespread measure indicator of regional disparity, identified by the convergence literature, which is *GINI coefficient,* as expressed in equation (1) (Canaleta et al, 2004; Gluschenko, 2018). Following equation (1), x_i is the GDP capita per planning region, x_j is the national GDP per capita, $\bar{x}$ is the average national GDP capita, p_i is the ratio of regional employment to national employment. Different weights are given to each unit, in so doing, we reduce the problems resulting from the degree of aggregation and giving more relevance to large units[3].

$$G_x=1/\bar{x}\sum_i p_i \left| x_i-x_j \right| \quad (1)$$

Table 1: Values of GINI coefficient in the statistical regions in North Macedonia, based on the data of GDP per capita.

Coefficient	Years	Statistical regions in North Macedonia							
		Vardar	East	Southwest	Southeast	Pelagonija	Polog	Northeast	Skopje
GINI	2000-2005	0.19	0.21	0.19	0.19	0.20	0.18	0.14	0.13
	2006-2010	0.21	0.23	0.21	0.21	0.22	0.20	0.15	0.14
	2011-2015	0.24	0.25	0.23	0.24	0.25	0.21	0.20	0.13
	2016-2020	0.28	0.28	0.27	0.22	0.28	0.26	0.25	0.11
Average	2000-2020	0.23	0.24	0.22	0.22	0.24	0.21	0.19	0.13

Source: State Statistical Office, 2020 and own calculations based on equation (1)

Note: Indices are calculated based on GDP per capita data accounting for regional GDP and regional employment in North Macedonia, based on own calculations, using data from State Statistical Office of North Macedonia.

The GINI indicator is mostly used in the analysis of income and regional inequalities (Tsui, 1996; Esteban, 1994). Table 1 shows the results of the GINI indicator for GDP per capita, respectively, over the period 2001-2005, 2006 – 2010, 2011-2015 and 2016-2020, on average basis, for the eight statistical regions in North Macedonia. A five-year average should be enough to account for one economic cycle. GINI coefficient is the best index for measuring inequality concerns, which reflect the shared values of a frequency distribution of income, investment and welfare (Canaleta, *et al* 2004). Low values of GINI coefficient, close to 0 express perfect equality, whereas a GINI coefficient closer to 1 express maximal inequality among values. As can be observed from table 1, less inequality concerns are noted for the statistical regions of Skopje and Northeast East, recording average values of GINI coefficient's close to 0, during the observed period 2000-2020, whereas for the remaining statistical regions of Vardar, Southwest, Southeast, Pelagonija and Polog, the inequality concern is higher in comparison to the regions of Skopje and Northeast, during the same period.

3 STYLIZED FACTS

However, to capture some inequality concerns among regions, in this section, we outline relevant indicators associated to regional economic development in North Macedonia, like: *regional growth rate, regional GDP per capita and regional GDP per worker employed.* On the ground of growth prospects, we can detect that the highest growth rate, in all the statistical regions, except Vardar, was recorded during the observed period 2006-2010, probably due to high influx of Foreign Direct Investment in this period, which occurred due to favorable investment climate in North Macedonia, reinforced by the policy of Free industrial zones.

[3] Although GINI coefficient as a statistical measure of inequality, is free of any explicit egalitarian judgment, it still expresses any intuitive view on the grounds of egalitarian principle, since the values of GINI coefficient are compared with those that are better off (Temkin, 1994).

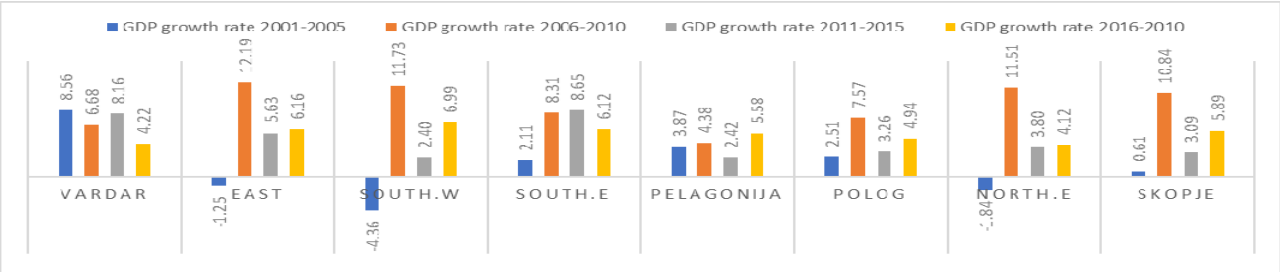

Figure 1: Regional growth rate

Note: author's calculations, using data from State Statistical Office of North Macedonia.

Referring to GDP per capita as a differentiation factor with respect to regional economic development, associated with regional living standard (figure 2), we can see that Skopje region had the biggest share of GDP per capita in the country, while the North east and Polog regions had the lowest share in terms of GDP per capita, during the four observed periods.

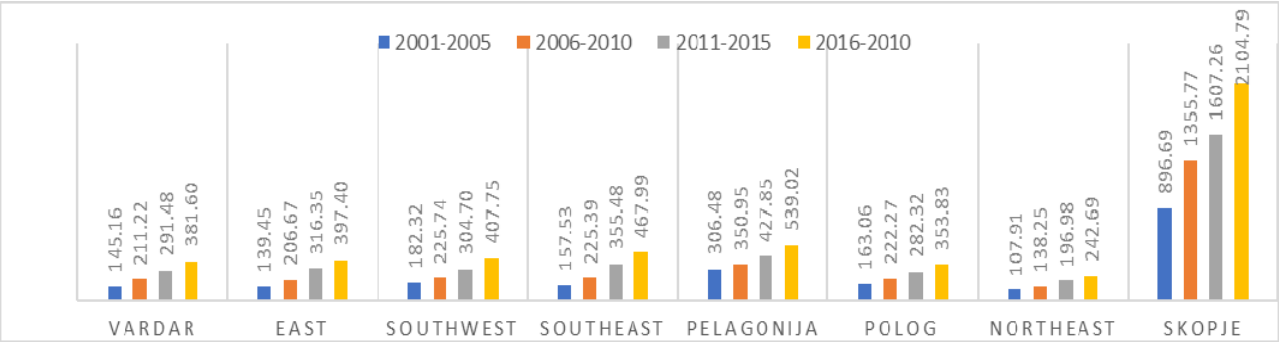

Figure 2: Regional GDP per capita, in Euro

Note: author's calculations, using data from State Statistical Office of North Macedonia.

During the analyzed periods there is a positive trend of increase in the GDP per capita terms in all regions, but the disparities between regions also remain. As confirmed from figure 2, on the basis of GDP per capita differences between regions, the region of Skopje, on average, during the whole observed period, 2000-2020, is 8 times richer than the poorest region of the country, which as confirmed from the analysis is the North East region and 5 times richer than Polog region (the second poorest region in the country. The analysis, as outlined in figure 2 and 3 shows evidence that Polog Region and Northeast Region recorded the lowest values of GDP per capita. Poor economic growth is only one concern with rising inequality because other dimensions of development and wellbeing may suffer as well (Partridge and Weinstein, 2013).

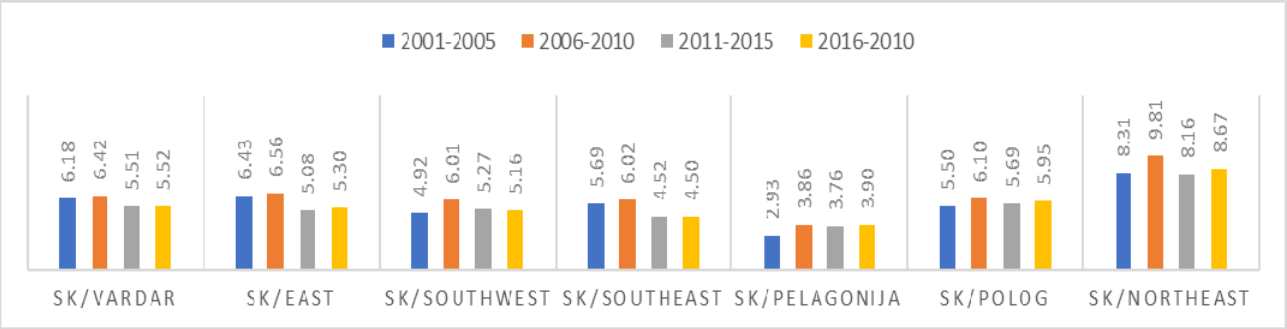

Figure 3: GDP per capita in Skopje region, in comparison to GDP per capita in other statistical regions of the country, in Euro

Note: author's calculations, using data from State Statistical Office of North Macedonia.

The increase of regional disparities with respect to economic development is a significant concern for internal migration of the labor force between regions (Michálek and Podolak, 2011). Therefore, appropriate policy measures should be undertaken by the government to reinforce equal economic development among the regions. The intensive development of the Skopje region is expected to have a significant impact on investment inequality and imbalances in the reallocation of the regional labor force. Figure 4 outlines the story of GDP per worker employed, where we can notice that the highest GDP contributed from labor force comes from the region of Skopje.

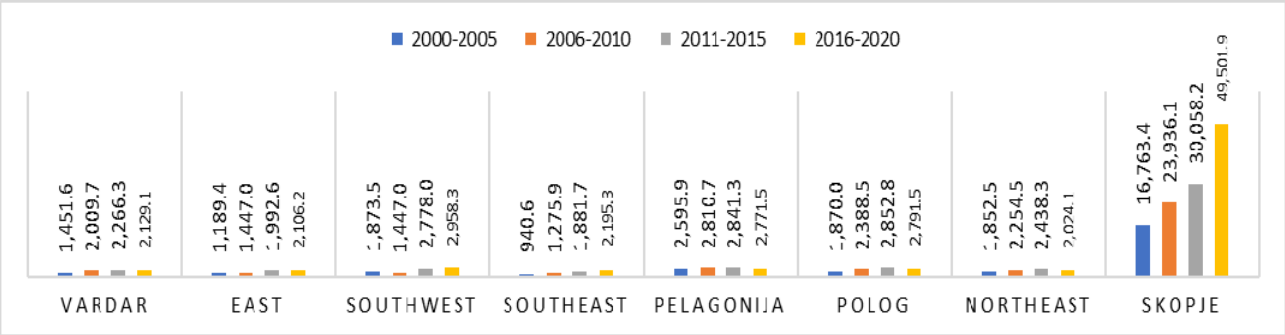

Figure 4: GDP per worker employed
Note: author's calculations, using data from State Statistical Office of North Macedonia.

On the grounds of comparison basis, as evidenced from figure (5), GDP per worker employed in Skopje region is significantly higher, than other statistical regions, ranging from 6 to 24 times, where the highest discrepancy is recorded during the observed yearly period 2016-2020.

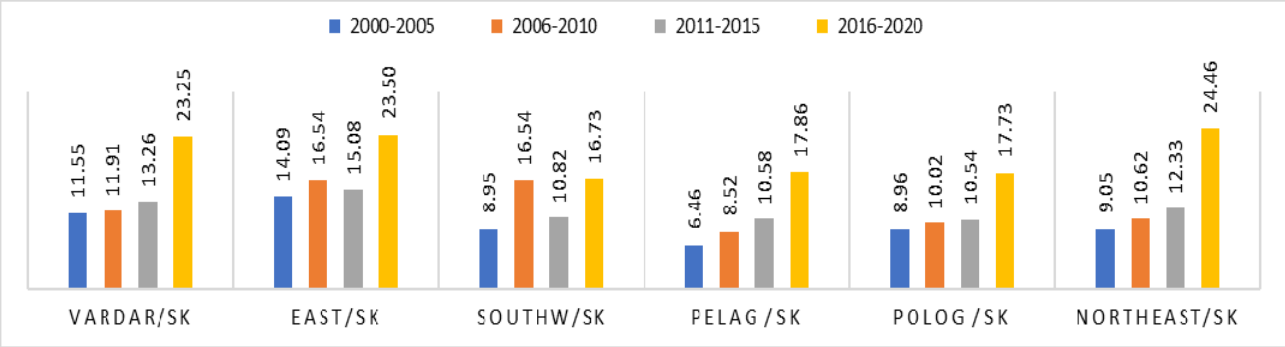

Figure 5: GDP per worker employed in Skopje in comparison to GDP per worker employed in the selected statistical region
Note: author's calculations, using data from the State Statistical Office of North Macedonia

Figure 6 outlines an increasing trend of gross fixed capital formation[4] value in the country, recording its maximal amount in the year of 2016, with insignificant downturn in the years after 2016.

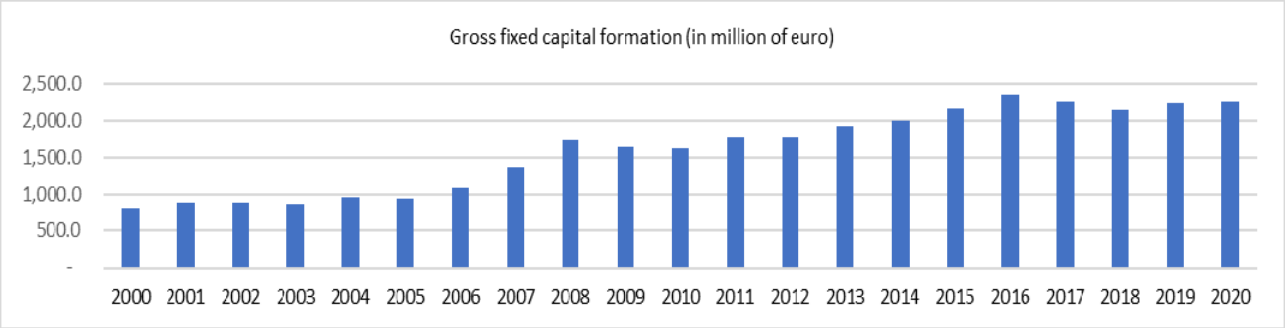

Figure 6: Gross fixed capital formation in North Macedonia, in millions of Euros.
Note: author's calculations, using data from State Statistical Office of North Macedonia.

However, at regional profile, based on shared percentages of gross fixed capital formation at regional level, as outlined in figure (7), Skopje region is again well favored in comparison to other stagnated regions, confirming a biased concept of governmental investments policies in the public goods (infrastructure, healthcare) and private investments.

[4] Gross fixed capital formation (formerly gross domestic fixed investment) includes land improvements (fences, ditches, drains, and so on); plant, machinery, and equipment purchases; and the construction of roads, railways, and the like, including schools, offices, hospitals, private residential dwellings, and commercial and industrial buildings (World Bank, 2023).

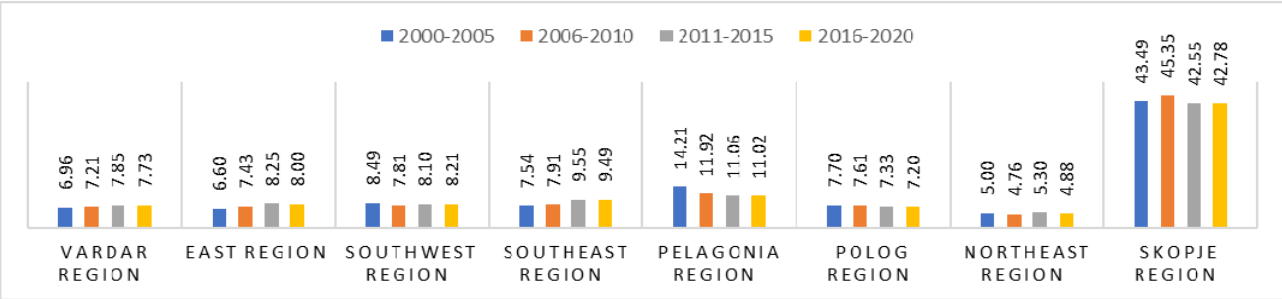

Figure 7: Gross fixed capital formation in North Macedonia' regions, as a share of country's total, in millions of Euros.

Note: author's calculations, using data from the State Statistical Office of North Macedonia.

The findings outlined in this section reveal significant increasing trend of development disparities, between North Macedonia's statistical regions, during the whole observed period, 2000-2020, which confirms that North Macedonia, still has a mono-centric model of economic development, where Skopje region is well favored on the grounds of economic development in comparison to other stagnated regions of the country, despite the country obligations which are derived from the Lisbon Strategy. North Macedonia is still categorized by unequal economic development at regional level, which is unusual case for small countries with small number of regions.

4 LITERATURE REVIEW

There is a large extent of literature trying to explain income inequality determinants at country or regional context. On the grounds of country level data, the empirical literature mostly outlines the effects of macroeconomic variables (unemployment and inflation) or fiscal policy variables (tax rate, government expenditure) as evidenced factors determining the size of income inequality (Mocan, 1999; Auten & Caroll, 1999). On the grounds of multi-country evidence, the empirical evidence outlines an institutional related factor, as crucial in determining inequality concerns among countries, like corruption, government expenditure, agriculture development (Tanninen, 1999; Vanhoudt, 2000; Barro, 2000). Some studies examined the Kuznets's (1955) hypothesis concerning the inverted U-shaped relationship between inequality and the level of development, studies which are mostly outlined on internal labor force migration due to regional inequality concerns (Mushinski, 2001; Thornton, 2001). The Kuznet's hypothesis states that agricultural and rural sectors feature lower inequality and lower level of GDP per capita, establishing a negative relationship between GDP per capita and income inequality, whereas the urban sectors feature higher inequality and higher level of GDP per capita, thereby, establishing a positive association between GDP per capita and income inequality at early stages of development. This paper will shed light on measuring inequality worries on regional level in North Macedonia, thus, providing a milestone for building relevant policy frameworks on the grounds of improving inequality concerns among North Macedonia's statistical regions.

5 ECONOMETRIC FRAMEWORK

5.1 Static panel analysis: Fixed effects with Driscoll and Kraay standard errors

Driscoll and Kraay standard errors (FEDK) are asymptotically efficient in the panel samples where time series, 'T' exceeds the number of panels 'N' (Hoechle, 2007). By relying on large T asymptotic, FEDK estimates assumes that the standard nonparametric time-series covariance matrix estimator is robust to general forms of cross-sectional as well as temporal dependence (Hoechle, 2007). Driscoll and Kraay's estimates are robust to heteroscedasticity and autocorrelation. To control for the presence of cross - sectional dependence we apply the Driscoll and Kray standard errors in the fixed regression model, using the stata command *xtscc, fe,* accounting for two-time lags. We also control for time and country fixed effects in the FEDK estimates. Assuming the linear regression of a model:

$$y_{it}=x'_{it}\Theta+\varepsilon_{it},\ t=1,2,\ldots,N \quad (2)$$

Where, the dependent variable is y_{it} is a scalar, x'_{it} is a vector of independent variables, Θ represent the vector of unknown coefficients, i denotes the cross-sectional units and t denotes time dimension of the sample and ε_{it} represent the scalar disturbance term. It is assumed that the regressors x'_{it} to be uncorrelated with the scalar disturbance term ε_{it} for all i, t (strong erogeneity). However, since in the standard pooled OLS the disturbance term ε_{tt} are allowed to be auto correlated, heteroscedastic and cross-sectional dependent, Driscoll and Kraay standard errors for the coefficient estimates are then obtained as the square roots of the diagonal elements of the asymptotic (robust) covariance matrix.

$$V(\Theta)=(X'X)^{-1}S_T(X'X)^{-1} \quad (3)$$

Where S_T is defined as in Newey and West (1987), allowing the Driscoll and Kraay's covariance matrix estimator to be equal to the heteroscedasticity and autocorrelation consistent covariance matrix estimator of Newey and West (1987) applied to the time series of cross-sectional averages.

5.2 Methodology and method of analysis

This paper will try to shed light on estimating income inequality concerns between 8 statistical regions in North Macedonia, relying on a yearly panel data set for the period 2000-2020. The reduced form of the growth equation for the estimation purpose is as follows:

$$GINI_{IT}=\beta_0+\beta_1 x_{it}+\beta_2 x_{it}\cdot d+\Theta_i+\gamma_t+\mu_{it} \quad (4)$$

Where $GINI_{IT}$ is the dependent variable denoting the inequality coefficient for the 8 statistical regions in North Macedonia, as calculated on table 1. x_{it} is the vector of explanatory variables, d_1 is the dummy variable denoting the specific regions in North Macedonia. β_0 is the constant. $\beta_2 x_{it}\cdot d$ is the interaction term between regional dummy and explanatory variables. Θ_i is regional dummy and γ_t is year dummy. μ_{it} is the usual standard error. Extending this approach, for estimation purpose, we have used the following equation:

$$GINI_{IT}=\beta_0+\beta_1 GDPcp_{it}+\beta_2 GDPGR_{it}+\beta_3 GEXP_{it}+\beta_4 GFCF_{it}+\beta_5 OG_{it}+\beta_6 TGDP_{it}+\beta_7 GDPcp_{it}\cdot d+\beta_8 GDPGR_{it}\cdot d+\beta_9 GFCF_{it}\cdot d+\beta_{10} OG_{it}\cdot d+\beta_{11} TGDP_{it}\cdot d+\Theta_i+\gamma_t+\mu_{it} \quad (5)$$

Where $i=1, 2\ldots,n$ is the regional index, $t=1,2,\ldots,n$ is the time index, denoting the years from 2000 to 2020. The empirical model assumes that GINI coefficient in North Macedonia is a function of GDP per capita ($GDPcp_{it}$), GDP growth rate ($GDPGR_{it}$), government expenditures ($GEXP_{it}$) Gross Fixed Capital Formation ($GFCF_{it}$), output gap (OG_{it}), and trend GDP accounting for potential GDP ($TGDP_{it}$) as well as the interaction terms between these variables with specific regional dummy, accounting for eight statistical regions in North Macedonia. As concern to the interaction terms with *regional* dummy, the aim of the study is to differentiate the determining factors of income inequality (captured by GINI index), across 8 group of statistical regions in North Macedonia[5]. For each considered region as a subject of study, the remaining group of regions is considered as benchmark category of regions.

5.3 Discussion of the results

We discuss the economic interpretation of the Fixed Effects with Driscoll and Kraay standard errors. To distinguish the effect of macroeconomic factors on income inequality, with respect specific regions in North Macedonia, we have included the interaction terms[6] between regional dummies with macroeconomic factors. By these interactions, we test the hypothesis that the effect of macroeconomic factors on income inequality is different among the specific regions in North Macedonia. Focusing on the results with regular variables (column 1), we outline an inequality enhancement effect of growth rate, GDP per capita and Gross Fixed Capital formation, which on the other hand represent the main macroeconomic factors which are triggering inequality concerns in North Macedonia, due to unequal distribution of the economic welfare in the country, which is stimulated through unequal distribution of public spending throughout the statistical regions in the country, at initial stage. The deteriorating effect of output gap, which denotes the cyclical component of the economic activity and potential GDP (captured by trend GDP) on income inequality is a signal that a country may experience potential inflation pressures, following the Keynesian approach, which arises due to increase of the demand component of the economy (Dauti and Elezi, 2020). Concerning the interaction term of GDP per capita with regional dummies, the result is statistically significant at 1 percent of significance for Pelagonija and Polog region. Hence, 100 Euro increase of GDP per capita in the Pelagonija region, is associated with 0.1 Euro of income inequality[7], whereas for the remaining regions the impact of 100 Euro increase on GDP per capita, is associated with 0.4 Euro increase of income inequality[8]. However, although GDP per capita is found to be on a statistically significant relationship with income inequality, the size of the impact of GDP per capita on income inequality is very low, denoting the inelastic change of income inequality due to changes on GDP per capita among the statistical regions in the country. In the Polog region, GDP per capita changes are found to be on a positive and statistically significant relationship with

[5]Vardar region, Eastern region, Southeastern region, Southwestern region, Pelagonija region, Polog region, Northeastern region and Skopje region.

[6]The presence of a significant interaction indicates that the effect of one predictor variable on the response variable is different at different values of the other predictor variable. It is tested by adding a term to the model in which the two-predictor variables are multiplied. Adding an interaction term to a model drastically changes the interpretation of all of the coefficients. If there were no interaction term B_1 would be interpreted as the unique effect of macroeconomic factors on income inequality at the whole sample of the eight statistical regions in North Macedonia. Since the interaction indicates that the effect of macroeconomic factors on income inequality is different for different values of regional dummy, the unique effect of macroeconomic factors is not limited to B_1, but also depends on the values of the regional dummy variable.

[7] 0.0018 (0.0047-0.029*1) See column (6) the interaction coefficient of GDP per capita with Pelagonija regional dummy and the unique coefficient of GDP per capita

[8] 0.0047(0.0047-0.029*0) See column (6) where the interaction effect is 0, since dummy variable for the benchmark category of Pelagonija regions, denoting the remaining regions in North Macedonia is zero, in this case.

income inequality. Hence, 100 Eu increase of GDP per capita in the Polog region is related to average increase of income inequality by 1.1 Euro, ceteris paribus[9], whereas, for the benchmark category of the remaining statistical regions, this impact is estimated to be 0.4 Euro increase of income inequality, per average increase of GDP per capita by 100 Euro[10]. In the same way, the interaction terms of output gap[11] for Pelagonija and Polog regions are negative and statistically significant at 1 percent level of significance, signaling for the increase of the demand components of the economy (consumption, investments, government expenditures and net exports) as vital for reducing the disparity that these regions are facing on the grounds of economic development in comparison to the remaining statistical regions, albeit, in the long run some potential inflation pressures may arise due to triggered aggregate demand. Following the interpretations of the output gap coefficients for these two regions, it is noticeable that per 100 Eu increase of output gap in the Pelagonija and Polog region, income inequality decreases by 2.22[12] and 0.54[13] Euro, into these regions, respectively. The marginal impact of output gap on income inequality may lay behind the scope of the absence of economic activity into these regions. The interaction term of GDP growth coefficient with regional dummy is statistically significant, at 10 percent level of significance only for Pelagonija region, relying on a negative relationship with income inequality, although the size of the impact is marginal. As concern to the aggregate supply coefficient represented by trend GDP the results indicate statistically significant impact of aggregate supply on income inequality, for Pelagonija and Polog region, having regard the statistically significant interaction coefficient of trend GDP with regional dummies for these two regions. Hence, per 100 euro increase in the aggregate supply in Pelagonija and Polog region, income inequality decreases by 0.57[14] and 0.54[15] euros, respectively, ceterus paribus. This result is an indication that production activities should be favored into these regions, in order to make the welfare impact of aggregate supply functional for decreasing income inequality into the respective regions of Pelagonija and Polog.

Table 2: Results from the Fixed Effect with Driscoll and Kraay standard errors

GINI - dependent variable	(1) North Macedonia	(2) Vardar region	(3) East region	(4) Southwest region	(5) Southeast region	(6) Pelagonija region	(7) Polog region	(8) Northeast region	(9) Skopje region
$GDPcp_{it}$	0.00438***	0.00431***	0.00458***	0.00435***	0.00458***	0.00474***	0.00432***	0.00425***	0.00328**
	(0.000514)	(0.000547)	(0.000535)	(0.000534)	(0.000472)	(0.000589)	(0.000507)	(0.000461)	(0.00133)
$GDPGR_{it}$	0.000162*	0.000174	0.000137	0.000248*	0.000131	0.000170*	0.000151	0.000196**	-5.78e-05
	(9.24e-05)	(0.000116)	(9.47e-05)	(0.000124)	(0.000109)	(8.62e-05)	(9.83e-05)	(8.44e-05)	(0.000133)
$GEXP_{it}$	-0.000168	-0.000167	-0.000156	-0.000179	-0.000158	-0.000161	-0.000176	-0.000190*	0.000324
	(0.000109)	(0.000114)	(0.000108)	(0.000113)	(0.000110)	(0.000108)	(0.000110)	(0.000104)	(0.000284)
$GFCF_{it}$	0.000195**	0.000200**	0.000193**	0.000193**	0.000199**	0.000188**	0.000189**	0.000193**	0.000459*
	(7.93e-05)	(8.28e-05)	(8.06e-05)	(8.18e-05)	(8.18e-05)	(7.87e-05)	(7.97e-05)	(7.71e-05)	(0.000231)
OG_{it}	-0.00219***	-0.00216***	-0.00229***	-0.00218***	-0.00229***	-0.00237***	-0.00216***	-0.00213***	-0.00174**
	(0.000244)	(0.000259)	(0.000254)	(0.000254)	(0.000222)	(0.000282)	(0.000242)	(0.000218)	(0.000630)
$TGDP_{it}$	-0.00215***	-0.00212***	-0.00224***	-0.00213***	-0.00224***	-0.00231***	-0.00212***	-0.00208***	-0.00180***
	(0.000237)	(0.000252)	(0.000247)	(0.000246)	(0.000217)	(0.000274)	(0.000233)	(0.000213)	(0.000607)
$GDPcp_{it} \cdot d$		-0.00191	0.000712	0.00610	-0.00398	-0.00293***	0.00734**	-0.0121	0.00125
		(0.00148)	(0.00138)	(0.00477)	(0.00401)	(0.000798)	(0.00320)	(0.0107)	(0.00120)
$GDPGR_{it} \cdot d$		3.51e-05	0.000232**	-0.000319	0.000490	-0.000402*	-0.000594*	-0.000406	0.00123***
		(0.000178)	(9.40e-05)	(0.000288)	(0.000403)	(0.000200)	(0.000312)	(0.000330)	(0.000403)
$GEXP_{it} \cdot d$		7.70e-05	0.000447***	-0.000264**	0.000104	0.000141**	-0.000234	-0.000736**	-0.000366*
		(0.000112)	(0.000119)	(0.000125)	(0.000170)	(5.39e-05)	(0.000138)	(0.000290)	(0.000180)
$GFCF_{it} \cdot d$		0.000140*	-2.67e-05	-0.000241*	0.000413**	8.21e-05	-0.000222*	0.000202	-0.000249
		(7.30e-05)	(5.44e-05)	(0.000134)	(0.000158)	(6.42e-05)	(0.000120)	(0.000332)	(0.000162)
$OG_{it} \cdot d$		0.000906	-0.000363	-0.00282	0.00170	0.00144***	-0.00331**	0.00621	-0.000576
		(0.000722)	(0.000658)	(0.00229)	(0.00186)	(0.000380)	(0.00151)	(0.00522)	(0.000573)
$TGDP_{it} \cdot d$		0.000878	-0.000415	-0.00282	0.00178	0.00135***	-0.00342**	0.00589	-0.000443
		(0.000698)	(0.000650)	(0.00226)	(0.00190)	(0.000378)	(0.00152)	(0.00509)	(0.000553)
Observations	168	168	168	168	168	168	168	168	168
Number of groups	8	8	8	8	8	8	8	8	8
R-square	0.9487	0.9493	0.9524	0.9523	0.9529	0.9505	0.9522	0.9637	0.9528

Notes: Dependent variable is GINI coefficient denoting income inequality. Driscoll and Kraay standard errors in brackets, ***, ** and * indicate significance of coefficients at 1, 5 and 10 per cent, respectively. *d* is the regional dummy variable.

6 CONCLUSION AND POLICY IMPLICATIONS

[9] (0.00432+0.00734*1). See column (7) the interaction coefficient of GDP per capita with Polog regional dummy and the unique coefficient of GDP per capita.

[10] (0.00432+0.00734*0) =0.004 x 100=0.4

[11] Output gap is measured as a percentage difference of actual GDP (aggregated demand) from trend - potential GDP, aggregate supply, as calculated with Hodrick-Prescott filter. Theoretically, the underlying expansion in economic growth means an increase of output gap, meaning that actual GDP converges to its potential level, thus, forcing for inflation pressures, when actual GDP is higher than potential GDP (Dauti and Elezi, 2022)

[12] (-0.0237 +0.00144*1) =-0.02226 x 100 = -2.221

[13] (-0.00216-0.00331*1) =-0.00547 x 100 =-0.547

[14] (-0.00231-0.00342*1) =-0.00573 x 100=-0.5

[15] (-0.00212-0.00342*1) =-0.00554 x 100 =-0.5

This policy-oriented paper tried to evaluate on empirical grounds some of the main macroeconomic indicators of income inequality across eight state statistical regions of North Macedonia, relying on a yearly data set for the period 2000-2020. Moreover, having regard latest oriented policies of North Macedonia for regional economic cohesion in a coherence with the Lisbon Treaty, as a pre-requisite of EU adherence path, regional economic development is becoming vital tool for reducing regional disparities for the country. is crucial for the country. Considering the reviewed statistical data on some of the macroeconomic indicators, like: GDP per capita, GDP per worker employed, gross fixed capital formation, government expenditure, the study reveals significant differences on the trajectory of these indicators, between statistical regions. Hence on the grounds of GDP per capita indicator as a crucial measure of standard of living, the study outline that Skopje region has the highest share of GDP per capita in the country, while the Northeast and Polog region are suffering from the lowest GDP per capita, during the whole observed period, making the Skopje region, on average three times richer than the remaining statistical regions, where in extreme cases this region is times richer than Northeast region and five times richer than Polog region. Also, the reviewed data on GDP per worker employed across the statistical regions, reveals that GDP contributed from the labor force comes mainly from the region of Skopje. Gross fixed capital formation which includes private and public investments is found to experience unequal share among the statistical regions during the whole observed period, in favor of Skopje region again in comparison to other stagnated regions, confirming a biased concept of investment policies in public goods (infrastructure, healthcare, schooling, social welfare) and private goods (domestic and foreign investments). On empirical grounds, using the fixed effects estimates with Driscoll and Kraay standard errors, the study finds that stimulating aggregate supply, throughout facilitating domestic production, on Polog and Pelagonija region, two of the most stagnated regions, can significantly reduce the un-favoring economic situation of these regions in comparison to other statistical regions, thus contributing to the reduction of economic disparities at state level. Output gap as a macroeconomic indicator of convergence process of actual GDP (aggregate demand) to potential GDP (aggregate supply) is found to be on a negative relationship with income inequality for Pelagonija and Polog region, meaning that income inequality can be reduced only through increase of the demand component of the economy (increased consumption, investments, government expenditures and net exports), although some inflation pressures may be provided due to the increase of the demand components in the long run. The study contributes to the empiricism of regional economics in several ways. Firstly, it enriches the empirical literature of the determinants of economic disparities on regional context. Secondly, it contributes to the policy debate in North Macedonia, regarding the efforts that the government is putting forward for achieving a sensible cohesion policy on the basis of equal economic development of North Macedonia's statistical regions and thirdly the study addresses some figures and data which outline the trends of economic development in the statistical regions in North Macedonia. The results of the study will provide relevant policy endorsements to the governmental authorized bodies and other interested parties for achieving a productive institutional reform on addressing the challenges and improved perspectives in the policy of a balanced regional economic development.

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FARM TO FORK STRATEGY AS A FRAMEWORK FOR NEW SERBIAN AGRICULTURE AND RURAL DEVELOPMENT STRATEGY[1]

Abstract: The EU's Farm to Fork strategy provides a comprehensive framework for transforming the food system and promoting sustainable agriculture. In this paper, we analyze the potential of this strategy as a basis for creating a new strategy for agriculture and rural development in Serbia. This topic is significant because Serbia is in the process of European integration, which implies a specific political synchronization. In addition, the current strategy ends in 2024, so the topic is up to date. This paper aims to provide recommendations to policy-makers based on a comparative analysis of these two strategies and the performance of Serbian agriculture. The paper highlights that the country may face challenges in adapting to new standards and regulations and in securing the necessary resources and financial support for implementing changes.

Keywords: Agriculture, Strategy, European Union, Serbia.

1. INTRODUCTION

In August 2014, the Agriculture and Rural Development Strategy of the Republic of Serbia for the period 2014-2024 was published, so this is the last year of this strategy. It is expected that the development of a new strategy for the period after 2024 will begin soon. As in the case of the current strategy, the EU strategy and policy will most likely be the basis for the process of creating a new one, due to the process of European integration. In the past ten years, significant changes have taken place in the EU, especially with the adoption of the European Green Deal (EDG), the goal of which is to make Europe the first climate-neutral continent by 2050. For the agricultural sector, the Farm to Fork Strategy (F2F), which is derived from EGD, is particularly important. This paper aims to provide recommendations to policy makers based on a comparative analysis of these two strategies and the performance of Serbian agriculture. In the first part of the paper, the key elements of the F2F strategy were analyzed, and in the second part, potential implications for Serbia's new strategy were presented. At the end, the conclusions of the research are summarized. All data were taken from the FAOSTAT electronic database.

[1] The paper presents a part of research on the Erasmus+ Jean Monnet project Jean Monnet Centre of Excellence: Sustainable Agriculture for Greener Future – AgriGREEN (101085183).

2. KEY ELEMENTS OF THE FARM TO FORK STRATEGY

The Farm to Fork Strategy aims to accelerate transition to a sustainable food system that should (European Commission, 2023):

- have a neutral or positive environmental impact;
- help to mitigate climate change and adapt to its impacts;
- reverse the loss of biodiversity;
- ensure food security, nutrition and public health, making sure that everyone has access to sufficient, safe, nutritious, sustainable food;
- preserve affordability of food while generating fairer economic returns, fostering competitiveness of the EU supply sector and promoting fair trade.

Following these goals, particular emphasis is placed on ecology and climate change, the global transition towards sustainability, the creation of new jobs in the new system, and greater resilience of the food supply chain, which is especially important in crisis conditions (Figure 1).

Figure 1: Key elements of the Farm to Fork Strategy
Source: European Commission, 2023.

This strategy also defines targets. For the agricultural sector, the following are particularly important:

- Reduction of the overall use and risk of chemical pesticides by 50% and the use of more hazardous pesticides by 50% by 2030,
- The reduction of nutrient losses by at least 50% while ensuring no deterioration in soil fertility. This will reduce the use of fertilizers by at least 20% by 2030,
- Reaching at least 25% of the EU's agricultural land under organic farming by 2030 and a significant increase in organic aquaculture.

These targets can be considered very ambitious and radical. It is very questionable what the consequences will be on the food market if there is such a significant drop in the use of chemical inputs. Wesseler (2022) indicates a decline in EU agricultural production in quantitative terms. Furthermore, the F2F strategy negatively affects aggregate consumer surplus and a net increase or decrease in producer surplus, thereby inducing an overall net welfare loss. The strategy's success will be contingent on the political willingness of the European Parliament and Council to support the European Commission's high levels of ambition and the capacity to reconcile opposing interests between Member States, political groups, and interest groups (Schebesta & Candel, 2020).

3. IMPLICATION ON NEW SERBIAN AGRICULTURE AND RURAL DEVELOPMENT STRATEGY

In 2014, the Agriculture and Rural Development Strategy of the Republic of Serbia has set goals that are in line with the trends of the EU in that period (Off. Gazette of RS, 2014):

- production growth and producer income stability;
- growth of competitiveness with adaptation to the requirements of the domestic and foreign markets and technical-technological improvement of the agricultural sector;
- sustainable resource management and environmental protection;
- improving the quality of life in rural areas and reducing poverty;
- efficient management of public policies and improvement of the institutional framework for the development of agriculture and rural areas.

The goals defined in this way are in accordance with this sector's needs for further economic development. The previous period showed that the main focus was on the growth of production and economic performance, while other goals were subordinated, primarily environmental. Based on the structure of support measures, it is possible to determine the importance of individual goals. Most of Serbia's agricultural budget is spent on market support and direct payments. Direct payments had a share of 50% in the total payments, while 17% goes to direct payments based on production and 2% to subsidizing variable inputs. Of the measures that belong to the group of structural support and support for rural development, almost all funds are spent on improving the competitiveness of the agricultural and food sector. Like other developing countries, environmental payments, organic production, and animal welfare are at the statistical error level. In addition, 2% of the total funds are spent on research, development, advisory, and professional services (APP, 2023). This structure of support measures indicates that the agrarian policy is mostly directed toward achieving the first goal - production growth and producer income stability.
In order to draw a parallel with the performance of the EU in critical points related to chemical inputs, Figure 2 shows the use of nitrogen fertilizers in the agriculture of the EU and Serbia.

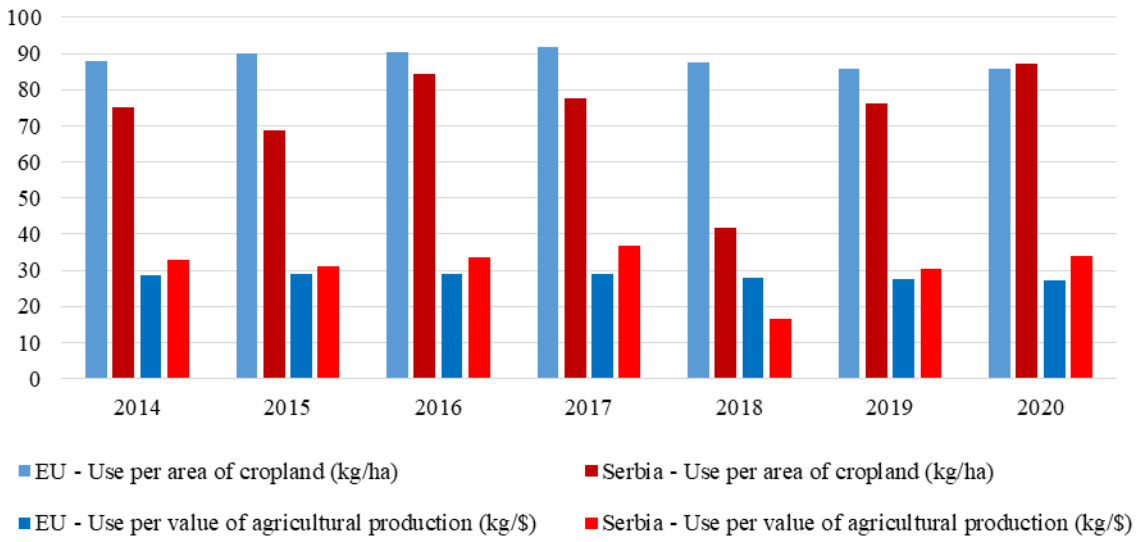

Figure 2: Fertileser use (N) in EU and Serbia
Source: FAOSTAT, 2023.

In the years under review, mineral fertilizers per area are slightly higher in the EU than in Serbia. However, what is worrisome for Serbia is that more mineral fertilizer is used if we look at the use per value of agricultural production. This implies that this input is used less efficiently. Furthermore, this situation results from two factors, the quality of the mineral fertilizer and the way of management. Therefore, it is clear that more education and better farmers' management are necessary to optimize the use. A particular problem for Serbia is the importance of fertilizer use. According to Đokić et al. (2022), using mineral fertilizers is a crucial source of growth in land productivity in Western Balkan countries. Therefore, the potential drop in use can dramatically change output and productivity.
The chemical inputs, the most important of which are mineral fertilizers, have the largest share in total variable costs in crop production. Non-optimal use implies an increase in costs and a reduced economic result. Indeed, technological solutions are still being sought, and one of the biggest questions is the economic profitability of applying new technology. Some of the solutions offered by modern science are: applying more efficient "smart" fertilizers, organic fertilizers, and precision agriculture. The basic idea of smart fertilizers is a slower release of the active substance so that the crops can absorb nutrients for extended periods. By applying this type of fertilizer, the active substance is used more optimally, and the ecological effect is favorable because most nutrients are absorbed, preventing groundwater pollution. One of the most modern types of smart fertilizers is those based on nanotechnology. Calabi-Floody et al. (2018) believe that this technology can significantly increase the efficiency of using mineral fertilizers and reduce the harmful environmental effects. On the other hand, precision agriculture is based on technology that enables a better analysis of the agricultural production process and implies the automation of some processes. The concept of precision agriculture appeared in the mid-1980s in order to apply mineral fertilizer more adequately with the help of new technology (Robert, 2002). Today, precision agriculture involves the application of technologies, which McBratney et al. (2005) divided into several groups, of which the most significant for the use of fertilizers are the development of hardware and sensors, as well as data analysis and decision support systems. This technology makes it possible to detect crop needs and optimize the intensity of mineral fertilizer application in the field. However, this technology has yet to find widespread use. Robert (2002) points out that socioeconomic barriers, such as high application costs and lack of expertise and training of farmers, prevent widespread application. Also, one of the solutions is organic fertilizers. Wang et al. (2018) point out that most farmers still prefer chemical fertilizers over organic ones because they fear they will achieve lower yields and

income. The same authors state that the popularization of organic fertilizers requires the support of the state and that membership in cooperatives can have a positive impact.
On the way to the ecological transition of agriculture, another essential factor is organic production. Figure 3 shows the areas under organic production in the EU and Serbia. Based on these data, the set goal of the F2F strategy seems highly ambitious. In the period until 2023, it is predicted that the areas under organic production will make up almost a third of the total areas. In the case of Serbia, organic production is at an enviable level. However, the agricultural policy will play a significant role in that process. Nieberg, Offermann, (2000) insists that government support is necessary for producers engaged in organic agriculture to achieve similar economic results as conventional producers.

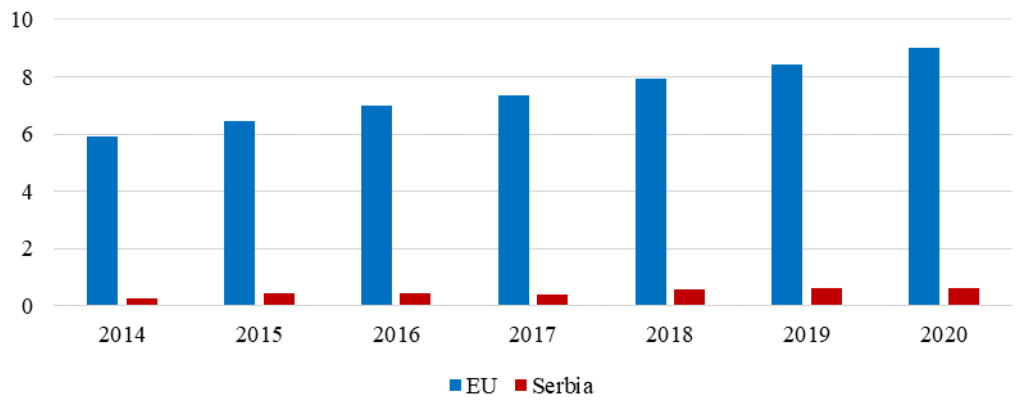

Figure 3: Agriculture area under organic production (share in the total agricultural land - %)
Source: FAOSTAT, 2023.

4. CONCLUSION

The F2F strategy represents a radical shift in the food production sector. Regarding agriculture, the critical elements are reducing the use of chemical inputs and promoting organic production. Indications are that such a turn will lead to a significant reduction in output. In the previous period, Serbia's agricultural policy was mainly focused on production growth and increasing efficiency. If the EU policy is followed while drafting the new Strategy, as was the case in the previous period, the consequences can be dramatic.
The most significant challenge for the creators of the new Strategy will be balancing the economic and ecological goals of the agricultural policy, given the undeniable economic importance of this sector for the economic development of Serbia. One of the possible solutions and main recommendations is to change the focus on economic measures aimed at the research and development of green technologies, which will have a significant impact on technical progress in agriculture and enable the sustainable development of this sector in the long term. Also, the new Strategy must include a gradual transition towards greener agriculture so that the economic consequences are not devastating for agriculture. Finally, support measures must be focused on new modern types of fertilizers, organic production, and the education of farmers.

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РАД ЗА СТУДЕНТСКУ СЕКЦИЈУ-МОДЕЛИ УГОВОРА О ЕФИКАСНИМ ЗАРАДАМА

Апстракт: Теорија ефикасних надница и различити модели обрачуна надница предмет су бројних научних анализа и расправа. У овом раду се указује на специфичности тржишта рада, али и на њихову актуелност и у савременим условима. Основни циљ рада је да се представе модели ефикасних надница, као функција ангажованости, продуктивности и залагања радника. Прецизно дефинисани циљеви истраживања одредили су структуру овог рада, као и методолошки инструментаријум. Понуђени модели имају одређена ограничења, али и бројне могућности проширења.

Кључне речи: ефикасне наднице, обрачун надница, залагање на раду, ангажованост

MODELS OF CONTRACTS ABOUT EFFICIENCY WAGE

Abstract: The theory of efficiency wages and different wage calculation models are the subject of numerous scientific analyzes and discussions. This scientific work points on the specificities of the labor market, but also their relevance in modern conditions. The main goal of the work is to present models of effective wages, as a function of engagement, productivity and commitment of workers. Precisely defined research objectives determined the structure of this work, as well as the methodological instrumentation. The offered models have certain limitations, but also numerous expansion possibilities.

Key words: effective wages, wage calculation, commitment to work, engagement

УВОД

Тржиште рада представља једно од најважнија три тржишта, односно предузећа се јављају на тржишту производа, тржишту капитала и тржишту рада. Пошто предузећа на тржишту капитала и рада купују факторе производње, ова тржишта се називају тржишта фактора производње. Бројни су покушаји да се објасни како се на тржишту рада формирају наднице и запосленост.

Различита су теоријска објашњења функционисања тржишта рада, обично се сматра да се ово тржиште понаша као и свако друго, да се равнотежа налази на нивоу пуне запослености. Неке теорије указују да уколико не постоји државна интервенције да ће увек бити присутна незапосленост. Једне теорије су друге смењивале, биле

су краткорочног даха и сваком сменом су тражиле начин за своју допуну. Још ни једна теорија није успела у потпуности да објасни ово тржиште и да заокружи његову структуралну целину. А зашто? Све теорије које су покушавале да објасне тржиште рада, су занемаривале једну веома битну чињеницу, тржиште рада се не понаша као остала два тржишта и има своје специфичности. Људски рад се разликује, не постоје устаљени обрасци понашања, у томе лежи његова специфичност. Главни недостатак економских теорија које су покушавале да објасне ово тржиште јесте што им је недостаје социолошки аспект. Наведену слабост, модели ефикасних зарада односно надница у великој мери су отклонили.
Методологија овог рада, којом се настоје објаснити различите теорије о зарадама, почиње објашњењем специфичности тржишта рада. Потом се презентују различите теорије о надницама, које су основа и полазиште модерних теорија. Али и претпоставка разумевању функционисања овог тржишта и унапређења постојећих модела ефикасних надница. Крајњи резултат такве анализе је модел ефикасних надница, као модел који у своју анализу укључује економски и социолошки аспект тржишта рада. Представља унапређење у односу на класичне теорије, међутим постоји простор за његово даље унапређење. Његова критика, као и могућност за даље унапређење, ће бити изнете у закључном разматрању овог рада.

1. СПЕЦИФИЧНОСТИ ТРЖИШТА РАДА

Тржиште рада у свом најширем контексту представља место где се сусрећу тражња за радом и понуда рада. Усклађивање слободних радних места са особама које траже посао је заправо главна улога овог
тржишта. Међутим, неопходан услов који мора да се испуни да би се могло говорити о тржишту рада, јесте да се рад замењује за новац.
Тржиште рада поседује неколико специфичности, које га чине различитим од осталих тржишта.
Прва специфичност тржишта рада односи се на понуду и тражњу за радом. Тражња за радом је заправо изведена тражња. Она је изведена из тражње за одређеним производима. Понуда рада проистиче из жеље за стицањем дохотка. Поред тога, радна снага се унајмљује, док се фактори производње купују. Затим, радници су заправо живи фактор производње и као такви се не могу третирати као средства за рад или ти предмети рада. (Супић, 2020)
Друга специфичност тржишта рада јесте да постоји разлика како основни економски закони делују на другим тржиштима, а како на тржишту рада. Према закону понуде и тражње, пораст понуде, уз задржавање постојеће тражње резултираће смањењем цена, тј. смањење цена демотивише произвођаче да задрже исти ниво производње. Истовремени пораст тражње, као резултат нижих цена ће се одразити на формирање нове равнотеже, али уз нижу цену. Зашто овај механизам није уочљив на тржишту рада? Зато што зараде нису флексибилне надоле. Уколико би се понуда рада повећала дошло би до смањења зараде, али не и до нивоа на ком би се могла формирати равнотежа јер постоји одређени минимални ниво, тј. минимална зарада. Може се закључити да је тржиште рада у неравнотежи, уз постојање недобровољне незапослености. (Супић, 2020)
Трећа специфичност тржишта рада је његова подељеност на делове, односно сегменте. Тржиште рада је сегментирано, јер постоје ограничења кретања радне снаге. Подела тржишта рада је резултат професионалних и просторних ограничења. (Супић, 2020)

2. ПРЕГЛЕД ИСТРОРИЈСКОГ РАЗВОЈА ТЕОРИЈА О НАДНИЦАМА

Када се у економској литератури помене надница мисли се на суму која се раднику исплаћује за обављање неког посла, за радни дан или час рада. Из овога произилази да формирање наднице не би требало да буде превише захтевно и аналитички компликовано, међутим у пракси је сасвим другачија ситуација. Још је Јозеф Шумпетер у својим радовима указао на то да теорија надница заостаје за напретком у односу на остале економске теорије и анализе. У овом поглављу ћемо представити како су различите школе утицале на развој теорије о надницама.
Као полазну, потребно је размотрити Смитову теорију надница и његов допринос развоју ове еконмске науке. На самом почетку он прави поделу између два стања у друштву. Прво стање се односи на искључивање акумулације капитала, односно стање на нивоу примитивног развоја, док друго стање укључује акумулацију капитала. У првом случају укупан производ рада је заправо природна награда, одатле произилази је радом одређена прометна вредност. Док у другом случају када постоји акумулација капитала, један део тог капитала ће се искористити за унајмљивање радника. Из овога произилази да уколико занемаримо ренту, остварени производ се може поделити да две целине. Први део предствља део који се издваја за наднице, а други део представља профит послодавца. Међутим, након тога Смит говори о цени рада коју назива „природна“ или „тржишна“. Шта је заправо тржишна цена рада? То је надница која омогућује радниково преживљавање и оспособљавање, и то не само њега већ и његове породице, како би се одржала у континуитету понуда рада. Такође, Смит је поставио темеље теорије фонда надница. По тој теорији просечна надница једнака је односу

постојећег фонда надница, који представља тражњу за радом и броја радника, који представљају понуду рада (Smit, 1998).
Први који је унапредио теорију фонда надница и представио објашњење како се наднице формирају у дугом року је Дејвид Рикардо. Његов допринос економској анализи је од суштинске важности. Рикардова теорија надница може се поделити у два дела: наднице зависе од односа капитала и становништва, што представља теорију фонда надница. Висина надница у дугом року ће гравитирати неопходном нивоу за преживљавање. Рикардо се као и Смит залаже да наднице не треба ограничавати законима, већ их треба препустити слободној тржишној конкуренцији. Такође, преузео је Смитово становиште и „природној“ цени рада. Међутим, указао је да се она мења током времена, а такође није иста ни у различитим земљама. Из овога се може закључити да на природну надницу утичу локални услови и обичаји места и времена, насупрот дотадашњем мишљену да је закон главни регулатор (Ricardo, 1983). На Рикардов допринос теорији о надницама се надовезао Џон Стјуарт Мил. Значајан преокрет се догодио 1869. године када је Мил напустио теорију фонда надница и дао значај преговарању и односу преговарачке моћи на тржишту рада, као механизму путем којега се одређују зараде (Mill, 1968). Мил је заправо направио огроман напредак, јер је увео у анализу утицај синдиката и колективног преговарања.
Значајно унапређење теорије надница даје А. Маршал и његова теорија граничне продуктивности, односно маргиналистичка теорија. Ова теорија покушава да избегне објашњења да наднице регулише само понуда и тражња. Према његовом виђењу наднице не одређује ни понуда ни тражња, већ читав сплет узрочних околности, који директно и посредно врше утицај на понуду и тражњу. Укратко, теорија граничне продуктивности значи да је цена сваког фактора једнака његовом граничном производу, тј. сваки фактор, у овом случају радник, се плаћа онолико колико он доприноси у производњи аутпута (Стојановић, 2009). Ова теорија је интегрисала два принципа: принцип праведности и принцип ефикасности. Први принцип предпоставља да се сваки фактор производње награђује сходно сопственом производном доприносу, док принцип ефикасности је представљен максимизирањем процеса производње и елиминисањем непродуктивних фактора. На темељима овог принципа се градила теорија ефикасних надница. Битно је нагласити да овај концепт доминира до Велике економске кризе 1929. године.
Велика економска криза је указала на све проблеме и доказала да тржиште не може да функционише као механизам које се сам регулише. Класична економска теорија је доживела крах, а једини излаз и другачији поглед на тржиште рада је понудио Џон Мајнард Кејнс. Он је указао на две специфичности тржишта рада, а то су: наднице су ригидне (надоле) и присутна је невољна незапосленост. (Kejns, 1987) Класична економија није дозвољавала постојање невољне незапослености, укључивала је неке видове незапослености, као што је фрикциона незапослености, међутим она је сматрала да се тржиште рада увек налази на нивоу пуне запослености. За разлику од тога Кејнзова доктрина указује на постојање невољне незапослености, као и да је она сасвим уобичајено стање у економији, јер ниједна економија се дугорочно не налази у стању пуне запослености.
Након неуспеха кејнзијанизма 70-их година двадесетог века, до чега је довела појава стагфлације, која је била изазвана високим стопама незапослености и акутном високом инфлацијом, као нови правац у развоју економске мисли дошли су монетаристи и школа нове класичне економије. По њиховој доктрини свака стопа незапослености је вољна незапосленост, која је одређена кобминацијом између рада и доколице. Одакле се може закључити да радник који је незапослен више преферира доколицу у односу на рад. Такође, на однос рада и доколице утиче однос између текуће и просечне тржишне зараде у одређеном сектору, односно ако је текућа већа онда ће радник повећати рад, а смањити доколицу.

3. МОДЕЛИ ЕФИКАСНИХ НАДНИЦА

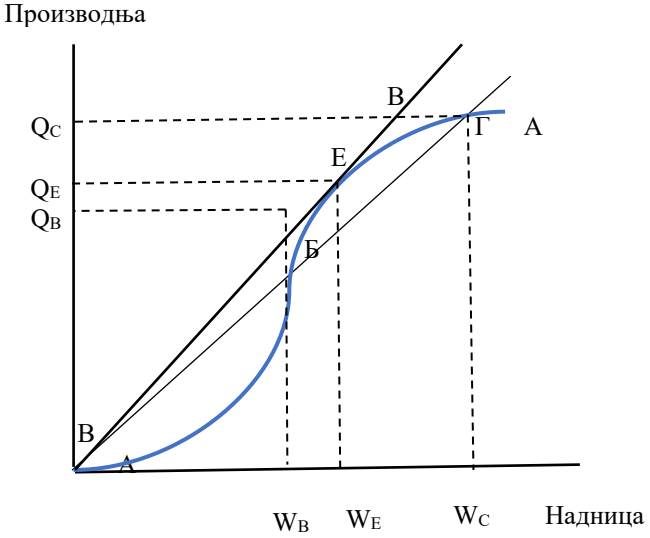
Теорија ефикасних надница (*Effeciency Wage Theory, Yellen,* 1984) доживела је свој развој 80-их година прошлог века и представља унапређење кејнзијанске и класичне школе економске мисли. Основна идеја ове теорије није нова. Карл Маркс је још у својим ранијим радовима уочио да су на самом почетку осамнаестог века постајали концепти ефикасних надница (за које је заслужан Бернард де Мендевил). Он уочава следеће:

„ Они који се издржавају свакодневним радом немају другог подстрека за своју услужност сем својих потреба, које је мудро ублажавати, а било би лудо лечити. Једина ствар која радног човека гони на вредноћу јесте умерена најамнина. Премала најамнина учиниће га, већ према његовом личном темпераменту, малодушним или очајним, превелика дрским и љењим.“ (Маркс, 1970)

Мендевил је поставио основне концепте теорије ефикасних нандица, коју је он називао „умерена најамнина“, на његов концепт су касније надоградили Адам Смит, Џон Стјуарт Мил, Алфред Маршал и остали. Међутим, савремену интерпретацију и њену разраду ова теорија је доживела 80-их година двадесетог века.
Џенет Јелен (Jenett Yellen) је на једноставан начин објаснила сам концепт и начин функционисања ове теорије. Полазећи од тога да наднице директно утичу на продуктивност рада. Може се претпоставити да се привреда налази у стању перфектне конкуренције и имају производну функцију $Q= F[e(w), N]$, где је N број запослених, e напор по раднику, w реална надница. Уколико фирма жели да оствари свој примарни циљ, да максимизира профит она ће понудити реалну надницу w^*. Ова надница представља ефикасну надницу и њена основна сврха

јесте да минимизира трошкове рада по ефективној јединици. На основу тога предузећа ће упошљавати раднике све до тачке оптимума, у којој је гранични производ рада једнак реалној надници. Међутим, шта ако привреда дође у ситуацију да је агрегатна понуда рада већа од агрегатне тражње за радом и дође до појаве невољне незапослености, поставља се питање да ли ће предузећа смањити надницу испод w^* ? Наравно да неће, јер по концепту ефикасне наднице, уколико се смање наднице долази до пада продуктивности (Yellen, 1984). Суштина коцепта ефикансих надница јесте да надница, односно најамнина прво утиче на продуктивност, а затим и на профит. Уколико фирма подигне најамнину изнад равнотежне, раст профита, који је последица пораста продуктивности, може да компензује његов пад (као резултат раста трошкова рада), па је отуд нето ефекат на профит већи од нуле, тј. позитиван. Често се среће пример Хенри Форда (Hanry Ford, 1863-1947), оснивач „Ford Motor Company“. Он је први увео серијску производњу аутомобила, дневницу повећао са 2.34$ на 5$, смањио је број радних сати са 9 на 8. Идеја му је била да смањи одлив радника, јер се ефикасност постиже само запошљавањем и задржавањем оних најбољих. Резултат је био и више него успешан, продуктивност је у просеку порасла за 50%, број напуштања посла смањен за 15%, а профит је порастао за 20%. (Trivić & Todić , 2022) Битно у вези са ефикасном надницом је истаћи две чињенице. Прва говори да ефикасна надница ствара незапосленост. При реалној надници *w* понуда рада била је једнака тражњи за радом и незапосленост је била вољна, тј. добровољног карактера. Особе које су биле незапослене биле су без посла, јер нису хтела да раде за дату надницу. Међутим, ефикасна надница w^* привлачи незапослене особе да уђу на тржиште рада, али пошто је ограничен број радника, укупна запосленост остаје на истом нивоу. Друга чињеница јесте да ефикасна надница одређује нову равнотежу на тржишту рада, тако што фирме немају интерес за њено даље увећавање, а ни за њено умањивање. Другим речима, уколико фирме повећају наднице изнад ефикасне наднице, додатни производ рада за фирме би био мањи од раста наднице, док супротан утицај на смањивање надница испод ефикасне наднице довело би до већег пада маргиналног производа рада него трошка рада.

Ефикасну надницу одређују фирме тако што посматрају како повећање наднице утиче на продуктивност радника. Пошто се свака фирма разликује једна у односу на другу, по том основу ни ефикасна надница не може бити иста у свакој фирми, међутим за њено одређивање се може извести општи критеријум.



Дијаграм 1: „Ефикасне наднице“

Извор: Супић, Н. (2020). *Економија тржишта рада: основни принципи и политике.* Суботица: Економски факултет у Суботици.

Одређивање ефикасне наднице представљено је на дијаграму 1. Производна функција (АА) има растући нагиб и представља однос између производње и наднице. Она указује да раст наднице утиче на повећање продуктивности рада, међутим та веза није линеарна, већ је у облику латиничног слова S. На самом почетку продуктивност рада расте умерено, потом се убрзава и након одређеног нивоа производње та веза почиње да слаби. Маргинални производ наднице MPW (*marginal product of wage*) представља однос за колико ће се јединица повећати производња ако се најамнина повећа за једну јединицу, и он је заправо представљен кроз нагиб производне функције АА. Приказано математички:

$$MPW = \frac{\Delta Q}{\Delta W}$$

ΔQ – промена аутпута, ΔW – промена наднице.

Ефикасна надница се налази у тачки Е, где линија ВВ додирује производну функцију. Заправо линија ВВ је тангента производној функцији АА и у тој тачки је њихов нагиб једнак. Она представља однос између

производње и надница одакле се може закључити да она представља просечан производ наднице APW (*average product of wage*). APW показује просечан аутпут по једној новчаној јединици, која је исплаћена раднику.

Приказано математички:

$$APW = \frac{Q}{W}$$

Q – количина аутпута, W – количина наднице.

Линија просечног производа наднице полази из координатног почетка, у ком су и аутпут и надница једнаки нули, а крајња тачка количина аутпута (Q_E) и надница на нивоу ефикасне наднице (W_E). APW има облик:

$$APW = \frac{QE - 0}{WE - 0} = \frac{QE}{WE}$$

Из ове релације се може закључити да је просечан производ наднице један количнику аутпута и ефикасне наднице. Када фирме желе да одреде ниво ефикасне наднице, оне се воде критеријумом максималног профита. Максималан профит се остварује у оној тачки где се додирују крива просечног производа наднице и производна функција, односно тамо где је просечан производ наднице једнак маргиналном производу наднице, односно:

$$\frac{Q}{W} = \frac{\Delta Q}{\Delta W}$$

Међутим , да би се остварио максималан профит, ефикасну надницу је могуће изразити у следећем облику, тј. форми еластичности:

$$\frac{W}{Q} = \frac{\Delta Q}{\Delta W} = \frac{\%\Delta Q}{\%\Delta W} = 1$$

Из ове релације проистиче да је ефикасна надница она при којој раст наднице за један проценат доводи до раста аутпута за један проценат, она уједно фирмама омогућава остварење максималног профита. Шта би се догодило да фирма одреди надницу испод и изнад ефикасне наднице? У тачки Б надница је испод свог ефикасног нивоа. Нагиб криве маргиналног производа наднице је већи од нагиба линије просечног производа наднице. Може се закључити да је коефицијент еластичности већи од један:

$$\frac{\Delta Q}{\Delta W} > \frac{Q}{W} \rightarrow \frac{(\%\Delta Q)}{\%\Delta W} > 1$$

Пошто повећање наднице за један проценат доводи до повећавања аутпута за више од једног процента за фирму је рентабилно да запосленима повећа зараду изнад W_B. Међутим, у тачки Г је ситуација обрнута. У овом случају нагиб криве маргиналног производа наднице мањи је од нагиба линије просечног производа наднице.

$$\frac{\Delta Q}{\Delta W} < \frac{Q}{W} \rightarrow \frac{(\%\Delta Q)}{\%\Delta W} < 1$$

У овом случају коефицијент еластичности мањи је од један. Повећање наднице за један проценат повећава аутпут за мање од једног процента, из угла фирме није исплативо да се повећавају наднице. (Супић, 2020)

Полазећи од датог објашњења формирања ефикасне наднице, потребно је анализирати како може да утиче на продуктивност радника. Постоји неколико модела и теорија које објашњавају тај утицај.

Први модел јесте заправо теорија дуалног тржишта рада, која покушава да објасни постајање трајних разлика између примарног и секундарног тржишта рада и ефикасну надницу. Када се тржиште рада налази у стању тржишне равнотеже, наднице на примарном тржишту су веће од надница на секундарном тржишту, и у случају када су радници истих радних способности. У овом случају радници на секударном тржишту спремни су да прихвате и надницу која је нижа од тренутне наднице на примарном тржишту рада, међутим фирме неће прихватити нижу надницу. Иако свака фирма тежи да минимизира трошкове она се не одлучује на овај корак, јер би на тај начин, снижавања надница довела до пада продуктивности и подстакла раднике на забушавање. Радници који присвајају нижу надницу имају већи подстрек на забушавање, јер је њихов опортунитетни трошак мањи, док радници који присвајају високе наднице њихов опортунитетни трошак је висок и они су подстакнути на пуно залагање (Bullow & Summers, 1986).

Други модел јесте Шапиро-Стиглиц теорија која објашњава како ефикасна надница утиче на смањење забушавања (*no-shirking model*). Ова теорија претпоставља да фирма није у могућности да свакодневно прати учинке својих радника. На основу овог проблема она одлучује да својим радницима исплаћује вишу надницу како би подигла њихов трошак забушавања. Када би фирма периодичном контролом уочила да радник забушава следио би му отказ , а тиме је његов трошак већи због веће наднице. Кроз исплаћивање ефикасне наднице фирме дају подстрек својим радницима да не забушавају. Такође, овај модел има и макроекономске последице, односно фирма која исплаћује надницу која је изнад нивоа који „чисти“ тржиште, доводи до појаве невољне незапослености. Међутим, ово је уједно и механизам дисциплиновања радника како су га њих двојица назвали (Shapiro & Stiglitz, 1984).

Трећи модел је модел погрешне или негативне селекције радника (*adverse selection model*), главни циљ овог модела јесте да се надница коју фирма нуди има утицај на квалитет радника који се појављује као кандидат за запослење. Фирма настоји да привуче квалитетније људске ресурсе како би остварила боље резултате, јер

фирма не тежи да надницу постави на нивоу који представља минимум, где се изједначавају понуда и тражња за радом, већ на онај ниво који јој обезбеђује минималне трошкове по јединици рада. На тај начин исплата ефикасне наднице елиминише ефекат негативне селекције. Асиметричне информације и њихова повезаност између наднице и квалитета рада подстиче послодавце да подигну ниво најамнине и на тај начин привуку квалитетнију радну снагу и да остану што дуже у фирми (Стојановић, 2009).

Четврти модел се заснива на смањењу флуктуација радника у фирми (*the labour-turnover model*). Асиметричне информације и на тржишту рада значе да једна страна има више информација у односу на другу страну. Радници располажу са више информација о својим компетенцијама, образовању и осталом, и уколико радници мисле да нису довољно плаћени за свој рад својевољно ће напустити фирму. Трошкови напуштања за фирму могу бити значајни, и деле се на директне и индиректне (Salop & Salop, 1976). Програми увођења нових радника представљају директни трошак, док трошкови који су узроковани нижом продуктивношћу нових радника представљају индиректне трошкове. Због ових трошкова предузеће настоји да смањи стопу флуктуације радника и решење види кроз ефикасну надницу, која је изнад равнотежног нивоа и мотивише раднике да остану што дуже у фирми.

Пети модел је модел правичности за који је заслужан Џорџ Акерлоф. По њему, осећање једнакости и праведности одбија фирме да одређују ниске наднице. Акерлоф се залаже да се уговори о радном односу могу представити као „размена дарова“, односно додатни напор радника који мења за одређени доходак (Akerlof, 1984). Радник је спреман да уложи додатни напор са којим би превазишао радну норму, јер очекује да предузећа, као одговор на то, подигну надницу изнад нивоа који се исплаћује у конкурентским фирмама. Међутим, фирма не посматра радника појединачно, већ на основу радних група. За боље разумевање ове теорије битна је социолошка теорија неформалних група. Ове групе се могу препознати тако што појачавају међусобну препознатљивост, као и индивидуалну и заједничку мотивацију. Акерлоф се позвао на истраживања Елтона Меја која су доказала да норма радне групе заправо одређује колико ће се сваки радник залагати на послу. На основу ове тврдње дошло је до закључка да се радници понашају колективно показујући „емотивну обавезу“ једни према другима и према фирмама, и на тај начин се може увидети лојалност према фирми и другим радницима. Поставља се питање шта ако радници премашују договорену норму? Фирма, као одговор на тако високе резултате може да смањи радну норму, што за раднике који премашују постојећу норму нема посебан утицај. Радници према којима они осећају „емотивну обавезу“ могу при новој норми да се осећају лагодније, и на тај начин побољшају међуљудске односе у радној групи. Други начин да фирма одговори на дато питање јесте да повећа наднице, код овог начина важно је да фирма поштује начело узајамности, односно да на пораст продуктивности одговор фирме буде кроз повећање надница, како радне групе не би минимизирале своје напоре. Ово повећање мора бити у складу са начелом праведности, тј. реципроцитета на коме се заснива овај модел, како не би дошло до негативних реперкусија (Стојановић, 2009).

ЗАКЉУЧАК

Бројне су теорије које објашњавају како функционишу механизми који одређују равнотежу на тржишту рада. Проблем теорија које су претходиле теорији ефикасних надница јесте што су посматрали тржиште само са економског аспекта. Новина коју је теорија ефикасних надница увела јесте укључивање социолошког аспекта. Све је очигледније да на раднике не утиче само зарада, већ и његов тим, неформална група, окружење, услови рада, степен партиципације и остало.

Главна критика која је упућена овој теорији јесте: зашто фирма исплаћује ефикасну надницу, кад може да плаћа надницу по комаду како би подстакла продуктивност? Одговор на ово питање лежи баш у социолошком доприносу развоја ове теорије. Завршни или финални производ је у малом броју случајева резултат појединачног радника, већ је резултат одређене радне групе. У том случају настаје проблем утврђивања учинка појединачног радника и отпор тима ка променама. У сваком тиму постоји радник који забушава. Покушај проналажења узрока унутар тима може да доведе до продубљивања проблема и пада продуктивности као резултат „отпора“ радне групе.

Могућа су унапређења теорије ефикасних надница. Један од начина јесте њена емпиријска верификација. Неопходно је спровести истраживање како би се она поткрепила, јер је њена актуелност неспорна.

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РАД ЗА СТУДЕНТСКУ СЕКЦИЈУ - НЕЈЕДНАКОСТ ДОХОТКА И МАТЕРИЈАЛНА ДЕПРИВАЦИЈА У СРБИЈИ

Апстракт: Вредност Gini коефицијента, као и Квинтилног односа, у Србији је у последњих пар година у благом паду. Међутим, оваква тенденција поменутих показатеља не побољшава позицију Србије у односу на друге европске земље, будући да се она и даље налази у групи земаља са највећом доходном неједнакошћу. Последично, значајан удео становништва Републике Србије може да се окарактерише као материјално депривиран. Циљ овог истраживања јесте да теоријски поткрепи и образложи могуће узроке настајања овакве ситуације, као и њеног развитка последњих година.

Кључне речи: Gini коефицијент, Квинтилни однос, доходна неједнакост, материјална депривација.

INCOME INEQUALITY AND MATERIAL DEPRIVATION IN SERBIA

Abstract: Value of the Gini coefficient, as well as quintile ratio, in Serbia in the last couple of years shows a tendency of slight decline. However, this tendency of the mentioned indicators does not improve the position of Serbia comparing to other European countries, as it still belongs in a group of states with highest income inequality. Consequently, a significant share of population of Republic of Serbia can be characterized as materially deprived. The purpose of this research is to theoretically support and to explain possible causes of this condition, as well as its development over the last few years.

Key words: Gini coefficient, quintile ratio, income inequality, material deprivation.

УВОД

Аутор Atkinson (2015) тврди да одређене разлике у економским наградама које појединац осваја за своја достигнућа могу бити сматране као прилично оправдане. Самим тиме, анализе у сфери неједнакости доходака не би требале да теже елиминисању свих разлика у економским исходима, а самим тиме ни потпуној једнакости.

Аутор Polacko (2021) наводи последице доходне неједнакости као оне које се дешавају на економском и социјалном фронту. На економском фронту, последице досежу знатно преко очегледног сиромаштва и материјалне депривације, које се најчешће и повезују са ниским нивоима дохотка. Оно што је евидентно јесте да су неједнакости доходака значајно утицале и на смањење раста, иновација и инвестиција. С друге стране, на социјалном фронту, ове последице се исказују као различити социјални и здравствени проблеми (могуће је

њихово сагледавање кроз очекивано трајање живота, гојазност, убиства, злоупотребу наркотика, ментално здравље појединаца, образовање деце...).
Узимајући у обзир све претходно наведене негативне ефекте који настају као последица изразитих неједнакости једне друштвене заједнице, намеће се потреба за анализом тих неједнакости и проналажењем одговарајућих решења чија би имплементација могла да допринесе побољшавању ситуације.
Посебно забрињавајућа чињеница јесте да показатељи ових непопуларних трендова данашњице у Републици Србији имају изнад просечну вредност у односу на показатеље Европске Уније.
У складу са тим, предмет рада представља анализу основних показатеља неједнакости доходака, Gini коефицијента и Квинтилног односа и њихово стављање у однос са резултатима оствареним у Европској Унији у просеку, односно појединим националним економијама унутар ње. Такође, пружа се и осврт на стопе изразите материјалне депривације у Републици Србији, као једне од главних последица видљивих на економском фронту друштвене заједнице.

1. МЕТОДОЛОГИЈА ИСТРАЖИВАЊА

Подаци за емпиријско истраживање о доходним нејднакостима и материјалној депривацији у Србији (и у поређењу са ЕУ), прикупљани су првенствено дигиталним путем. Ослањајући се на податке Eurostata, као статистичке канцеларије Европске Уније која је задужена за објављивање високо квалитетних статистичких података о појавама и оствареним резултатима широм Европе, као и на податке Републичког завода за статистику, организације задужене за спровођење статистичких истраживања у Србији, доношење јединствених статистичких стандарда и сарадњу са бројним међународним организацијама ради обезбеђивања упоредивости, прикупљени су подаци о оствареним вредностима Gini коефицијента и Квинтилног односа у Републици Србији, у периоду од 2017. године до 2021. године, али и подаци о вредности ових показатеља у Европској Унији у просеку и појединим изабраним националним економијама у оквиру ње (претежно економије које имају екстремне вредности ових показатеља, било минималне или максималне) за 2021. годину.
Подаци о материјалној депривацији, који такође потичу из претходно поменутих извора, су прикупљени уз посебан нагласак на учешће појединих старосних група, али и на раздвајање сваке од старосне групе према полу, на мушкарце и жене. Наиме, осим стопе укупног становништва које се суочава са изразитом материјалном дперивацијом, приказано је и учешће следећих старосних група:

- млађи од 18 година
- становништво старости од 18 до 64 године
- старији од 65 година.

Посебан осврт је приказан стављајући акценат и на структуру домаћинства, односно на њихово суочавање са изразитом материјалном депривацијом по основу првог критеријума на нивоу домаћинства. Наиме, основна подела структуре домаћинства је извршена са аскпекта да ли у домаћинству има или нема деце, а затим се у оквиру сваке категорије разликују по 3 изабрана типа домаћинства.
Подаци који се односе на Европску Унију приказани су за 2021. годину, док су подаци за Србију приказани за 2020. годину.

2. РЕЗУЛТАТИ ИСТРАЖИВАЊА

2.1. Gini коефицијент и Квинтилни однос

Један од основних и најпопуларнијих показатеља доходне неједнакости мерене у целој популацији је Gini коефицијент. Узимајући вредности од 0% до 100%, вредност 0 означава потпуну једнакост свих појединаца, а вредност 100 концентрацију прихода на само једног појединца.
Према подацима Eurostata, вредност Gini коефицијента у Европској Унији у 2021. години је износила 30.1%. Највећи нивои неједнакости у погледу расположивог дохотка регистровани су у Бугарској (39.7%), Летонији (35.7%), Литванији (35.4%) и Румунији (34.3%). На другом крају, налазе се државе као што су Словачка (20.9%) и Словенија (23.0%), где је доходак био најравноправније распоређен. У овом контексту, Србија се са вредношћу Gini коефицијента од 33.3%, а према подацима Републичког завода за статистику, свакако налази изнад просека Европске Уније, а релативно близу оних земаља које су идентификоване као земље са највећом присутном неједнакошћу у расподели дохотка.
Ипак, оно што је могуће констатовати јесте да је вредност овог коефицијента у периоду од 2017. године до 2021. године у благом паду.

Табела 1: Вредност Gini коефицијента у Републици Србији у периоду од 2017. године до 2021. године

	2017.	2018.	2019.	2020.	2021.
Gini коефицијент	37.8	35.6	33.3	33.3	33.3

Извор: аутори на основу Републичког завода за статистику

Други показатељ који се користи у анализи неједнакости доходака јесте Квинтилни однос. Дефинисан као доходак зарађен од стране 20% најбогатијих појединаца популације у једној држави према дохотку зарађеном од стране 20% најсиромашнијих појединаца, постао је једна од најпопуларнијих мера за изражавање доходних неједнакости у друштву (Langel, Tille, 2011). Вредност овог показатеља, према подацима Eurostata за 2021. годину, је у Европској Унији била 5.0, показујући да је у просеку, доходак примљен од стране 20% најбогатијих појединаца био 5 пута већи у односу на доходак примљен од стране 20% најсиромашнијих појединаца. Међу појединим чланицама ЕУ вредност овог показатеља је имала прилично широк распон, од 3.0 у Словачкој и нешто испод 4.0 у Данској, Холандији, Ирској, Финској, Чешкој, Белгији и Словенији до преко 6.0 у Литванији, Шпанији, Летонији и Румунији достижући највишу вредност у Бугарској (7.5). Позиционарујући Србију у односу на државе ЕУ, са вредношћу S80/S20 коефицијента од 5.9 у 2021. години евидентно је да Република Србија спада у ред земаља са израженијом доходном неједнакошћу и по овом основу.
Оно што је могуће констатовати јесте да је вредност овог коефицијента у периоду од 2017. године до 2021. године значајно опала.

Табела 2: Вредност Квинтилног односа у Републици Србији у периоду од 2017. године до 2021. године

	2017.	2018.	2019.	2020.	2021.
Квинтилни однос S80/S20	9.4	8.6	6.5	6.1	5.9

Извор: аутори на основу Републичког завода за статистику

Већа општа неједнакост у Србији у односу на већину земаља чланица ЕУ, углавном би могла да се објасни као последица веће развијености социјалне заштите у Европи и јачег прогресивног опорезивања, посебно у развијеним земљама западне и северне Европе (Матковић, Крстић, Мијатовић, 2015). Наиме, социјална заштита је углавном скромног обима, а прогресивно опорезивање виших доходака готово и да не постоји.
Србија и даље релативно мало троши на две главне социјалне накнаде које су усмерене ка сиромашнима - новчану социјалну помоћ и дечји додатак (расходи за социјалну помоћ износе 1.96% БДП-а).

2.2. Материјална депривација

Последица ових изразитих доходовних неједнакости, поготово по последњи квинтил, јесте суочавање са материјалном депривацијом, као изразом стварног положаја које је појединац успео да достигне. Тачније, материјална депривација би могла да се опише изнуђена неспособност да се нека од ставки са дате листе приушти, пре него избор да се то не уради. Показатељи који се користе у сврху њеног израчунавања се прикупљају на годишњем нивоу.

Листа од 13 критеријума који се узимају у обзир при анализирању материјалне депривације је следећа:

На нивоу домаћинства:

1. Капацитет суочавања са изненадним финансијским трошком
2. Могућност да се приушти годишњи одмор у трајању од 7 дана (изван домаћинства)
3. Могућност суочавања са заосталим обавезама (плаћање хипотеке или закупнине, комуналних рачуна или других облика позајмица)
4. Могућност да се приушти оброк са месом (пилетином, рибом) или вегетаријански еквивалент сваког другог дана
5. Могућност одржавања домаћинства у адекватном стању
6. Приступ ауту у приватне сврхе
7. Замена дотрајалог намештаја.

На нивоу индивидуе:

1. Интернет конекција
2. Замена дотрајале одеће
3. Поседовање два пара одговарајуће обуће (укључујући обућу за све временске прилике)
4. Потрошња мале количине новца на недељном нивоу на личне жеље
5. Редовно спровођење активности у слободно време
6. Одлазак са пријатељима/породицом на пиће/оборок барем једном месечно. (Eurostat)

Стопа материјалне депривације дефинише се као удео становништва који није у могућности да приушти пет или више од претходно наведених ставки. Стопа изразите материјалне депривације се дефинише као удео становништва који није у могућности да приушти седам или више од претходно наведених ставки.

Стопа изразите, тешке материјалне депривације је за Европску Унију, у просеку у 2021. години износила 6.3% (знатно варирајући по појединим земљама, од највеће стопе од 23.1% у Румунији до стопе од свега 1.1-1.8% у Чешкој, Аустрији, Словенији, Шведској и Финској). Са стопом нешто мањом од 14.5%, Србија се налази знатно изнад просека Европске Уније. Овако висок ниво депривације је и очекиван, узимајући у обзир знатан удео популације са ниским дохотком и вишедеценијске неповољне економске и друштвене прилике (Матковић, Крстић, Мијатовић, 2015.). Уколико се сагледа полна структура изразито материјално депривираног становништва Србије, приметно је да жене представљају угроженију категорију, будући да стопа материјалне депривације износи 14.9%, у поређењу са 13.2%, колико се односи на мушкарце. Комбинујући полну са старосном структуром, може да се дође до закључка да су најугроженија категорија жене старије од 65 година, а категорија која је најмање под утицајем овог ризика мушкарци млађи од 18 година.

Табела број 3: Стопа изражене материјалне депривације, анализирана према полној и старосној структури, у ЕУ и Републици Србији у 2021. (2020.*) години

	Укупно		Млађи од 18 година			18-64 година			Старији од 65 година		
	М	Ж	Укупно	М	Ж	Укупно	М	Ж	Укупно	М	Ж
ЕУ	6.0%	6.6%	7.5%	7.5%	7.5%	6.3%	6.0%	6.6%	5.3%	4.5%	5.9%
Србија*	13.2%	14.9%	12.3%	11.7%	12.9%	13.0%	12.9%	13.0%	18.6%	15.4%	21.0%

Извор: аутори на основу Eurostata

Узевши у обзир први критеријум на нивоу домаћинства, могућност подмирења изненадног финансијског трошка, а у комбинацији са структуром домаћинства, евидентно је да посебно угрожену категорију представљају самице без деце, где ова стопа износи чак 62.6%. У домаћинствима које имају децу, најугроженија категорија су самохрани родитељи једног детета, где чак 50.3% није у могућности да подмири ненадани финансијски трошак.
Гледано у односу на просек ЕУ, присутни су нешто уједначенији показатељи у домаћинствима са децом, у односу на она која чине искључиво одрасле особе.

Табела број 4: Стопа становништва у ЕУ и у Републици Србији које није у могућности да подмири изненадан финансијски трошак, анализирано у односу на структуру домаћинства у 2021. (2020.*) години

	Домаћинства без деце				Домаћинства са децом			
	Укупно	Самац	Самица	Двоје одраслих, бар један старији од 65 година	Укупно	Самохрани родитељ једног детета	Двоје одраслих и једно дете	Двоје одраслих са троје или више деце
ЕУ	30.1%	36.7%	40.2%	22.6%	31.4%	54.3%	25.9%	37.5%
Србија*	40.3%	49.3%	62.6%	42.2%	30.7%	50.3%	30.2%	45.5%

Извор: аутори на основу Eurostata

Посматрајући домаћинства са децом, најзначајнија разлика Србије у односу на просек ЕУ је приметна у домаћинствима које имају више деце (троје или више од троје), док посматрајући домаћинства без деце видимо да је стопа становништва које је у немогућности да подмири ненадани финансијски трошак много неуједначенија по свим посматраним категоријама, поготово у случају самица.

3. НЕКЕ ОД МЕРА ЗА СМАЊЕЊЕ НЕЈЕДНАКОСТИ

Имајући у виду још увек прилично неповољне показатеље за Србију, неопходно је дефинисати неке од мера које би могле да допринесу побољшавању тренутног стања. Оно што треба имати у виду јесте да би последице оваквих мера биле знатно далекосежније, од искључиво побољшања самог индикатора.
Као кључни инструмент за смањење неједнакости би свакако могао да се наведе порез на доходак грађана, па је у складу са овом чињеницом и дефинисана већина потребних акција.
Неке од мера предложене до стране Фискалног савета Републике Србије су:

- удвостручавање неопорезивог цензуса на зараде са 19.300 динара на 40.000 динара, као и увођење додатног неопорезивог цензуса од 20.000 динара месечно за сваког издржаваног члана домаћинства
- повећање стопе пореза на зараде са 10% на 15% чиме би се омогућило финансирање претходно поменуте мере
- разматрање прогресивинијег приступа пореској реформи.

Резултат поменутих мера би свакако допринео смањењу неједнакости односно редистрибуцији дохотка од 20% домаћинстава са највишим нивоима прихода, ка осталих 80%. Оно што је такође неопходно истаћи јесте да би релативно највећи добитник овакве пореске реформе била домаћинства средњег слоја са децом, али свакако да не би изостали ни позитивни резултати по домаћинства са најнижим дохоцима, пре свега са аспекта подстицаја за њихово укључивање на тржиште рада у случају оних појединаца који су незапослени.

ЗАКЉУЧАК

Република Србија и даље заостаје за Еворпском Унијом по питању постојећих доходовних неједнакости у друштву. Посматрајући вредности и Gini коефицјента и Квинтилног односа у Србији у односу на поједине економије у оквиру Европске Уније, приметно је да се Србија налази ближе оним земљама које су у оквиру ЕУ регистроване као максимални екстреми, као што су Бугарска, Летонија, Литванија и Румунија.
Са аспекта изложености израженој материјалној депривацији, удео појединих категорија становништва Републике Србије (посматрано по полу и старости) а које се суочавају са овим проблемом, је нуепоредиво виши него што је то у случај у Европској Унији у просеку. Највеће регистроване разлике су приметне код становништва старијег од 65 година, што указује на њихову изражену угроженост у оквиру наше националне економије.

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Предлог мера социјалне и пореске политике за смањење неједнакости и ризика од сиромаштва у Републици Србији (2022). *Фискални савет Републике Србије*.

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DETERMINANTS OF PUBLIC DEBT - COMPARATIVE ANALYSIS OF EUROPEAN COUNTRIES

Abstract: The country's public debt is one of the main macroeconomic indicators of a country's stable economy. The authors in this study try to explain the diversity of the effects of many macroeconomic indicators on the public debt of developed and developing countries. The sample of the study includes 12 countries, of which the countries are divided into two groups. The first group includes developed countries while the second group includes developing countries. The study aims to analyze and compare the effects of macroeconomic factors on the public debt of countries. The authors use the statistical software E-views where at the beginning of the study they analyze the descriptive data of developed and developing countries. After that, a series of diagnostic tests are performed, such as unit root tests and the derivation of the correlation matrix to reject the hypotheses of non-stationarity and collinearity. At the end of the research, the authors use the POLS method and the Fixed effect model to interpret the effects of independent variables on the dependent variable of public debt. The study covers the period from 1998 to 2023 and includes projections for the year 2024. An additional goal of the study is to observe and analyze the movement of macroeconomic factors in crisis and recessionary periods of the world economy. These findings will be useful to regulators who are developing, amending, or implementing public debt laws, policies, and regulations.

Keywords: Public debt, Macro-economic factors

1. INTRODUCTION

Public debt is a crucial aspect of any country's economy. It refers to the amount of money that a government owes to its creditors, both domestic and foreign. In European countries, public debt has been a significant concern for policymakers, economists, and citizens. This study discusses the issue of public debt in European countries, the factors contributing to it, and its impacts on the European economies. High levels of public debt have significant impacts on European economies. One of the impacts is that it limits a government's ability to respond to future economic crises. High levels of debt make it difficult for governments to borrow more and increase their spending to support their economies during a crisis. Additionally, high levels of public debt can lead to higher interest rates, which can increase the cost of borrowing for individuals and businesses. This, in turn, can lead to reduced economic growth and higher unemployment rates. Several factors such as economic crisis periods, an aging population, and a decrease in economic growth have contributed to high levels of public debt. The impacts of public debt on European economies are significant, limiting governments' ability to respond to future economic crises and leading to higher interest rates and reduced economic growth. The key difficulties facing policymakers when faced with large public debt are choosing the best time, speed, and means to reduce it. Fiscal consolidation, rapid economic growth, high inflation, or low-interest rates are the components of a debt-reduction plan as determined by the debt dynamics equation. Fiscal consolidation, or austerity, may be counterproductive in the current climate of low domestic growth and the zero-interest rate band. Growth stimulation may enhance fiscal balance and debt dynamics, resulting in increased tax revenue for the

government (Cherif & Hasanov, 2018). In the context of rising life expectancy, stable governance, and institutional conditions, it is necessary to regularly examine the sustainability of public debt to discuss technical proposals to maintain it at an even rate. (Briceno & Perote, 2020).

2. LITERATURE REVIEW

There are numerous studies that have analyzed the effects of economic growth on the public debt of countries such as (Pegkas, Staikouras & Tsamadias, 2020; Lim, 2019; De Vita, Trachanas & Luo, 2018; Gomez & Rivero, 2017; Gomez & Rivero, 2015; Bell, Johnston & Jones, 2015; Iovin & Navarro, 2015; Law, Ng, Kutan & Law, 2021). All studies represent a negative bidirectional relationship between economic growth and public debt. A study conducted by Jacobs, Ogawa, Sterken & Tokutsu (2020) also analyzed the direction of the impact of economic growth and public debt. The results indicated the presence of a unidirectional negative impact of economic growth on the public debt of countries. A study such as Cecchetti, Mohanty & Zampolli (2011) indicated the significance of the effects of public debt on economic growth if the level of public debt is above 90% of the country's GDP.
Awoyemi (2020), who looked into capital expenditure, concluded that the Nigerian economy may lower public debt and the debt-to-GDP ratio by raising capital spending since doing so frequently has a major impact on output, and doing so could lower the debt-GDP ratio. A study conducted by Knapkov, Kiaba & Hudec (2020) indicated the statistical significance of the effect of GDP growth, the openness of the economy, the size of the public sector, the rate of return on government bonds, and the unemployment rate on Slovakia's public debt. According to one study, real interest rates, budget deficits, and trade openness, all raised public debt while inflation and investment decreased their value. The analysis also revealed that Tunisia's state debt is mostly determined by the budget deficit (Belguith & Omrane, 2019). A study by Ali & Yayja (2019), using governance indicators such as voice and accountability, political stability and the absence of violence/terrorism, government effectiveness, regulatory quality, rule of law, and control of corruption, investigated their impact on public debt in Arab countries. The results of the study indicated a statistically significant effect of all indicators except for the control of corruption indicator. According to Mohanty and Panda (2019), research, public debt has a negative influence on economic growth but a beneficial impact on long-term interest rates. The findings also revealed conflicting responses regarding Indian investment and inflation. The abundance of oil, economic growth rate, the proportion of mineral rent in total revenue, interest rates paid on foreign borrowings, and being a developing country were all statistically significant influences on the rise in public debt, according to a study conducted by Sadiq & Ghato (2019).

3. METHODOLOGY AND DATA

In this part of the study, the authors define the methodology of the research itself. As mentioned earlier, the study covers the period from 1998 to 2023, as well as projections for 2024 (???). The research was conducted on the example of 12 countries, which were divided into two groups. The first group includes developed European countries, which include Belgium, France, Italy, Germany, Luxembourg, and Slovenia, while the second group represents developing countries, namely Bosnia and Herzegovina, Croatia, Montenegro, Macedonia, Russia, and Serbia. The subject of the study is a comparative analysis of the impact of macroeconomic factors such as GDP growth, Exports, Expenditures, Imports, Inflation, and Investments on the public debt of developed and developing countries. In this chapter, the authors define and state the hypotheses and main models that are the subject of testing, as well as the formulas of the diagnostic tests used. All the data used were downloaded from the website of the International Monetary Fund, and the authors define the dependent and independent variables used in this study in the table below.

Table 1: Dependant and independent variables

	Symbol	Variable	Proxy
Dependent variable	GD	Gross national debt	Gross debt as % of GDP
Independent variables	GDP	Gross domestic product	Annual growth %
	EXPE	Government expenditure	Expenditure as % of GDP
	EX	Exports	% Change in exports
	IM	Imports	% Change of Imports
	INF	Inflation	% Annual change
	INVE	Investment	Investments as % of GDP

Source: authors

3.1. Hypothesis and tests

Based on previous studies, the authors define the following hypotheses:

H0 - Macroeconomic factors have no influence on Public Debt
H1 - Macroeconomic factors have an impact on Public Debt

As mentioned, the authors divide the subject of the study into a group of developed countries and a group of developing countries, where the impact of various macroeconomic factors is analyzed. In addition to the main hypotheses, the authors define auxiliary hypotheses:

H2 - The change in GDP has an impact on the public debt of developed countries
H3 - The change in GDP has an impact on the public debt of developing countries
H4 – Government expenditure has an impact on the public debt of developed countries
H5 - Government expenditure has an impact on the public debt of developing countries
H6 - Exports have an impact on the public debt of developed countries
H7 - Exports have an impact on the public debt of developing countries
H8 - Imports have an impact on the public debt of developed countries
H9 - Imports have an impact on the public debt of developing countries
H10 - Inflation has an impact on the public debt of developed countries
H11 - Inflation has an impact on the public debt of developing countries
H12 - Investments have an impact on the public debt of developed countries
H13 - Investments have an impact on the public debt of developing countries

For econometric research, panel data are frequently employed since they make it possible to integrate the spatial and temporal dimensions. Namely, panel data are made up of numerous independent instances of the same observation unit. One of the requirements underlying the econometric analysis of time series is stationary data, which is the most crucial requirement for an econometric approach (Musdaq, 2011). It speaks about the time series' mean and variance as constant values. The Augmented Dickey-Fuller test is used in this research to assess whether the data are stationary. The data is not steady and has a unit root if the p-value is more than 0.05. Since using non-stationary data can lead to an unfavorable regression model, the unit root test is used to eliminate it (spurious regression). The following assumptions are part of this test:

H0 : Data is not stationary (has a unit root)
H1: Data is stationary

The multicollinearity test, which shows us whether there is a high level of correlation between the independent variables, is also one of the necessary tests to check the validity of the data. If the variance inflation factor exceeds the threshold value of 10, the data is multicollinear and must be omitted from the regression model. According to Lin, Foster, and Ungar (2011), the VIF test was utilized for the analysis, and the computed regression is as follows:

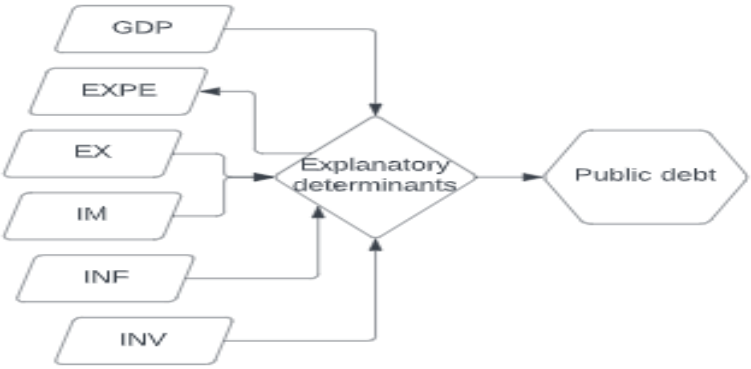
$$VIF = 1/(1 - R_j^2) \quad (1)$$

Where:

- VIF – Variance inflation factor
- R^2_j – R square of the regression model

This test includes the following hypotheses:

H0 : Multicollinearity exists
H1: There is no multicollinearity



Picture 1: Model construction
Source: authors

After establishing the main and auxiliary hypotheses, as well as reviewing the diagnostic tests, the authors derive the following regression models that represent the subject of this study:

$$Y_{dev} = \alpha + \beta_{1GDP_{it}} + \beta_{2EXPE_{it}} + \beta_{3EX_{it}} + \beta_{4IM_{it}} + \beta_{5INF_{it}} + \beta_{6INVE_{it}} + \epsilon \quad (2)$$

$$Y_{deve} = \alpha + \beta_{1GDP_{it}} + \beta_{2EXPE_{it}} + \beta_{3EX_{it}} + \beta_{4IM_{it}} + \beta_{5INF_{it}} + \beta_{6INVE_{it}} + \epsilon \quad (3)$$

Where:
- Y_{dev} stands for the dependent variable of the public debt of developed countries
- Y_{deve} stands for the dependent variable of the public debt of developing countries
- GDPit stands for the GDP growth of a country i at time t
- EXPEit stands for government expenditure of country i at time t
- EXit stands for exports of country i at time t
- IMit stands for imports of country i at time t
- INFit stands for inflation of country i at time t
- INVEit stands for investments of country i at time t

3.2 Developed Countries

In this part of the study, the authors present a descriptive analysis of the variables used in the examples of developed and developing countries that are the subject of this study. In addition to the descriptive analysis, the authors graphically illustrate the movement of the public debt levels of the countries in the period from 1998 to 2023. The data was collected from the IMF website and the analysis also includes the expected amounts of the public debt of the observed countries for 2024. The table below shows a descriptive analysis of the variables in the example of developed countries, where it can be seen that the largest amount of standard deviation is present in the variable of public debt and is 37,094, which lets us know that with this variable there are the largest deviations from the minimum to the maximum value of the indicator. Further analysis shows that the highest amount of public debt was achieved by Italy in the amount of 155.313% of GDP in 2020, while the lowest amount of public debt was achieved by Luxembourg in 2003 in the amount of 7.439% of GDP. The highest percentage growth of GDP was achieved by Slovenia in 2021, by 8.211%, while the highest amount of inflation of 9.471% was achieved by Belgium in 2022. The highest amount of imports, measured as a percentage change, was achieved by Luxembourg in 2010, at 17.809%, as well as the highest amount of change in exports at 27.047% in the same year. Observing the investments, it is noticeable that the largest amount of investments as a percentage of GDP was achieved by Slovenia in 2007, in the amount of 33.047%, while the smallest amount was achieved by Luxembourg, 16.183%, in 2009. As for government spending, the highest level was achieved by France, in the amount of 61.421% in 2020, while the lowest amount was achieved by Luxembourg in 2007, at 37.391% of GDP.

Table 2: Descritptive statistics of developed countries

	Mean	Max	Min	Std. Dev.	Obs
GD	76,37173	155,313	7,439	37,09417	152
GDP	1,623171	8,211	-9,026	2,726665	152
EXPE	49,19832	61,421	37,391	5,041369	152
EX	3,570592	27,047	-19,53	6,714558	152
IM	3,484184	17,809	-20,673	6,315626	152
INF	2,358487	9,471	-0,521	2,008929	152
INVE	21,90224	33,047	16,183	2,961968	152

Source: authors

In addition to the descriptive analysis, the authors use the graphic illustration for further analysis of the trend of the level of public debt in the observed period. The period of analysis covers 25 years, and it contains a trend of movement through many crisis periods, the most recent of which is the appearance of war in the eastern part of Europe. It is noticeable that in all the countries that are the subject of the analysis, there are growing trends in the level of public debt in periods of crisis. From the emergence of the dotcom bubble in the 90s, the world crisis of the late 2000s, the Coronavirus pandemic until today's conflicts in the eastern part of Europe, there is a noticeable growing trend, followed by a period of a slight decline in the indebtedness of developed countries.

Picture 2: Developed countries
Source: authors

3.3 Emerging Countries

Analyzing developing countries in the table above, we notice that, similarly to developed countries, the highest amount of standard deviation is present in the public debt variable, which means that there is the largest spread between the maximum and minimum values. A high level of standard deviation is also present in the import and export variables, which is different concerning developing countries. Looking at the maximum and minimum amounts of public debt as a percentage of GDP, in the example of developing countries, the largest amount of public debt of 135.193% of GDP was achieved in 1998, by Russia. Also, the lowest amount of public debt for the observed period was achieved by Russia at 7.446% in 2008. Analyzing the percentage change in GDP, the authors note that the highest amount was achieved by Montenegro in 2021, of 13.043%, while the lowest amount was also achieved by Montenegro, a drop of 15.307% in 2020. Observing the inflation, the largest amount was achieved by Russia in 1999, as much as 85.746%, while the lowest amount was achieved by Bosnia and Herzegovina, namely a drop of 1.584% on an annual basis in 2016. In addition to the largest change in GDP, Montenegro also achieved the largest percentage changes in imports and exports. Imports in 2006 in the amount by 47.42%, while exports in 2021, even 81.86% growth. The highest amount of state investment as a percentage of GDP was achieved by Croatia in 2008, at 30.516%, while the highest amount of government spending was achieved by Bosnia and Herzegovina in 2000, at 56.306% of GDP.

Table 3: Descritptive statistics of developing countries

	Mean	Max	Min	Std. Dev.	Obs
GD	46,0576	135,193	7,446	24,07081	118
GDP	2,879381	13,043	-15,307	4,068129	118
EXPE	42,70537	56,306	29,04	5,818406	118
EX	5,810805	81,86	-48,302	12,76585	118
IM	5,271864	47,418	-39,016	12,94524	118
INF	5,776839	85,746	-1,584	9,045998	118
INVE	18,65192	30,516	-15,307	8,329447	118

Source: authors

In the graph below, a similar case is noticeable in developed countries. Observing trends in public debt, a slight rise in crisis periods is noticeable. The most interesting item is the example of Russia, where a significant decrease in public debt has been noticeable since the end of the 90s, and the beginning of the 2000s. In the continuation of the study, the authors present the findings and comment on the results.

Picture 3: Developing countries
Source: authors

4. FINDINGS

As one of the main conditions for performing a correct panel regression model is the absence of multicollinearity of the used variables. In this study, the authors use the correlation matrix as well as the variance inflation factor to prove the absence of multicollinearity. The table below shows the correlation matrix in which the relationship between the dependent and independent variables is observed. It is noticeable that the level of correlation between the used variables does not exceed the threshold level of 0.80.

Table 4: Correlation matrix

	GD	GDP	EXPE	EX	IM	INF	INVE
GD	**1,0000**	-0,2504	0,6333	-0,0613	-0,0552	-0,0524	-0,0583
GDP	-0,2504	**1,0000**	-0,3093	0,6652	0,6441	0,1827	0,1718
EXPE	0,6333	-0,3093	**1,0000**	-0,1209	-0,1944	-0,3820	0,1295
EX	-0,0613	0,6652	-0,1209	**1,0000**	0,6311	-0,0514	0,0992
IM	-0,0552	0,6441	-0,1944	0,6311	**1,0000**	0,0138	0,1004
INF	-0,0524	0,1827	-0,3820	-0,0514	0,0138	**1,0000**	-0,0513
INVE	-0,0583	0,1718	0,1295	0,0992	0,1004	-0,0513	**1,0000**

Source: authors

This fact was confirmed by using the Variance inflation factor, which is a frequently used collinearity test. Since the threshold value of VIF does not exceed the threshold value of 10, we can confirm the absence of multicollinearity. With the help of the results of the correlation matrix and the variance inflation factor, we can reject the null hypothesis of the existence of multicollinearity of variables.

Table 5: Variance inflation factor

Variables	Coeff.	Centered Vif
EXPE	0,07692	1,30692
EX	0,05102	2,15075
GDP	0,49035	2,47098
IM	0,04617	1,96987
INF	0,04738	1,23916
INV	0,06563	1,07419
Average VIF		**1,70198**

Source: authors

Another important diagnostic test used to derive a valid regression model is the unit root test. The unit root test serves to establish the stationarity of the data used. Stationarity is one of the main factors in the performance of a valid regression model. In the analysis, the authors use three unit root tests, often used in the analysis of panel data. The data in the table above show us that all data except the public debt data are stationary at level, because the probability does not exceed the 5% significance level, while the public debt data become stationary after performing the 1st difference. As mentioned earlier, the condition for rejecting the null hypothesis of data nonstationarity is a probability below the 5% significance level.

Table 6: Unit root test

	Level			1st difference		
Variables	Levin, Lin & Chu	ADF	PP	Levin, Lin & Chu	ADF	PP
GD	-1,24190 (0,1071)	34,2712 (0,0800)	33,1513 (0,1009)	**-4,11966 (0,0000)***	**95,0787 (0,0000)***	**165,748 (0,0000)***
GDP	**-8,66258 (0,0000)***	**111,669 (0,0000)***	**202,321 (0,0000)***	-16,8435 (0,0000)	228,111 (0,0000)	863,857 (0,0000)
EXPE	**-2,40915 (0,0080)***	**47,7883 (0,0027)***	**55,3983 (0,0003)***	-7,76883 (0,0000)	124,087 (0,0000)	232,503 (0,0000)
EX	**-10,2357 (0,0000)***	**125,576 (0,0000)***	**220,998 (0,0000)***	-11,5906 (0,0000)	212,938 (0,0000)	1170,09 (0,0000)
IM	**-9,14462 (0,0000)***	**129,367 (0,0000)***	**269,787 (0,0000)***	-10,2670 (0,0000)	207,923 (0,0000)	1168,57 (0,0000)
INF	**-15,0971 (0,0000)***	**101,409 (0,0000)***	**70,8365 (0,0000)***	-10,8480 (0,0000)	184,399 (0,0000)	320,456 (0,0000)
INVE	**-4,24529 (0,0000)***	**48,5273 (0,0009)***	**59,6682 (0,0000)***	-11,7821 (0,0000)	156,127 (0,0000)	470,192 (0,00000)

Source: authors

After diagnostic tests of multicollinearity and unit root, the authors in the table below use POLS and a fixed effects model to derive an adequate regression model. The table below shows both types of models for developed and developing countries. Based on the obtained results, we note that in the case of developed countries, the influence of independent variables such as consumption, exports, GDP growth, and inflation proved to be statistically significant. It is noticeable that the growth of consumption and exports by 1% causes the growth of public debt by 0.5617% and 0.217339% in the case of developed countries, while the growth of Gdp and Inflation by 1% causes the decrease of public debt by 1.22279% and 0,337600% respectively. The negative impact of GDP growth is supported by studies such (Alfonso & Jalles, 2013; Swamy, 2020). In the case of developing countries, it was discovered that only GDP growth and imports have a statistically significant impact on public debt. A 1% increase in GDP results in a 2.624085% decrease in public debt, while a 1% increase in imports leads to a 0.396608% increase in public debt, respectively. These results are expected and in accordance with the findings of (Afanaisev & Shash ,2016), since developing countries are much more dependent on the import of funds than on exports, GDP growth itself has a stronger impact on reducing public debt than the case in developed countries. Also in the table above, the R-squared indicator is noticeable, which in the case of both models indicates that the given variables describe more than 50% of the changes in the public debt variable.

Table 7: Panel regression model

Variables	Developed countries		In development countries	
	POLS	FIXED	POLS	FIXED
EXPE	0,111169 (0,0640)	**0,561709 (0,0000)***	0,197876 (0,2091)	0,492031 (0,1007)
EX	0,257528 (0,0057)	**0,217339 (0,0045)***	0,104885 (0,2158)	0,112980 (0,1881)
GDP	-1,224343 (0,0000)	**-1,22279 (0,0000)***	**-2,624085 (0,0000)***	-2,558257 (0,0000)
IM	-0,213676 (0,0380)	-0,136188 (0,1165)	**0,396608 (0,0000)***	0,404182 (0,0000)
INF	-0,128235 (0,3788)	**-0,337600 (0,0074)***	0,007989 (0,9406)	-0,005588 (0,9632)
INV	0,018677 (0,8616)	0,163513 (0,1427)	-0,030304 (0,7560)	0,001739 (0,9944)
C	-2,858328 (0,3240)	**-27,83156 (0,0000)***	-3,613311 (0,6353)	-16,97106 (0,2019)
R - squared	0,558878	**0,720217**	**0,51178**	0,52232
Prob.	0,0000	0,0000	0,0000	0,0000

Source: authors

The main test used to identify the adequacy of POLS and Fixed effects models is the likelihood ratio. This indicator serves to show which of these two used models shows more adequate results. Based on the table above, it is noticeable that in the case of developed countries, the probability does not exceed the threshold value of 0.05, so the Fixed effects model proved to be more adequate, while in the case of developing countries, the POLS model proved to be more adequate. Observing the obtained results, the authors can reliably reject the main null hypothesis of the absence of macroeconomic effects on the public debt of European countries. Further analysis shows that in the case of developed countries, the authors can accept the additional hypotheses H2, H4, H6, and H10 set at the beginning of the study. In the case of developing countries, the authors can accept additional hypotheses H3 and H9.

Table 8: Likehood ration

	Developed Countries		In development count.	
Effects test	Statistic	Prob.	Statistic	Prob.
Cross-section F	16,14646	**0,0000***	0,590248	0,6704
Cross-section Chi-square	69,20684	**0,0000***	2,575399	0,6312

Source: authors

CONCLUSION

As mentioned earlier, the country's public debt represents one of the very important macroeconomic items that the country must keep under control. Indebtedness itself does not necessarily mean a negative item in a country's balance sheet if that money is used adequately. In addition to public debt, there are many other macroeconomic indicators of key importance for the economic success of a country. Precisely for this reason, a deeper and more precise understanding of the implications of certain indicators on public debt is needed to develop an adequate policy for the consumption of borrowed funds. In this study, the authors used 12 European countries as a sample, where one half included developed countries and the other half included developing countries, divided according to the criteria of the International Monetary Fund. The aim of the study was to analyze the impact of various macroeconomic indicators on the public debt of developed and developing countries, as well as their comparative analysis. In addition to analyzing the effects of macroeconomic indicators on public debt, the authors used the study to also analyze the effect of crisis periods in the previous twenty years on the movement of the public debt of the countries used in the study. The comparative analysis provides insight into the economic situation of developing countries and developed countries as well as certain

differences between these economies. The results indicated a statistically significant effect of consumption, exports, GDP growth, and inflation on the public debt of developed countries, while in developing countries the impact of GDP and exports proved to be statistically significant. These studies, as mentioned, give greater insight into the implications of various macroeconomic factors on the public debt of countries and provide support to policymakers for better maneuvering of borrowed funds. The limitations of the study are the use of only 12 countries, and the author's suggestion for further research is the use of a larger number of countries in future research on this topic.

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ЕФЕКТИ ФИНАНСИЈСКОГ ЛЕВЕРИЏА НА ПОСЛОВАЊЕ ПРЕДУЗЕЋА У УСЛОВИМА ГЕОПОЛИТИЧКИХ ПРОМЕНА

Апстракт: Предмет истраживања обухвата анализу финансијског леверица, степена задужености и односа дуга и капитала предузећа у периоду од 2017-2022. године, која послују у сектору електроиндустрије у Републици Српској. Узорак чини пет производних предузећа у области електроиндустрије и то: а. д. „Хидроелектране на Требишњици“, а. д. „Хидроелектране на Дрини“, а. д. „Хидроелектране на Врбасу“, а. д. „Рудник и термоелектрана Гацко“ и а. д. „Рудник и термоелектрана Угљевик“. Полуга или левериџ показује услове за оцену ефеката пословања уз присуство финансијских ризика. У овом контексту, концепт полуге утиче на пословање предузећа и доношење одлука менаџмента. Истраживање се заснива на анализи јавно доступне документације, односно финансијских извештаја предузећа из узорка за дати период анализе. Циљ истраживања је оцена ефеката финансијског леверица на финансијске перформансе предузећа. У измењеном амбијенту пословања, повећани су ризици у правцу остварења позитивног финансијског резултата. Менаџмент предузећа мора бити свестан значаја финансијског леверица и његовог утицаја на пословање предузећа, како би спремно реаговало на будући раст прихода.

Кључне речи: финансијски левериц, финансијске перформансе; геополитичке промене

THE EFFECTS OF FINANCIAL LEVERAGE ON BUSINESS OPERATIONS IN THE CONDITIONS OF GEOPOLITICAL CHANGES

Abstract: The subject of the research includes the analysis of financial leverage, the degree of indebtedness and the ratio of debt and capital of the company in the period 2017-2022, which operate in the electrical industry sector in the Republic of Srpska. The sample consists of five production companies in the field of electrical industry, namely: a. d. "Hydroelectric power plants on Trebišnjica", a. d. "Hydroelectric power plants on the Drina", a. d. "Hydroelectric power plants on Vrbas", a. d. "Gacko mine and thermal power plant" and a. d. "Ugljevik mine and thermal power plant". Leverage shows the conditions for assessing the effects of business with the presence of financial risks. In this context, the concept of leverage affects business operations and management decision-making. The research is based on the analysis of publicly available documentation, i.e. financial reports of companies from the sample for the given period of analysis. The aim of the research is to assess the effects of financial leverage on the financial performance of companies. In the changed business environment, risks have increased in the direction of achieving a positive financial result. Company management must be aware of the importance of financial leverage and its impact on company operations, in order to readily respond to future revenue growth.

Key words: financial leverage, financial performance; geopolitical changes

УВОД

Анализа финансијског леверица се користи у сврху испитивања оптималног односа сопственог и позајмљеног позајмљеног капитала предузећа. Будући да финансијски левериџ зависи од финансијског ризика, циљ сваког предузећа да елиминише поменути ризик који утиче на остварење бруто финансијског резултата. Да не би било дејства финансијског леверица тзв. полуге на остварење бруто финансијског резултата, то би било могуће само ако предузеће своје пословање финансира из сопственог капитала. Циљ предузећа је да фактор финансијског леверица буде што нижи, а он показује колико се брже мења бруто финансијски резултат, када се пословни резултат промени за један проценат. У условима геополитичких промена теже је извршити анализу финансијског леверица као и његов утицај на перформансе предузећа. Проблем истраживања огледа се управо у ефекту финансијског леверица на финансијске перформансе производних електро предузећа у Републици Српској. Циљ истраживања је да се утврди веза између финансијског леверица и пеформанси предузећа за производњу електричне енергије у Републици Српској. Рад се састоји из три дела. У првом делу је са теоријског аспекта анализирана актуелна литература на тему која је предмет истраживања у раду, те је и анализирано кретање финансијског леверица у посматраним предузећима за период од шест година. У другом делу рада је представљена методологија рада која је коришћена у самом истраживању, а у трећем делу приказани су резултати истраживања и представљени закључци.

1. ПРЕГЛЕД ЛИТЕРАТУРЕ

Истраживањем везе и утицаја финансијског леверица на перформансе предузећа бавили су се Iqbal и Usman на узроку од 16 предузећа, за период од 2011-2015. године, применом дескриптивне статистике, корелационе анализе и регресионих модела. Резултати истраживања су показали да финансијски левериџ има позитиван утицај на перформансе предузећа уколико позајмљени капитал не прелази износ сопственог капитала (Iqbal и Usman, 2018).

Такође, Chen (2020) се бавио испитивањем утицаја финансијског леверица на перформансе предузећа, мерен повратом на средства РОА. Анализа се базирала на узорку кинеских предузећа за период од 2010-2019. године. Применом OLS и 2SLS метода линеарне регресије испитан је однос између финансијске полуге и учинка предузећа. Резултати истраживања указују да је дејство финансијске полуге на перформансе предузећа негативно, док дејство оперативног леверица ублажава овај однос (Chen, 2020).

Иванова, Барјактаровић и Иванов (2018) су се бавили анализом финансијског леверица у предузећима у нафтној индустрији Републике Србије за период од 2012-2016. године. Основ за ову анализу били су финансијски извештаји, који су јавно доступни на сајту Агенције за привредне регистер. Резултати финансијске левериџ анализе показали су да анализирана предузећа су релативно успешно успела одговорити на промене цене нафте и нафтних деривате на светском тржишту (Иванова, Барјактаровић, и Иванов, 2018).

Због неадекватне структуре капитала многа предузећа постају несолвентна. Из ових разлога Singh и Bansal (2016) су спровели студију којом су истражили утицај финансијске полуге на финансијске перформансе предузећа као и вредновање фирме. За анализу користили су узорак од 60 предузећа, за период од 2007-2016. године. Коришћен је метод регресионог модела са панел подацима. Резултати су показали да левериџ има статистички значајан негативан утицај на показатељ учинка предузећа EBA и РОА као и индицатор вредновања предузећа Tobin's Q (Singh и Bansal, 2016).

Како нафта и нафтни деривати играју значајну улогу за економски развој свих земаља, Inam и Mir (2014) су спровели истраживање како би испитали утицај финансијске полуге на финансијске перформансе предузећа која припадају сектору горива и енергије у Пакситану. Коришћен је узорак од 12 предузећа, а резултати анализе су показали да финансијски левериџ позитивно утиче на финансијске перформансе предузећа. Студија је показала да она предузећа која имају висок профит морају побољшати своје финансијске перформансе због високих услова ликвидности (Inam и Mir, 2014).

Анализом панел података Raza (2013) је извршио анализу детерминанти структуре капитала нефинансијских предузећа листираних на берзи Karachi, за период од 2004-2009. године. Резултати анализе су показали да постоји негативна веза између леверица и перформанси предузећа (Raza, 2013).

Ilyukhin (2015) се бавио испитивањем односа између финансијске полуге и учинка предузећа. За анализу је коришћен велики узорак руских акционарских предузећа за период од 2004-2013. године. Резултати истраживања указују да постоји негативан утицај финансијског леверица на учинак или перформансе предузећа (Ilyukhin, 2015).

Како би се сагледала финансијска ситуација у предузећу, неопходно је извршити финансијску анализу. Финансијска анализа представља основу за предвиђање будућег финансијског стања у предузећу. Путем финансијских извештаја, биланса стања и биланса успеха, врши се утврђивање и оцена функционалних односа између позиција у билансима, да би се оценио финансијски положај предузећа (Красуља и Иванишевић, 2000).

Структура капитала је јако значајна са аспекта анализе финансијског леверица. Уколико предузеће има више позајмљених извора финансирања у односу на сопствени већи ће бити и финансијски ризик коме ће бити изложен. Ово значи да предузеће мора да покрије камате из пословног добитка. Уколико дође до интезивније

промене пословног добитка због промене обима производње, то ће резултовати већом променом добитка пре опорезивања и нето добитка у односу на промену пословног добитка. Ова промена мери преко фактора финансијског леверица (Иванишевић, 2011). Финансијски левериџ се дефинише на разне начине у академској литератури и различите су мере за његово израчунавање. Према Малешевић и Старчевић (2010), Иванишевић (2011), фактор финансијског леверица се израчунава из односа пословног резултата и бруто финансијског резултата. Дејство финансијског леверица се активира путем фиксних финансијских расхода који проузрокују финансијски ризик. Интезитет финансијског леверица зависи од степена којим су фиксни расходи на име камате покривени из пословног добитка.

Предузеће може да користи различите комбинације позајмљених извора средстава, капитала и различитих финансијских аранжмана. Како би увећало своју тржишну вредност, предузеће може да користи различите комбинације обвезница, финансирање путем лизинга, банкарске кредите и многе друге опције финансирања. Финансијски менаџмент предузећа доноси кључну одлуку у вези са структуром капитала (Raza, 2013). Уколико се ефикасно управља структуром капитала тиме се управља и трошковима капитала. Висок левериџ или низак однос капитала у односу на активу смањује агенцијски трошак спољног капитала и на тај начин долази до повећања вредности предузећа, приморавањем менаџера да делују више у интересу предузећа (Berger и Di Patti, 2006).

Дакле, постоје разни начини за утврђивање финансијског леверица у предузећу. На основу Иванићевић (2011) израчунат је фактор финансијског леверица у анализираним предузећима за период од 2017-2022. године. Фактор финансијског леверица је рачунат као однос пословног резултата и бруто финансијског резултата (График 1).

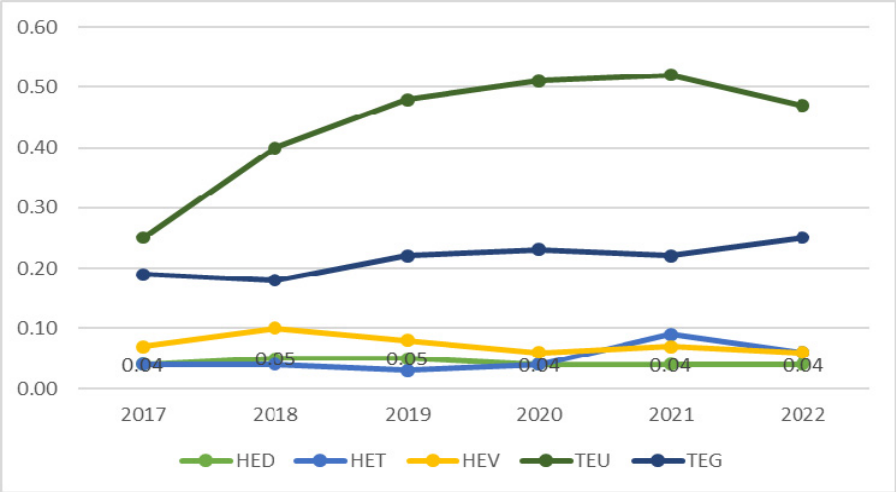

График 1. Кретање фактора финансијског леверица у анализираним предузећима (2017-2022)
Извор: Калкулација аутора (www.blberza.com)

На основу приказаног графика (График 1) јасно је да је дошло до пораста фактора финансијског ризика током анализираног периода у свих пет анализираних предузећа. Највиши фактор финансијског леверица је у Термоелектрани а. д. Угљевик, па затим у Термоелектрани а. д. Гацко. Фактор финансијског леверица бележи раст у свим предузећима све до 2021. године, а након тога је у благом опадању, осим код предузећа Термоелектрана а. д. Гацко где је у 2022. години овај фактор порастао. Јасно је да су финансијски ризици порасли задњих пар година анализе, због промене структуре капитала у корист позајмљеног капитала. Трошкови камата током посматраног периода су расли, али такође предузећа су остваривала негативне финансијске резултате који су свакако повезани новим геополитичким променама. Последица криза су свакао видљиви и на израчунатим финансијским показатељима.

2. МЕТОДОЛОГИЈА ИСТРАЖИВАЊА

Истраживање се базира на узорку од пет производних предузећа у области производње електричне енергије у Републици Српској, то су: а. д. „Хидроелектране на Требишњици“, а. д. „Хидроелектране на Дрини“, а. д. „Хидроелектране на Врбасу“, а. д. „Рудник и термоелектрана Гацко“ и а. д. „Рудник и термоелектрана Угљевик. Анализа ће се спровести на бази финансијских извештаја поменутих предузећа, који су јавно доступни на сајту Бањалучке берзе (http://www.blberza.com/). Будући да су тек у задњих пар година актуелне геополитичке промене, анализа се врши за период од 2017-2022. године, јер се испитује утицај финансијског леверица или полуге на перформансе поменутих предузећа у условима геополитичких промена.

Како бисмо испитали везу између финансијског леверица и финансијских перформанси предузећа испитали смо следеће хипотезе:

X0: Постоји значајна позитивна или негативна статистичка веза између финансијског леверица и финанасијских показатеља одабраних анализираних предузећа.
X1: Не постоји статистички значајна веза између финансијског леверица и финансијских перформанси одабраних анализираних предузећа.
У анализи као показатељ финансијског леверица коришћени су следећи показатељи: рацио власничког односа и рацио задужности. Рацио задужености као показатељ финансијске полуге преставља значајну меру која показује колико предузеће користи задужења како би обављало своје пословне активности. Такође, овај рацио представља однос укупних дуговања предузећа и вредности његовог капитала. Рацио власничког односа као показатељ треба да објасни однос акционарског капитала и укупних средстава предузећа. Поменуте показатеље у свом истраживању као меру финансијског леверица користили су следећи аутори: Chen (2020), (Inam и Mir, 2014), (Iqbal и Usman, 2018), (Raza, 2013).
Финансијске перформансе предузећа ће се приказати главним и најчешће коришћеним покатељима: РОЕ – поврат на капитал, РОА – поврат на имовину, ЕБИТДА маржа – маржа која приказује колико предузеће генерише прихода од продаје и НПМ – нето профитна маржа – однос нето профита предузећа и прихода од продаје.

3. РЕЗУЛТАТИ ИСТРАЖИВАЊА

3.1. Дескриптивна статистика

Према извршеној дескриптивној анализи може се констатовати да рацио задужености (РАЦ_ЗАД) као показатељ финансијског леверица за период од 2017-2022. године је имао просечну вредност од 0,16, а одступање од просечне вредности је било за 0,16. Слично је било са власничким рациом (ВЛАС_РАЦ), као показатеља финансијског леверица. Његова просечна вредност за анализираних шест година износи 0,73, а одступање од средње вредности износи 0,15. Поврат на капитал (РОЕ) је био у негативном предзнаку пар анализираних година, па његова просечна вредност је -0,04, а одступање од просечне вредности износи 0,11. Такође, поврат на имовину (РОА) је имао негативне вредности, па је његова просечна вредност у негативном предзнаку од -0,02, а одступање од просечне вредности износи 0,10. ЕБИТДА маржа (ЕБИТДА) је имала просечну вредност за анализирани период 0,32, иако је имала негативних вредности, а одступање је износило 0,17. Нето профитна маржа (НПМ) је претежно била негативна током анализираног периода, па јој је просечна вредност такође негативна од -0,06, а одступање исказано стандардном девијацијом износи 0,31.

Табела 1: Дескриптивна статистика

Показатељи	Узорак	Минимум	Максимум	АС	СД	ВАР	Skewness	Kurtosis
РАЦ_ЗАД	30	0.03	0.52	0.16	0.16	0.03	1.24	0.26
ВЛАС_РАЦ	30	0.43	0.93	0.73	0.15	0.02	-0.63	-0.57
РОЕ	30	-0.32	0.16	-0.04	0.11	0.01	-0.95	0.81
РОА	30	-0.25	0.15	-0.02	0.10	0.01	-0.94	0.58
ЕБИТДА	30	-0.17	0.57	0.32	0.17	0.03	-0.79	0.96
НПМ	30	-1.06	0.26	-0.06	0.31	0.09	-2.19	4.95

Извор: Калкулација аутора у SPSS програму
Напомена: АС – аритметичка средина; СД – стандардна девијација; ВАР – варијанса.

3.2. Корелациона анализа

Након извршене дескриптивне анализе извршена је корелациона анализа путем два теста корелације: Kendall's tau тестом корелације и Spearman's rho тестом корелације, како би се испитала веза између анализираних варијабли. Поменути тестови корелације се користе када подаци нису нормално дистрибуирани или кад постоји изражени скокови вредности података. Будући да анализиране варијабле немају нормалан распоред није примењен Pearson-ов тест корелације јер би био мање поуздан или нетачан. Како се Kendall's tau и Spearman's rho тестови корелације темеље на рангирању података, то их чини мање осетљивим на неправилности у дистрибуцији података и екстремне вредности, па су стога корисни за проверу повезаности између варијабли у таквим околностима.

Табела 2: Корелациона анализа – Kendall's tau тест корелације

		РАЦ_ЗАД	ВЛАС_РАЦ	РОА	РОЕ	НПМ	ЕБИТДА
РАЦ_ЗАД	Коефицијент корелације	1,000	-0,593**	-0,105	-0,151	-0,125	-0,239*
	Статистичка значајност		0,000	0,215	0,126	0,171	0,035
ВЛАС_РАЦ	Коефицијент корелације	-0,539**	1,000	0,169	0,280*	0,265*	0,344**
	Статистичка значајност	0,000		0,101	0,017	0,022	0,005
РОА	Коефицијент корелације	-0,105	0,169	1,000	0,841**	0,782**	0,642**
	Статистичка значајност	0,215	0,101		0,000	0,000	0,000
РОЕ	Коефицијент корелације	-0,151	0,280*	0,841**	1,000	0,844**	0,705**
	Статистичка значајност	0,126	0,017	0,000		0,000	0,000
НПМ	Коефицијент корелације	-0,125	0,265*	0,782**	0,844**	1,000	0,751**
	Статистичка значајност	0,171	0,022	0,000	0,000		0,000
ЕБИТДА	Коефицијент корелације	-0,239*	0,344**	0,642**	0,705**	0,751**	1,000
	Статистичка значајност	0,035	0,005	0,000	0,000	0,000	

Извор: Калкулација аутора у SPSS програму.
** Корелација је статистички значајна на нивоу од 0,01 (1-tailed);
*Корелација је статистички значајна на нивоу од 0,05 (1- tailed).

Према извршеној корелационој анализи путем Kendall's tau теста корелације може се закључити да рацио задужености и власнички рацио имају негативну статитстичку везу на нивоу од 0,01, јер је вредност коефицијента корелације -0,593, а статистичка значајност износи 0,000 (1-tailed). Такође, рацио задужености има негативну статистичку корелацију на нивоу статитстичке значајности од 0,01 са ЕБИТДА маржом од -0,239 (0,000 1-tailed). Негативна статистичка веза указује да повећањем вредности рациа задужености предузећа долази до смањења вредности власничког рациа и ЕБИТДА марже. Други показатељ који је кориштен као показатељ финансијског леверица је власнички рацио. Власнички рацио има негативну статистички значајну везу осим са рациом задужености и са РОЕ на нивоу статистичке значајности од 0,05 (0,000 1-tailed) , где коефицијент корелације износи 0,280. Затим, постоји негативна корелациона веза између власничког рациа са нето профитном маргином (НПМ) на нивоу статистичке значајности од 0,05 (0,000 1-tailed) и са ЕБИТДА маржом на нивоу статистичке значајности од 0,01 (0,000 1-tailed).

Табела 3: Корелациона анализа –Spearman's rho тест корелације

		РАЦ_ЗАД	ВЛАС_РАЦ	РОА	РОЕ	НПМ	ЕБИТДА
РАЦ_ЗАД	Коефицијент корелације	1,000	-0,619**	-0,131	-0,189	-0,149	-0,294
	Статистичка значајност		0,000	0,245	0,158	0,216	0,058
ВЛАС_РАЦ	Коефицијент корелације	-0,619**	1,000	0,238	0,380*	0,351*	0,453**
	Статистичка значајност	0,000		0,102	0,019	0,029	0,006
РОА	Коефицијент корелације	-0,131	0,238	1,000	0,910**	0,880**	0,788**
	Статистичка значајност	0,245	0,102		0,000	0,000	0,000
РОЕ	Коефицијент корелације	-0,189	0,380*	0,910**	1,000	0,959**	0,858**
	Статистичка значајнос	0,158	0,019	0,000		0,000	0,000
НПМ	Коефицијент корелације	-0,149	0,351*	0,880**	0,959**	1,000	0,880**
	Статистичка значајност	0,216	0,029	0,000	0,000		0,000
ЕБИТДА	Коефицијент корелације	-0,294	0,453**	0,788**	0,858**	0,880**	1,000
	Статистичка значајност	0,058	0,006	0,000	0,000	0,000	

Извор: Калкулација аутора у SPSS програму.
** Корелација је статистички значајна на нивоу од 0,01 (1-tailed);
*Корелација је статистички значајна на нивоу од 0,05 (1- tailed).

Корелациона анализа путем Spearman's rho теста корелације показала је скоро исте резултате у поређењу са резултатима корелационе анализе путем Kendall's tau теста корелације. Путем овог теста (Табела 3) рацио задужености као показатељ финансијског леверица нема статистички значајну везу са ЕБИТДА маргином, за разлику од Kendall's tau теста корелације.

ЗАКЉУЧАК

У раду испитана је веза између финансијског леверица и финансијских перформанси предузећа. Као узорак изабрано је пет предузећа за производњу електричне енергије у Републици Српској за период од 2017-2022. године. Као показатеље финансијског леверица узети су рацио задужености и власнички рацио. За показатеље финансијских перформанси предузећа анализирани су РОА, РОЕ, ЕБИТДА маржа и нето профитна маржа.

На основу извршене анализе путем дескриптивне статистике и корелационе анализе путем Kendall's tau и Spearman's rho теста корелације закључује се да се прихвата X0 хипотеза, што значи да постоји статистички значајна веза између финансијског леверица и финансијских перформанси анализираних предузећа, док се X1 хипотеза одбацује. Ово значи да финансијски левериц има негативну статистички значајну везу са рациом задужености, РОЕ, ЕБИТДА маржом и нето профитном маржом на основу два теста корелације. Уколико дође до пораста финансијског леверица то значи да ће доћи до пада поменутих показатеља финансијских перформанси. Задњих посматраних година дошло је до раста финансијског леверца, који је узрокован порастом позајмљеног капитала у корист сопственог капитала. Анализирана предузећа су се задњих анализираних година у већем проценту финансирала из туђих извора финансирања, што је довело до раста финансијског ризика због плаћања већих камата на име позајмљеног капитала.

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WORLDWIDE TRENDS IN THE SCIENTIFIC PRODUCTION ON THE RELATIONSHIP BETWEEN PUBLIC GOVERNANCE AND HEALTH SYSTEMS IN THE CONTEXT OF POST COVID-19 PANDEMIC

Abstract: The research conducted within this paper is set to identify worldwide scientific trends and assess the overall production of the relationship between public governance and health systems. The methodological credentials are based on scientometric analysis, implying the "R-bibliometrix" package, using the bibliometrix R-Tool to visualise the existing knowledge networks and to measure the quality and quantity of the selected and included documents. Moreover, we applied the main features of R-biliometrix, namely annual scientific production, specific research themes and documents trends, sources, and authors, with a keen focus on the clustering technique. The bibliographic data were selected and retrieved through the Web of Science Core Collection database (WoS), resulting in a final sample of 313 relevant articles published during the lapse of time between 2018-2022. Results indicate two major areas of countries' networks, respectively collaboration and production networks, with a significant level of interaction between countries worldwide and close groups of knowledge at the European Union level, along with the highest level of scientific author production between different countries around the world. Moreover, the results suggest that the governance of health systems is a solid field of research and the most important themes identified are related to the specific subject of financing the health system, especially during and after the COVID-19 pandemic, implying the need for adequate regulations and effective public policies to further sustain public health. Moreover, the results reveal that many authors and international institutions express a greater interest in the public governance of health systems. Ultimately, the all-embracing impact of research trends regarding the relationship between public governance and health systems is beneficial, our results leading to an upsizing of future research assistance by providing a worldwide framework related to the governance of health systems within the EU.

Keywords: public governance, COVID-19, health systems, R-bibliometrix, knowledge networks

1. INTRODUCTION

In the past decade, many policy areas have developed a series of collaborative mechanisms. Public government positions the health and well-being of citizens as key drivers of a prosperous society and an expanded and vibrant economy. On the other hand, public governance of health systems is characterised by various actors involved (e.g., ministers, ministries of health, health agencies, and others) because they play a key role in shaping policies to promote public health and the welfare of citizens. The way people live and the context in which they create health in their daily lives require a new approach to health governance. In the contemporary context induced by the Covid-19 pandemic,

digitisation's impact on health dimensions is evident, as effective national responses are needed to strengthen health systems at the European level and significantly reduce the gaps between EU member states (Țăran et al., 2022). Therefore, health should be considered an essential pillar in all policies and various intersectoral actions because most health indicators are found in multiple sectors other than health.
The approach to governance of health systems has a feature that varies over time depending on the changing nature of the various challenges and risks facing society. WHO indicates that governance should be disseminated on several levels, such as i) state actors (ministry, parliament, others); ii) society (citizens, foundations, enterprises, global media, others); iii) actors at the supranational level (European Union, respectively United Nations). Thus, there is a need for a complex approach to reviewing the literature on the impact of public governance on health systems.
Based on these underpinnings, the general objective of our research was to draw out a scientific framework regarding the incidence of public governance in the health system. Moreover, the analysed period covered the years 2018–2022. Consequently, 313 references were selected from the Web of Science Core Collection (WoS) database. In order to identify the research framework, the analysis measures the quantity and quality of publications by employing an R tool, namely the R-Bibliometrix package pointed out a detailed analysis that explores a wide range of indicators and features, using the R Shiny application, developed in R.
The novelty and complexity of our research are defined by the fact that we consider document reviews of the most valuable research from institutions and researchers in the European Union area. Furthermore, our article provides a practical exploration of the main trends regarding the incidence of public governance in health systems and a comprehensive analysis for practitioners, researchers, and academics to grasp the future challenges of public governance regarding public health during some critical situations.
The paper consists of five sections. Section 2 presents a detailed and relevant literature underpinning. Section 3 presents the methodology and provides the bibliographic data. Section 4 includes the main results, while Section 5 presents the conclusions.

2. LITERATURE REVIEW

In recent years, it has been clearly emphasised that the quality of a nation's governance is directly correlated with its economic output, with higher levels of policy and credibility/effectiveness of public institutions and public authorities producing a positive and robust impact on economic output (Dima et al., 2013). The incidence of public governance in the health system has been debated over recent years in the literature. These explorations aimed to endorse a new theoretical framework regarding the relationship between governance and public health, especially health systems.
Many authors argued that exists many methodological approaches and tools of scientometric and bibliometric analyses through which we can determine the most relevant research trends regarding many topics by employing several essential features and different studies in terms of the most relevant authors, prolific countries, significant affiliations and institutions, conceptual structures, intellectual networks, and world collaboration trends that can significantly contribute to the existing literature through the new integrative and comprehensive framework on several research topics (Rodriguez-Soler et al., 2020; Lobonț et al., 2020; Ravslej et al., 2022; Lobonț et al., 2021).
Based on the fact that medical care is a fundamental human right, public governance has the role of ensuring rules and coordinating institutions that facilitate access to medical care and provide benefits for society. In this light, Bertoncello et al. (2015) explored the perceptions among Italian residents regarding the need for training and the governance model that can define the competence framework for good governance through a questionnaire. The results reveal that resident doctors feel a greater need that is inclined towards better training, especially the need to define the framework of competencies (role and responsibility) to achieve the measures that lead to the ideal of good governance of the health systems.
Marks et al. (2010) highlighted different perspectives regarding public health governance through a thematic analysis. Furthermore, it was considered that public health governance is characterised by several transition points, along with administrative and governance changes. The results emphasise that a different approach to governance, but also the various commitments regarding governance can significantly influence health outcomes, potentially having an impact on a series of characteristics involved in governance, respectively: strategies, public health practices, and implicitly management regimes regarding performance.
Nonetheless, the reform of health systems and the structures that govern public health must be aligned on the same trajectory as most practices. Lipauga et al. (2019) conducted a study that facilitates an understanding of different emerging structural governance models. The main findings highlight tools developed to reform the institutional mechanism regarding the governance of public hospitals.
On this frame of reference and multiple challenges, many authors state that public governance and health promotion have a multifaced role in health systems (Helgensen, 2014). Furthermore, Carlson et al. (2015) underscored, among other things, the existence of six functions of public health governance, respectively: public policies that must be developed, a health department that must be kept under continuous supervision, the need for resource management, continuous improvements, involved partners, and legal authority.
Withal, Yang et al. (2022) investigated the complex impact of the COVID-19 pandemic on public health governance. The authors applied different types of analyses, such as co-cited references, co-occurrence networks, and the citation of

documents. The results highlighted the research directions, clear lines for future research, research trends, prolific countries, and core sources.

3. METHODS AND MATERIALS

3.1. Data and sample construction

The dataset comprising the documents included in the scientometric research was obtained by consulting the Web of Science (WoS) Core Collection database. WoS provides a comprehensive set of documents, with efficient instruments and filters, starting from inclusion and exclusion criteria to specific features that allow the selection of the relevant documents and up to information on the analysed results (specific fields of WoS regarding the included records through Treemap chart, bar chart, or table visualisation). From the variety of features, characteristics, and instruments provided by the Web of Science (WoS), we took an interest in and extracted only the relevant documents regarding the incidence of public policy on health systems by applying different criteria of inclusion and exclusion (Figure 1), as well as the treemap field from WoS.

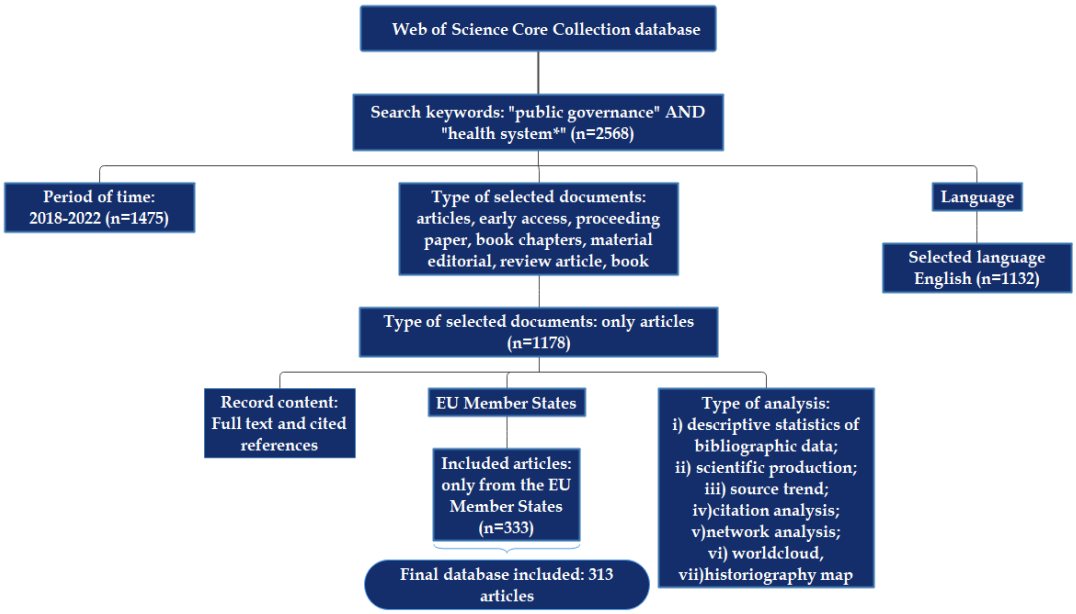

Figure 1: The multi-phase process of determining the final sample of documents
Source: Authors' own process in Edrawmind software

Bibliometric data regarding the incidence of public governance in health systems were extracted from the Web of Science (WoS) Core Collection database. Consequently, the Web of Science database was selected as the most relevant database that meets the requirements of the bibliometric analysis related to the relationship between public governance and health systems. In order to capture all relevant documents, the search query included a series of keywords related to our research topic, identifying public governance and health systems as the most used terms after an extensive analysis of the literature on existing bibliometric studies. Furthermore, public governance and the health system are considered the key terms of the analysis because they contain initiatives aimed at modernising and integrating high-quality public governance into public health systems.

The data collection process comprises two steps. Although, this stage can involve creating its own databases (Waltman, 2016). First, the bibliographic data regarding the incidence of public governance on health systems was derived from a popular comprehensive academic database – Web of Science Core Collection. WoS Core Collection covers many records and peer-reviewed journals. Secondly, to yield the number of records in the research field, the search terms were: "public governance" AND "health system*", which produced 2568 documents between 2018 and 2022. Therefore, filters restrict the research to only documents written in English, which ensures replicability and the international audience of the papers chosen in the analysis process between the period 2018 and 2022. After the screening process, the eligibility criteria were performed by manually examining the documents. Thus, 313 articles have been identified on the Web of Science as relevant for our bibliometric analysis regarding the incidence of public governance in health systems.

After all relevant bibliometric data regarding the incidence of public governance on health systems were extracted from the Web of Science (WoS), various approaches and tools were applied. Regarding the descriptive presentation, the Shiny app allows for obtaining descriptive statistics (Aria et al., 2017; Munoz et al., 2020).

Data visualisation includes intuitive visualisations and maps representing various visualisation analysis methods, namely intellectual structures, social networks, dendrograms, thematic evolutions, and bi-dimensional maps that allow the extraction, visualisation, and mapping of valuable features from the set of analysed documents. In order to identify the different measures of the networks or to measure the overlap of the distinct clusters, the network analysis allows performing statistical analysis on the generated maps, dendrograms, and networks. By employing visualisation techniques, the Shiny app enables the representation of scientific maps and the results of different types of analysis.
Furthermore, we developed a detailed presentation on frequency analysis, scientific production examination, and mapping networks of the most prolific countries, core sources, and significant authors. Withal, the analysis of the network, the collaboration of the authors and the simultaneous appearance of the keywords, the analysis of the thematic evolution, including the mapping of the keywords and the thematic trends, and the strategic diagram were performed with the Biblioshiny package, respectively Shiny app. In addition, through a combination consisting of text mining and machine learning methods for predictive modelling in R, the dynamic change in the appearance of terms was analysed.

3.2. Methodology

As regards the scientometric approach, the methodology used consisted in applying different features of a method of science mapping, namely the Shiny app, which was laid on 313 documents.
R package, namely Bibliometrix, represents an integrative tool for comprehensive science mapping analysis that appraises the linkages, collaboration, networks, intellectual structures, thematic evolutions, and social structures. Bibliometrix scientific maps are configured through general formulas.
The data analysis comprises two essential parts: descriptive analysis and network extraction. Descriptive analysis of bibliographic data includes more information about the dataset: main information about data, document types and contents, authors, and their collaboration. Furthermore, to extract networks, different types of approaches have been developed:

a) "Bibliographic coupling": exists when at least one cited source appears in the bibliography or reference list of the two documents. The general formula for a bibliographic coupling network:

$$Bib_{coup}=A \times A' \quad (2)$$

where:

- A = document x cited reference matrix

The number of bibliographic couplings that exists between "i" and "j" is indicated by bij and the strength of the bibliographic coupling is represented by the number of common references to documents. Also, Bibcoup represents a symmetrical and non-negative matrix: Bibcoup=Bib'coup.

b) "Co-word analysis": by collecting keywords, abstracts, or titles in a bibliographic collection, maps and clusters of terms can be formed. The general formula for the co-word network:

$$Bib_{coword}=A' \text{ x } A \quad (3)$$

where:

- A = document x word matrix (terms from title or abstract, authors' keywords, keywords plus)

The number of co-occurrences that exists between "i" and "j" is indicated by bij. The diagonal elements represent the number of documents containing the word.

c) "Collaboration analysis": is represented by a scientific collaboration network. The nodes refer to authors, and the links refer to co-authorships. The general formula for collaboration network:

$$Bib_{coll}=A' \text{ x } A \quad (4)$$

where:

- A = document x author matrix

The number of existing collaborations between authors is indicated by bij. The diagonal element represents the number associated with the documents that are authored or co-authored by the researchers.

4. RESULTS

The starting point in the bibliometric analysis focused on the most cited documents over the last 5 years of analysis, respectively 2018-2022, Figure 2 lists the top 20 most cited documents in descending order. The most relevant documents observed individually during the analysed period are the following: in the first year (2018), the most cited articles belong to the author Tedee, with a total of 328 citations received for the first document in the top, respectively 241 citations for the second document. In the second year analysed, namely 2020, we identify authors such as Kuzemko, with the most cited document on emergency measures taken by states, companies, and individuals in response to the COVID-19 pandemic, results that led to a series of political, and economic and social changes, with 92 citations. In the third year of analysis, respectively, 2021, the analysis does not identify any document in the top 20 most cited documents. Furthermore, for 2022, the most relevant document comes from author Coccia, a scientific study

whose results suggest that the best-performing countries, which have faced the pandemic crisis of COVID-19, have outstanding public governance, associated with a high level of health expenditures regarding the health system, with a total of 32 citations. Moreover, this analysis presents indices that can help policymakers or public institutions to develop effective strategies to improve countries' preparedness and prevention for future pandemic threats or other health challenges that can arise over time (Coccia et al., 2022).

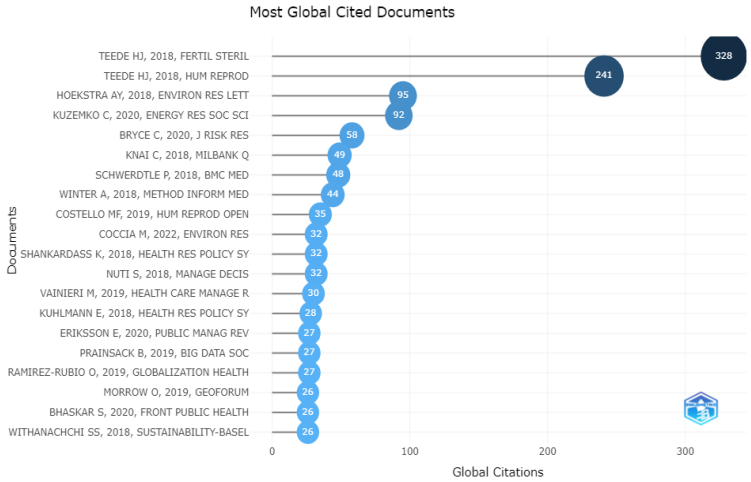

Figure 2: Most relevant documents regarding the number of citations
Source: Authors' computation through R software, Bibliometrix package, Shiny app

Moreover, focusing on the scientific production regarding the incidence of public governance in health systems, the most relevant sources, authors, and countries were identified based on published articles and citations over the period 2018-2022. Due to many different countries, specific sources and significant authors involved in the research field of the incidence of public governance on health systems, the presentation focuses on the most cited countries and sources, respectively the most cited authors.

The ranking of the core sources, the evolution and growth over time and the network of co-citation of sources is also a subject of interest. Furthermore, regarding the level of sources, the results of the most productive sources are highlighted in Figure 3. Also, a higher production level of an item in at least one of the years was used to determine the ranking. Thus, ten sources were analysed, and, in some cases, several scientific journals were ranked at the same production level. Furthermore, in terms of the productivity of the core sources, the level has changed considerably from year to year in the period 2018-2022. Accordingly, the number of certain sources increased significantly in the recently analysed period compared to the beginning period of the studied interval.

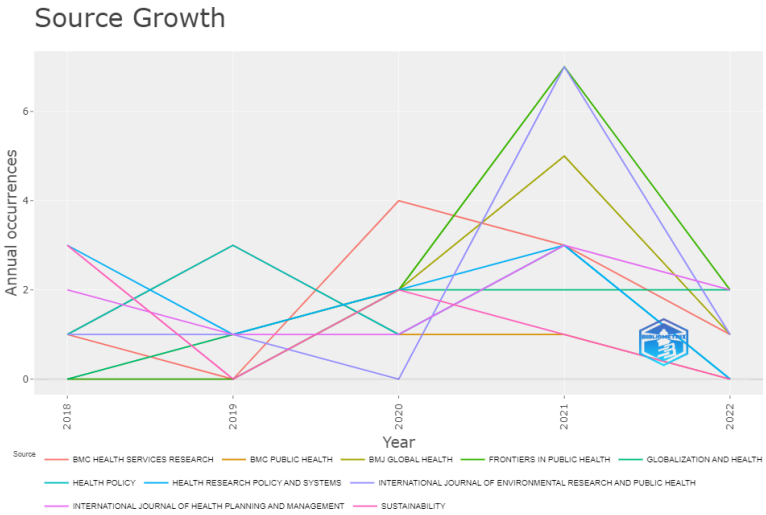

Figure 3: The evolution and dynamics of sources regarding the number of annual occurrences
Source: Authors' computation through R software, Bibliometrix package, Shiny app

Regarding specific scientific sources, the Journal of Frontiers in Public Health has the most annual publications in the analysed period (with 11 annual publications), followed by the "International Journal of Environmental Research and Public Health" with a total of 10 annual appearances. If each year is considered separately, six journals had more than nine annual appearances during the analysed period, and their annual occurrence accounted for more than half of the annual appearances throughout the period analysed. Also, "BMC Health Services Research", "BMJ Global Health",

“Health Research Policy and Systems”, and “International Journal of Health Planning and Management” on the third position in the ranking of annual appearances, all three journals having a number of 9 annual occurrences. In the context of source growth analysis, the journals "Frontiers in Public Health", "BMJ Global Health", and "International Journal of Environmental Research and Public Health" appeared in the first positions, being the most active sources in the last 3 years analysed, their annual appearances increasing significantly, being also the most core sources in the total ranking. The trend highlights an acceleration in the research field regarding the incidence of public governance in health systems, but also a significant number of appearances of the most relevant articles regarding the incidence of public governance in the health system, with a higher volume of annual appearances in the last 3 years analysed (2020-2022). Thus, the evolution of the ten most significant and prolific sources can be divided into three main categories: (i) sources that had a low average of annual occurrences but subsequently registered a significant increase and began to have a significant number of annual occurrences in the last three years analysed (2020-2022) and which continued to increase during this analysed period, with the highest number of occurrences; (ii) sources with a notable initial level of annual occurrence during the analysed period, but which significantly reduced their occurrence in the last 3 years analysed and showed significant intervals of inactivity; (iii) sources that started with a relatively low number of annual appearance, followed by upward developments and a remarkable and continuous level of annual appearances.

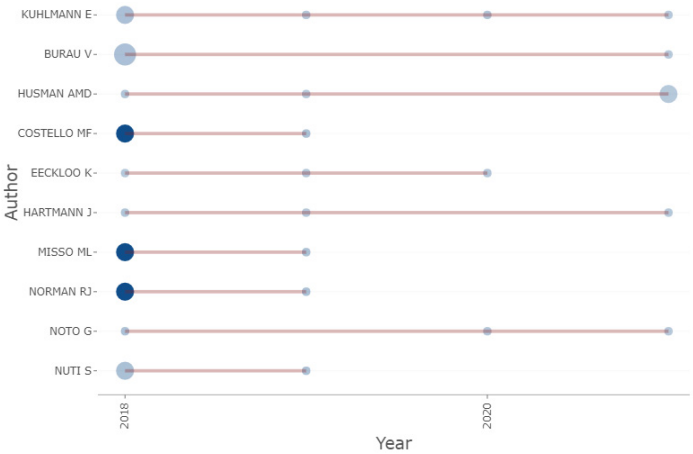

Figure 4: Authors' production during 2018-2020
Source: Authors’ computation through R software, Bibliometrix package, Shiny app

In terms of authors’ production over time, as shown in Figure 4, Viola Burau and Costello Michael have the most extended history of researching the relationship between public governance and health systems. Although their periods of activity were similar, the author Burau obtained 3 documents, and the author Costello got 2 documents, both in the top ranking of the most productive authors. Burau Viola and Michael Costello are the authors with the most remarkable works with a number of 49 and 569 citations, respectively, the authors which propose different methods of analysis and also studies proposing the introduction of a rapid benchmarking tool based on integrated multilevel governance. These studies also pointed out that the governance of health systems, especially contemporary public services in industrialised countries, is usually based on a combination of different models of governance, noting that the governance of health systems and health professions are essential pillars of public health. The literature related to governance has raised the issue of specific coexistence between different governance models. The focus is on various crises and impacts, while less attention is on situations where different governance models do not connect. Moreover, the authors also point out that the gaps in the coexistence of different models of government can be considered as disconnections in the management of public services, even health care services, reflecting a lack of government capacity to connect different models of governance with each other. Withal, the growth of international collaborations of countries worldwide and the country of the correspondence author made us consider the map of scientific collaborations.

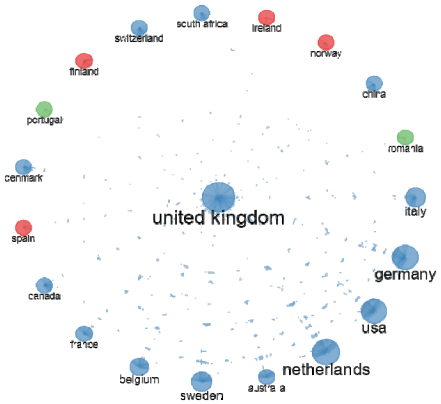

Figure 5: The collaborative network of the most prolific countries
Source: Authors' computation through R software, Bibliometrix package, Shiny app

The collaboration network represented in Figure 5 presents the interactions between different countries, but also the interconnectivity in scientific production between different countries, such as the United Kingdom, USA, Netherlands, and Germany - the blue cluster, with countries that collaborate largely with the other states in the green and red cluster. On the other hand, we have Ireland, Norway, Spain and Finland - the red cluster, although to a lesser extent, they are collaborating with different countries, including Belgium, the United Kingdom, China, Belgium and the USA. Furthermore, the scientific map also underlines the presence of the third cluster, the green one, which includes an internal collaboration between Romania and Portugal, which has external links with the countries from the other clusters, namely: Denmark, Italy, the United Kingdom, and Germany. However, the results also highlight the collaborative network of countries such as the United Kingdom, the Netherlands and Germany. The main collaborations between countries are easy to identify by the size of their nodes and by their interconnectivity. However, the countries with the greatest impact on the scientific production in the field regarding the incidence of public governance on health systems are the USA, the Netherlands, the United Kingdom, Germany, Belgium, Spain, and Sweden.

Figure 6: Wordcloud on the most important words used in the titles of documents
Source: Authors' computation through R software, Bibliometrix package, Shiny app

The terms that appear most frequently in the title of scientific articles are highlighted in Figure 6. Figure 6 presents the cloud of unigram words for the entire sample of scientific documents that discussed and approached the subject regarding the incidence of public governance on health systems. Unigrams consist of a single element in a sequence. The unigrams with the highest visibility are "health" with 160 appearances, "public" with 59 appearances, "governance" with 52 appearances, "covid" with 39 appearances, and "systems" with 35 appearances. Additionally, unigrams such as "care", "management", "study", "pandemic", "policy", "quality" and "assessment" tend to be significant for the analysis.

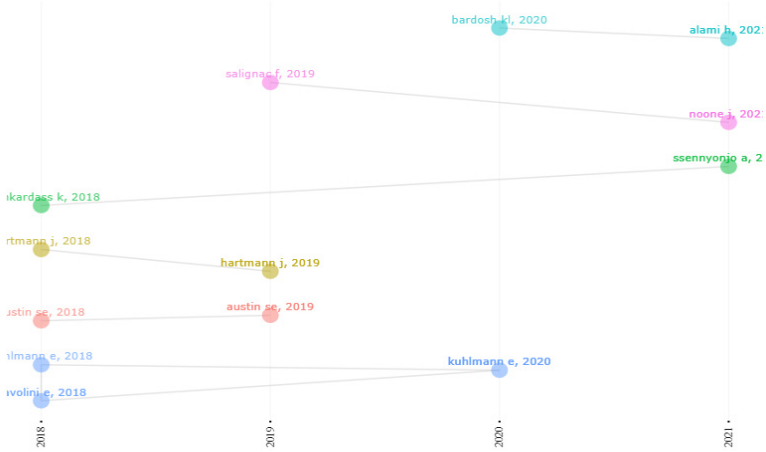

Figure 7: Historiographic representation of references
Source: Authors' computation through R software, Bibliometrix package, Shiny app

Additionally, in Figure 7, based on direct citations, intellectual connections are drawn in chronological order; each historical path represents a research topic and its central documents. In this sense, six research pathways are identified, being presented in different colours; each path represents a concept and its historical development. Further, the results evidence that the first route highlights the importance of integrating the social sciences in the preparation and response to the COVID-19 pandemic, namely a strategic framework for capacity building and improving global health security, as well as issues related to preparing health systems for a future pandemic. The second route emphasises the measurement of dynamic collaborations on collaborative tools for health assessment and the way collaboration practices can be supported in a new era of public governance. Route three discusses how social science theories can influence intra-government coordination efforts. Route four presents articles discussing risk governance. Route five refers to studies of intra-governmental relations on health adaptation to climate change. Furthermore, the last route, respectively route six, emphasises the importance of health governance.

5. CONCLUSIONS

This research brings significant contributions to the existing knowledge that is currently evolving in the field regarding the incidence of public governance in health systems by providing new insights and methodological and integrative approaches through different features of scientific mapping.

Therefore, given that recent years have led to a significant increase in the number of publications in the field of research, this method allows us to add value to the existing literature and to expose a comprehensive and in-depth examination of research on the incidence of public governance on health systems in the last five year allowing the examination of the evolution of research over time.

The methodological approach implies a broad range of different features and indicators in order to allow us to measure the quantity and quality of documents, the results providing a critical path of both national and international contributions to the existing literature regarding the incidence of public governance on health systems, by employing R-Bibliometrix package, namely Shiny app.

In this context, the general objective of our research was to build a framework for the research on the incidence of public governance in the health system by employing an R-tool, Bibliometrix, including the different features of the Shiny app, over the last five years. Assessing this objective, both for qualitative and quantitative measurement, involves in-depth approaches, taking into account different analyses of scientific mappings, such as the examination of descriptive indicators, including the most important documents and affiliations; identification of the most important countries and journals; observation of impact authors; examining collaboration between authors and highly significant research points; identification of currently used research topics, taking into account the dynamic change in the importance of the keywords used about the relationship between public governance and health systems.

Thus, after applying the scientific mapping technique to the bibliographic data, based on various bibliometric indicators, we found the most significant authors, sources, and prolific countries regarding the articles that discuss the incidence of public governance in health systems.

Moreover, The World Health Organization, OECD, European Commission, World Bank, Hood C., Pollitt C., Christensen T, Provan KG., and Buse K. are among the authors/institutions with the most extended history in researching the incidence of public governance on health systems. Furthermore, another scientific visualisation in terms of sources revealed substantial impacts of "Frontiers in Public Health", "International Journal of Environmental Research and Public Health", "BMC Health Services Research", and "BMJ Global Health", which are also considered core journals, being at the top in terms of the number of publications. Withal, when the scientific map of the most

prolific countries and their collaboration was applied, we found that worldwide, the results reveal collaborations between Australia, Canada, USA, China, South Africa and the European continent (United Kingdom, Romania, Denmark, Sweden, Ireland, Netherlands, Spain, France), and a significant degree of collaboration between certain countries from European Union. Finally, the authors' collaborations are highlighted in chronological order by different associations depending on the year of publication through a historiographical scientific map.

We emphasise that our research provides a schematic and visual framework of research regarding the incidence of public governance in the health system for researchers and practitioners. The research contributes integrative research and additional evidence regarding the incidence of public governance in health systems. Nevertheless, the research represents a guideline of recommendations and orientations for the scientific and academic community regarding the current research trends and can be considered as a support for the decision to choose the appropriate journal for the publication of scientific documents.

In future research direction, we propose an in-depth approach regarding not only the incidence of public governance on the health system but also to extend the terms used initially in the search for the most relevant document in WoS by adding the concept of the COVID-19 pandemic.

Our research presents limitations, mainly induced by the timespan chosen and the included bibliographic data. Therefore, selecting only one database, respectively Web of Science (WoS), can lead to a significant amount of bibliographic data being excluded, such as Pub Med, Scopus, and others. Other studies also mentioned these limitations, for example, Kalita et al. (2015), Yang and Qi (2022), and Bouchard et al. (2015). Furthermore, we intend to expand the analysis by also introducing the COVID-19 pandemic along with public governance to observe their incidence on health systems, as Yang and Qi (2022).

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MERENJE TRŽIŠNE KAPITALIZACIJE NA BEOGRADSKOJ BERZI U USLOVIMA GEOPOLITIČKIH TURBULENCIJA I PROMENA

Apstrakt: U poslednjih par godina, finansijska tržišta širom sveta bila su izložena egzogenim šokovima poput pandemije Covid-19 i ratnog sukoba u Ukrajini. Povećana volatilnost na svetskim finansijskim tržištima uticala je na veću svest učesnika na tržištu sa aspekta merenja, predviđanja i zaštite od posledica tržišne nestabilnosti. Cilj rada je utvrđivanje značajnosti razlike između ukupne tržišne kapitalizacije na Beogradskoj berzi pre i nakon početka ratnog sukoba u Ukrajini. Za potrebe utvrđivanja razlike je korišćen parametarski t-test uparenih uzoraka. Dobijeni rezultati ukazuju da je aktuelni ratni sukob u Ukrajini značajno i negativno uticao na ukupnu tržišnu kapitalizaciju u kontekstu srpskog tržišta kapitala. Rezultati sugerišu da je aktuelni ratni sukob značajan izvor finansijske volatilnosti, zbog čega je potrebno da investitori razmotre sprovođenje odgovarajućih strategija diversifikacije i zaštite u kriznim periodima.

Ključne reči: Tržišna kapitalizacija, Beogradska berza, geopolitičke turbulencije

1. UVOD

Neizvesnost, izazvana nedavnom pandemijom, već je prouzrokovala brojne probleme na globalnim finansijskim tržištima (Liu et al., 2022; Shaik, 2022), dok su geopolitičke tenzije, poslednjih godina, inicirale značajne fluktuacije cena sirove nafte, zlata i tržišta akcija (Umar et al., 2022; Qian et al., 2022). Kao rezultat toga, geopolitički rizik je nadmašio ekonomski rizik i postao najvažniji faktor, koji pokreće finansijsko zdravlje širom sveta (Shaik et al., 2023).
Rezultati ranijih studija su pokazali da geopolitičke turbulencije, rizici i šokovi, poput vojnih sukoba, terorističkih napada i ratnih tenzija imaju uticaja na ekonomsku aktivnost i finansijska tržišta (De Wet, 2023). Empirijski rezultati brojnih studija, takođe, obezbeđuju i dokaze da dugotrajne geopolitičke tenzije uzrokuju usporavanje ekonomske aktivnosti i da bi, u zavisnosti od ozbiljnosti, mogle da dovedu do sužavanja pojedinačnih ekonomija i globalne ekonomije (Bloom, 2009; Nikkinen & Vähämaa, 2010; Gupta et al., 2019; Caldara & Iacoviello, 2022).
Poslednjih godina je došlo do porasta akademskog interesovanja za procenu štetnih finansijskih efekata egzogenih šokova, zbog neočekivane zdravstvene krize Kovid-19, pri čemu je široko analizirana reakcija i oporavak različitih finansijskih tržišta od šoka prouzrokovanog Kovidom-19 (Đorđević & Stanković, 2022; Yarovaya et al., 2022). Međutim, literatura o uticaju vojnih operacija na finansijska tržišta je još uvek relativno oskudna. Na primer, Frey & Kucher (2000) izveštavaju o negativnom uticaju vesti iz Drugog svetskog rata na tržišta obveznica zemalja uključenih u rat, dok Choudhri (2010) posmatra različite strukturne prekide u prinosima i volatilnosti američkog tržišta akcija, tokom različitih događaja, na ratnim bojnim poljima od 1939. do 1945. godine. Fernandez (2008) analizira kako su američka objava rata terorizmu i potonja invazija na Irak uticali su na dugoročnu nestabilnost tržišta akcija širom sveta i pokazuje

da je politička nestabilnost na Bliskom istoku imala veći uticaj na razvijena finansijska tržišta na početku rata u Iraku. Rigobon & Sack (2005) ističu da je ratni rizik u Iraku negativno uticao na američko tržište kapitala, te je, stoga, faktor ratnog rizika koristan u proceni varijacija u cenama akcija u vreme rata. Hudson & Urkuhart (2022) su procenili uticaj pomorske katastrofe na britanske berze, pokazujući da je samo nekoliko politički značajnih pomorskih katastrofa uticalo na performanse berze.

Sa 37.3% ukupne ruske globalne trgovine robom 2020. godine, EU je bila najvažniji trgovinski partner Rusije (EC, 2022). Rusija je isporučilvala 27% sirove nafte, 46.7% čvrstog goriva i 41.1% prirodnog gasa, koji uvozi EU (Eurostat, 2022). Zbog integrisane prirode ruske privrede, posebno sa evropskim zemljama, preko trgovine naftom, gasom, hranom i sirovinama, povećane geopolitičke tenzije i naknadno uvedene sankcije verovatno će imati negativan efekat i na zapadne ekonomije i na rusku ekonomiju (Ahmed et al., 2022).

Tekući sukob između Rusije i Ukrajine je jedinstven po prirodi i značajno se razlikuje od političke neizvesnosti i ratova u prošlosti. Pre svega, ovaj ratni sukob je izazvao geopolitičke rizike i uzdrmao globalnu ekonomiju. Na primer, indeks geopolitičkog rizika, koji su razvili Caldara & Iacoviello (2022), pokazuje da je geopolitička pretnja dostigla vrhunac nakon početka ratnog sukoba u Ukrajini. Štaviše, velika je verovatnoća da će, ovaj sukob narušiti finansijsko posredovanje i trgovinu, izazivajući zabrinutost oko usporavanja ekonomskog rasta i povećanja inflacije na globalnom nivou. Kao rezultat toga, uticaj ove krize je znatno širi i dublji od uticaja prethodnih političkih događaja (Ahmed et al., 2022).

Uzimajući u obzir aktuelnost teme i činjenicu da uticaji ratnog sukoba u Ukrajini na pokazatelje tržišta kapitala, još uvek nisu dovoljno istraženi, predmet ovog rada je merenje tržišne kapitalizacije na Beogradskoj berzi u uslovima geopolitičkih turbulencija i promena. Shodno tome, cilj istraživanja je utvrđivanje značajnosti razlike između ukupne tržišne kapitalizacije na Beogradskoj berzi pre i nakon početka ratnog sukoba u Ukrajini. Radi odgovora na postavljeni cilj istraživanja, rad je strukturiran na sledeći način. Nakon uvodnog izlaganja, u sledećem delu je napravljen kratak pregled literature, koja se bavi relevantnom tematikom. Treći deo obuhvata metodologiju istraživanja, dok su u četvrtim delu prikazani rezultati istraživanja. Poslednji deo obuhvata ključne zaključke, nedostatke istraživanja i smernice budućim istraživačima ove teme.

2. PREGLED LITERATURE

Uticaj ratnih sukoba na tržišta kapitala nije novina, budući da su ranije studije dokumentovale njihove kako negativne, tako i pozitivne posledice. Tome u prilog govori i činjenica da je veliki broj autora, u svojim studijama, nastojao da utvrdi kako ratni događaji utiču na prinose na berzi (Harrison et al., 2000; Leigh et al., 2003; Schneider & Troeger, 2006; Hudson & Urkuhart, 2015; Carmignani & Kler, 2018; Kimbrough et al., 2020; Hassan et al., 2022; Sun, 2022), a, zbog značajnih globalnih uticaja ratnog sukoba u Ukrajini, povećava se i kvantitet studija o ovom ratnom sukobu (Boubaker et al., 2022; Chortane i Pandei, 2022; Lyócsa & Plíhal, 2022; Umar et al., 2022; Boungou & Yatié, 2022; Yousaf et al., 2022; Abbassi et al. 2023; Mahran, 2023).

Harrison (2000) ističe da su odnosi uvoza i izvoza između zemalja zahvaćenih ratnim sukobima i onih koje nisu, takođe, pogođeni vojnim sukobima, uzrokujući negativne efekte na proizvodnju, profitabilnost, očekivane novčane tokove i cene akcija. Prema Leigh et al. (2003), koji su analizirali podatke sa finansijskog tržišta, kako bi izvršili ex-ante procenu ekonomskih posledica rata sa Irakom, zemlje koje su veoma upletene u svetsku ekonomiju, ili neto uvoznici nafte, najverovatnije će se suočiti sa negativnim posledicama rata. Schneider & Troeger (2006) istražuju uticaj koji su politička dešavanja u tri ratna regiona (sukob Izraela i Palestine, konfrotacija saveza predvođenog Sjedinjenim Američkim državama protiv Iraka i sukobi na teritoriji bivše Jugoslavije) imala na globalna finansijska tržišta, u periodu od 1990. do 2000. godine, analizom vremenskih serija. Koristeći dnevne podatke sa berze, pomenuti autori pokazuju da su sukobi negativno uticali na interakcije na ključnim finansijskim tržištima u zapadnom svetu, ako su uopšte i imali sistematski uticaj.

Hudson & Urkuhart (2015) su proučavali uticaj Drugog svetskog rata na Britansku berzu i dobili ograničene dokaze o jakim vezama između ratnih događaja i povrata na tržištu, iako postoji podrška za negativni efekat. Hassan et al, (2022) su prikazali heterogene uticaje dve vrste događaja, koristeći uzorak od šest događaja, koji su proizašli iz indijskih graničnih sporova 2020. godine. Rezultati su pokazali da su sektorski indeksi heterogeno reagovali na oba događaja. Dok je nekoliko sektora pokazalo pozitivne i negativne abnormalne prinose, na druge događaji nisu uticali. Poprečni presek abnormalnih prinosa pokazuje da, veći rizik i volatilnost, dovode do većih prinosa tokom perioda nakon događaja. Prema Carmignani & Kler (2018), građanski sukob u susedstvu značajno povećava verovatnoću domaćeg sukoba, umanjuje kvalitet domaćih institucija i smanjuje stepen ekonomske integracije sa ostatkom sveta. Vrednost ove štete u dolarima se kumulira tokom vremena u zavisnosti od učestalosti/trajanja prostornog sukoba.

Kimbrough et al. (2020) se bave pregledom glavnih ekonomskih modela rata i sukoba i ističu da se ovi modeli se razlikuju u detaljima, ali da su njihove implikacije kvalitativno konzistentne, naglašavajući ključne zajedničke karakteristike u različitim okruženjima konflikta. Sun (2022) ističe da, kada se pojave ratni sukobi, cena svih dobara i usluga bi normalno porasla, posebno za sirovine kao što je nafta. Studija, pomenutog autora, je imala za cilj da analizira povezanost između nekoliko važnih ratova i cena nafte, uključujući faktore koji utiču na fluktuaciju cene nafte, kao i sličnosti i razlike promene cene nafte u različitim ratovima. Analizom dva rata, odnosno prvog i drugog Zalivskog rata,

autor ukazuje na sličnosti i razlike u fluktuaciji globalne cene nafte, i ističe da bi se analizom posledica fluktuacije cene nafte tokom ova dva rata, mogao predvideti trend fluktuacija cene nafte usled rusko-ukrajinskog ratnog sukoba.
Dokumentujući heterogene uticaje na razvijena i tržišta u razvoju, Boubaker et al. (2022) su, na osnovu metodologije studije događaja, za ispitivanje uticaja ratnih sukoba u Ukrajini, dokazali da je, ovaj ratni sukob, generisao negativne kumulativne abnormalne prinose za indekse globalnog tržišta akcija, ali sa heterogenim efektima. Yousaf et al. (2022) pružaju dokaze o sličnim uticajima na berze zemalja G20+. Naime, pomenuti autori su, u svojoj studiji, ispitivali uticaj početka sukoba između Rusije i Ukrajine na G20+ i druga odabrana tržišta akcija. Analiza abnormalnih prinosa, pre i posle pokretanja „specijalne vojne operacije" ruskih vojnih snaga 24. februara 2022. godine, je otkrila snažan negativan uticaj, ove vojne akcije, na većinu berzi, posebno na rusko tržište. Ukupna analiza tržišta akcija ukazala je na značajan i negativan uticaj sukoba između Rusije i Ukrajine na dan događaja i u danima nakon događaja. Analiza po zemljama je pokazala da su berze Mađarske, Rusije, Poljske i Slovačke prve reagovale u iščekivanju vojnih akcija u Ukrajini, pokazujući negativne prinose već u danima pre događaja, dok su berze Australije, Francuske, Nemačke, Indije, Italije, Japana, Rumunije, Južne Afrike, Španije i Turske bile štetno pogođene u danima nakon invazije, dok je regionalna analiza pokazala da su evropski i azijski regioni značajno i negativno pogođeni ovim događajem.
Koristeći dnevne prinose na berzi, na uzorku od 94 zemlje, za period od 22.01.2022. – 24.03.2022. godine, Boungou & Yatié (2022) su dokazali negativnu povezanost između ratnog sukoba u Ukrajini i prinosa na svetskim berzama. Rezultati studije, pomenutih autora, ukazuju na veći uticaj na početku ratnog sukoba, posebno tokom prve dve nedelje nakon 24.02.2022., odosno nakon početka ratnog sukoba. Reakcija globalnih berzi bila je slabija u nedeljama koje su usledile. Štaviše, nalazi ukazuju da su ovi efekti bili najizraženiji za zemlje, koje se graniče sa Ukrajinom i Rusijom, kao i za one zemlje članice UN koje su zahtevale prekid ruske ofanzive u Ukrajini.
Slično ovim nalazima, Umar et al. (2022) smatraju da je eskalacija geopolitičkog rizika u ratnom sukobu između Rusije i Ukrajine značajno uticala na finansijska i robna tržišta. Štaviše, Chortane & Pandei (2022), kao i Lyócsa & Plíhal (2022) obezbeđuju dokaze o tome kolika je turbulentnost kurseva (posebno ruske rublje) nastala zbog ratnog sukoba. Koristeći uzorak, koji je činilo 531 firma, iz zemalja G7, Abbassi et al. (2023), su ispitali uticaj rusko-ukrajinskog ratnog sukoba na berze G7 i dobili rezultate, koji ukazuju na heterogene efekte ratnog sukoba u Urajini na različita tržišta. Dok su firme u Kanadi i Italiji pokazale pozitivne kumulativne uticaje, one u Nemačkoj, Italiji i Velikoj Britaniji su iskusile negativne kumulativne prinose tokom perioda istraživanja. S druge strane, francuske i američke firme su bile beznačajno pogođene sukobom. Izloženost riziku i zavisnost od trgovine pokreću negativne abnormalne prinose izazvane ratnim sukobom. Autori pokazuju da su cene akcija osetljive na geopolitičke rizike i trgovinsku zavisnost.
Mahran (2023) je istraživao uticaj ratnog sukoba u Ukrajini na promenljivu povezanost između sektora Egipatske berze. Nalazi su pokazali da povezanost među sektorima Egipatske berze varira u zavisnosti od vremena. Prosečna mera dinamičke povezanosti među sektorima u Egiptu je 73.24%. Međutim, ovaj prosek, tokom ratnog sukoba u Ukrajini iznosi 85.63%. Autor, takođe, pokazuje da je transportni sektor najznačajniji neto prenosilac volatilnosti u preostalim sektorima tokom perioda ratnog sukoba.
Tosun & Ešraghi (2022) su istraživali reakciju finansijskog tržišta na najave kompanija, koje ostaju u Rusiji pune dve nedelje nakon početka ratnog sukoba. Prema nalazima studije, pomenutih autora, kompanije, koje su ostale u Rusiji su ostvarile lošije rezultate u poređenju sa kompanijama, koje su napustile Rusiju u roku od dve nedelje od početka ratnog sukoba. Federle et al. (2022), u svom istraživanju, napominju da početak ratnih sukoba, takođe, donosi rizik od vojne eskalacije u susedne zemlje. Berza opada, a rizici od katastrofe rastu. Zemlje, bliže području ratnog sukoba, će imati više negativnih prinosa na kapital. Ahmad et al. (2022) su ispitivali efekat rusko-ukrajinske krize na evropske berze. Zbog povećane političke neizvesnosti, geografske blizine i posledica novih sankcija uvedenih Rusiji, evropske berze su imale tendenciju da negativno reaguju na ovu krizu. Autori sugerišu da su, 21. februara 2022. godine, kada je Rusija priznala dve ukrajinske države kao autonomne regione, evropske akcije imale značajan negativan abnormalni prinos. Štaviše, negativne reakcije cena akcija su nastavljene i u periodu nakon ovog događaja. Veličina reakcija cena akcija na ovu krizu pokazuje značajne varijacije u različitim industrijama, zemljama i veličini kompanije.
Sidhu & Suri (2022) su, u svojoj studiji, merili uticaj rusko-ukrajinskog ratnog sukoba na performanse 20 najvećih indijskih kompanija, koje posluju na nacionalnoj berzi. Koristili su nedeljne podatke vremenske serije ovih kompanija i posmatrali njihove performanse tokom petomesečnog perioda. Izračunali su procentualne promene cena akcija ovih kompanija i pokušali da utvrde trend promene njihovih performansi pomoću grafikona. Rezultati su ukazali da su nakon opadanja performansi, u prve dve nedelje od početka sukoba, pokazale trend oporavka.

3. METODOLOGIJA ISTRAŽIVANJA

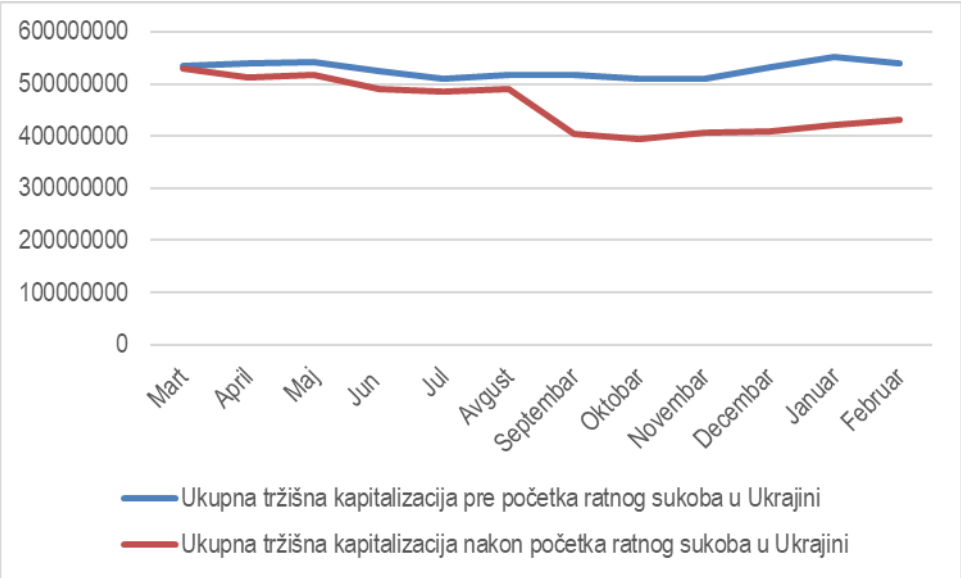
Radi utvrđivanja razlike između ukupne tržišne kapitalizacije na Beogradskoj berzi, 12 meseci pre i 12 meseci nakon izbijanja ratnog sukoba u Ukrajini, korišćeni su mesečni podaci, za period od marta, 2021. do februara, 2023. godine, preuzeti sa zvaničnog sajta Beogradske berze, pri čemu veličina uzorka iznosi 24, a, broj parova rezultata 11.

Tabela 1: Opis varijable, korišćene u istraživanju

Varijabla	Opis	Izvor
Ukupna tržišna kapitalizacija	Zbir kapitalizacija Regulisanog tržišta i MTP - Mesečni podaci	Beogradska berza https://www.belex.rs/trgovanje/kapitalizacija

Izvor: Beogradska berza

Slika 1 ilustruje kretanje ukupne tržišne kapitalizacije na Beogradskoj berzi, za posmatrani period. Najniža vrednost ukupne tržišne kapitalizacije, pre početka ratnih sukoba u Ukrajini, od marta, 2021. do februara 2022. godine, zabeležena je u novembru, 2021., u iznosu od oko 510 mil RSD, a najviša u januaru, 2022. godine, sa nešto više od 550 mil RSD. Prosečna vrednost kapitalizacije, za ovaj period, iznosi oko 527.7 mil RSD. Najniža vrednost ukupne tržišne kapitalizacije, nakon početka ratnih sukoba, u periodu od marta, 2022. do februara, 2023. godine, zabeležena je u oktobru, 2022. godine (oko 390 mil RSD), a najviša u martu 2022. godine (oko 530 mil RSD). Prosečna vrednost ukupne tržišne kapitalizacije, za ovaj period, iznosi oko 457.5 mil RSD. Od marta, 2022., odnosno nakon početka ratnih sukoba u Ukrajini, primetan je trend opadanja, sve do oktobra, iste godine, nakon čega je došlo do blagog rasta ukupne tržišne kapitalizacije, sve do kraja posmatranog perioda.



Slika 1: Ukupna tržišna kapitalizacija pre i nakon početka ratnih sukoba u Ukrajini
Izvor: Autori, na osnovu podataka sa Beogradske berze

Za utvrđivanje razlika između dve grupe podataka korišćen je t-test uparenih uzoraka. Podaci su procesuirani pomoću statističkog softvera IBM SPSS Statistics 21.

4. REZULTATI ISTRAŽIVANJA

U cilju testiranja značajnosti razlike između ukupne tržišne kapitalizacije, pre i nakon izbijanja ratnog sukoba u Ukrajini, korišćen je t-test uparenih uzoraka. Aritmetička sredina razlika između ukupne tržišne kapitalizacije na Beogradskoj berzi, pre i nakon izbijanja ratnog sukoba iznosi 70198585.583. Standardna devijacija za razlike je 49539599.688, dok standardna greška iznosi 14155643.954. Ostvarena vrednost t statistike je 4.959, pri čemu ostvareni nivo značajnosti iznosi 0.000. Ovakvi rezultati jasno ukazuju na statistički značajnu disproporciju u ukupnoj tržišnoj kapitalizaciji u korist perioda pre početka ratnog sukoba u Ukrajini.

Tabela 1: Rezultati t-testa uparenih uzoraka

Kategorija	Razlike u parovima			t	df	Sig (two-taled)
	Mean	Std. Deviation	Std. Error Mean			
TK pre - TK nakon	70198585.583	49036589.085	14155643.954	4.959	11	0.000

Izvor: Kalkulacija autora

5. ZAKLJUČAK

Cilj istraživanja, u okviru ovog rada, bio je utvrđivanje značajnosti razlike između ukupne tržišne kapitalizacije na Beogradskoj berzi pre i nakon početka ratnog sukoba u Ukrajini. Dobijeni rezultati su ukazali na postojanje ove razlike na statistički značajnom nivou. Naime, prosečna vrednost ukupne tržišne kapitalizacije, u periodu od godinu dana, pre početka ratnog sukoba u Ukrajini, je iznosila oko 527.7 mil RSD, dok je, godinu dana nakon početka ratnih sukoba iznosila oko 457.5 mil RSD, odnosno 13.30% manje. Dobijeni rezultati se ne mogu uporediti sa rezultatima drugih studija, jer druge studije, koliko je autorima poznato, nisu istraživale uticaj ratnih sukoba na pokazatelj, korišćen u ovom radu. Međutim, rezultati su u skladu sa istraživanjima autora, koji su utvrdii negativan uticaj ratnih sukoba na berze i, uopšteno, finansijska tržišta (Umar et al., 2022; Boubaker et al., 2022; Boungou & Yatié, 2022; Ahmad et al., 2022).

Nakon sprovedenog istraživanja, u okviru rada, nameću se i određena ograničenja, koja, istovremeno, mogu biti i preporuke za neka dalja istraživanja na ovu temu. Naime, u ovom radu je korišćen samo jedan pokazatelj, odnosno ukupna tržišna kapitalizacija na Beogradskoj berzi. U tom smislu bi, budućim istraživanjima, mogli biti obuhvaćeni i drugi pokazatelji, poput, Beleks 15 i Beleks Line, ili učešća stranih investitiora. Osim toga, istraživanje se odnosi samo na ukupnu tržišnu kapitalizaciju na Beogradskoj berzi, dok bi buduća istraživanja mogla obuhvatiti i berze zemalja iz okruženja, ili na regionalnom nivou. Takođe, uvek postoje i drugi faktori, kao što su politička dešavanja, koja se dešavaju u isto vreme, a, koja u ovom radu nisu razmatrana. Naime, trendovi kretanja berzanskih indeksa i cena akcija su kombinovani efekat svih događaja, koji se istovremeno dešavaju, te bi buduća istraživanja mogla da uzmu u obzir i ove faktore.

Generalno, uticaji ratnog sukoba u Ukrajini, na finansijsku volatilnost, još uvek nisu dovoljno istraženi. Povećanje istraživanja na ovu temu je, stoga, jedna od ključnih implikacija ovog rada.

Uticaj ratnih sukoba na berzanska tržišta je posebno važna tema za investitore, portfolio menadžere i regulatore. Rezultati istraživanja, u okviru rada, sugerišu da je aktuelni ratni sukob značajan izvor finansijske volatilnosti, zbog čega je potrebno da investitori razmotre sprovođenje odgovarajućih strategija diversifikacije i zaštite u kriznim periodima.

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УТИЦАЈ ТРАНСФОРМАЦИОНОГ ЛИДЕРСТВА НА ЗАПОСЛЕНЕ ТОКОМ ОРГАНИЗАЦИОНИХ ПРОМЕНА

Апстракт: Мерџери и аквизиције представљају ефикасне стратегије интернационализација компанија које за циљ имају бољу конкурентску позицију. Током спровођења ових облика реструктурирања, компаније фокус стављају на финансијске и пословне аспекте, док се психолошки утицаји промена на запослене углавном занемарују. Услед неадекватног лидерства приликом спровођења промена, запослени се могу суочавати са страхом и неизвесношћу, што ће директно утицати на редукцију њиховог задовољства, пад перформанси и могућу тенденцију промене посла. Спроведено истраживање има за циљ сагледавање утицаја мерџера и аквизиција на страх и неизвесност код запослених, као и значај подршке трансформационих лидера током спровођења ових промена. Истраживање је спроведено на примеру аквизиције банке чланице француске групације која послује на територији републике Србије од стране друге интернационалне банке. Истраживање је обухватило 104 испитаника и спроведено је путем анкетног упитника. Закључивање је базирано на резултатима просте линеарне регресије, вишеструке линеарне регресије и дескриптивне статистичке анализе. Практичне импликације спроведене студије огледају се у указивању компанијама на значај утицаја адекватног трансформационог лидерства на запослене приликом ових облика организационе трансформације предузећа

Кључне речи: Трансформационо лидерство, димензије трансформационог лидерства, задовољство запослених, неизвесност запослених, процеси аквизиције

THE EFFECT OF TRANSFORMATIONAL LEADERSHIP ON EMPLOYEES DURING ORGANIZATIONAL CHANGE

Abstract: Mergers and acquisitions represent effective strategies of the companies' internationalization, aiming towards better competitive positioning. During the implementation of these forms of restructuring, companies put their focus on the financial and business aspects, while the psychological effect these changes have on the employees is mostly ignored. Due to the inadequate leadership during the implementation of changes, employees can face fear and uncertainty, which will directly influence the reduction of their satisfaction, lower performances. and a possible tendency towards job change. The goal of the conducted research is to review the influence that mergers and acquisitions have on the fear and uncertainty of the employees, as well as the importance of the transformational leaders' support during the implementation of these changes. The research was conducted on the example of the acquisition of a bank, which was a member of a French grouping working on the grounds of the Republic of Serbia, by another international bank. The research included 104 respondents and was carried out through a survey questionnaire. Conclusions were based on the results of simple linear regression, multiple linear regression, and descriptive statistical analysis. Practical implications of the conducted study are reflected in indicating to the companies the importance of the effect an adequate transformational leadership has on employees during these types of organizational transformations of a company

Keywords: Transformational leadership, dimensions of transformational leadership, employees' satisfaction, employees' uncertainty, acquisition processes

1. УВОД

Мерџери и аквизиције представљају један тип реструктурирања компаније, чији је крајњи циљ побољшање конкурентске позиције, повећање профита и раст тржишног удела. Како наводе Wheelen и Hunger (2006) мерџери и аквизиције су постали најпопуларнија стратегија интернационализације који су користиле разне компаније у последњих неколико година.

Након повезивања, спајања или преузимања, профит представља показатељ да ли је оправдана спроведена промена. Међутим, треба имати у виду да је људски фактор кључан за успешне исходе процеса припајања (Gill и Foulder, 1978). Након најаве процеса преузимања потребно је да менаџери комуницирају са запосленима о предвиђеним ефектима промена. Уколико процес комуникације изостаје, повећава се несигурност код запослених, смањује се воља за радом и повећава се стрес и анксиозност (Ashford, Lee, и Bobko, 1989). Сви негативни ефекти доводе до пада учинка запослених и других дисфункционалности као што су одсуства и тенденција промене посла (Schweinger и Denisi, 1991).

Истраживање емоционалних реакција запослених приликом организационих трансформација предмет је интересовања великог броја аутора (Bordia, Hunt, Paulsen, Tourisch, и DiFonzo, 2004; Teerikangas, Very, и Pisano, 2011; Charoensukmongkol, 2016; Kuvandikov, Pendleton, и Higgins, 2020). Такође, значајан број студија бавио се истраживањем утицаја трансформационог лидерства на повећање задовољства запослених и утицаја на перформансе компаније (Goleman, 2000; Bruch и Vogel, 2011; Савовић, 2017). Међутим, мали број студија испитује утицај трансформационог лидерства на смањење неизвесности запослених приликом најаве процеса аквизиције, као и перцепције запослених о могућностима развоја каријере услед насталих облика организационог реструктурирања компаније.

Предмет истраживања овог рада је организациона промена са аспекта запослених у компанијама које су предмет аквизиције, њихов перципиран утицај на каријеру и суочавање са страхом и неизвесношћу услед насталих промена, као и утицај трансформационих лидера на ставове запослених о насталим променама. Циљ спроведеног истраживања је сагледавање емоционалних реакција запослених приликом процеса аквизиције и утврђивање значаја трансформационог лидерства на њихове перцепције организационих промена.

Додатно, испитиван је утицај различитих димензија трансформационог лидерства на повећање задовољства запослених. Циљ истраживања утицаја димензија трансформационог лидерства на задовољство током процеса аквизиција огледа се у пружању смерница компанијама које су то кључне карактеристике и вештине које би лидери требало да поседују.

Опредељени предмет и циљ истраживања структурирали су рад у два дела. Први део представља теоријски осврт на претходна истраживања ефеката организационе трансформације. Резултати поменутих истраживања представљали су основу за постављање истраживачких хипотеза. Други део рада садржи резултате дескриптивне и регресионе анализе, помоћу којих је извршено преиспитивање валидности постављених хипотеза.

2. ПРЕГЛЕД ЛИТЕРАТУРЕ

2.1. НЕИЗВЕСНОСТ ЗАПОСЛЕНИХ КРОЗ ПРОЦЕСЕ МЕРЏЕРА И АКВИЗИЦИЈА

Организационе промене су идентификоване као главна претња запосленима за ефикасно обављање посла и утврђено је да могу изазвати несигурност и неизвесност код запослених (Terry, Tonge, и Callan, 1995). Мерџери и аквизиције могу укључивати отпуштање запослених, мада и када то није случај запослени осећају страх од губитка тренутне позиције, моћи, шанси за напредовањем и других бенефита (Eby, Adams, Russell, и Gaby, 2000).

Неизвесност је једно од најчешћих психолошких стања кроз које пролазе запослени током процеса организационих промена (Bordia и сар., 2004). У случају спајања и припајања, запослени у припојеној компанији могу осећати одређене нивое неизвесности из бројних разлога. Неки од њих подразумевају немогућност увиђања јасне слике о будућности организације, страх услед промене сопствене позиције и улога у компанији, као и потенцијалан губитак прилика за развој и напредовање (DiFonzo и Bordia, 1998). Истраживањем које је спровео Spector (1985) доказано је да неизвесност код запослених услед недостатака адекватне комуникације доводи до смањења задовољства на послу, опадања привржености организацији, смањењу мотивације и расту намере за променом посла.

Bordia и сар. (2014) истичу да приликом процеса мерџера и аквизиција постоје различити нивои неизвесности са којима се суочавају запослени (стр. 352). Хијерархијски посматрано, на организационом нивоу неизвесност

се односи на аспект стратешких питања, као што су кључни разлози за промене. На средњем нивоу може постојати неизвесност у вези са организационом структуром (нпр. како ће се структуре извештавања променити). Коначно, на нивоу посла, неизвесност би могла бити везана за потребе додатне обуке, сигурност самог посла или потребе промене тренутне позиције. За запослене је најстреснија неизвесност на нивоу посла, услед перципирања негативног утицаја на сопствену каријеру и будућност.

Постоје разна емпиријска истраживања која су указала на пораст неизвесности код запослених приликом процеса аквизиција (Ashford, 1988; Schweiger и Denisi, 1991; Covin, 1993). Mueller (1977) је сагледавајући ефекте спроведених мерџера и аквизиција закључио да са најавом аквизиције долази до пораста неизвесности која ће директно утицати на перформансе запослених (стр. 321). Ashword и Black (1996) у истраживању проактивности и комуникације током процеса аквизиција истичу значај управљања неизвесношћу запослених која је последица најављеног процеса припајања (стр. 203).

На основу резултата претходних истраживања, која истичу да организациона реструктурирања предузећа (које подразумевају спајања и припајања) доводе до пораста неизвесности, постављена је прва истраживачка хипотеза у раду:

X1: Најава процеса аквизиције изазваће пораст неизвесности код запослених у компанијама које су предмет аквизиције

2.2. ЗНАЧАЈ ТРАНСФОРМАЦИОНОГ ЛИДЕРСТВА ПРИЛИКОМ ПРОЦЕСА МЕРЏЕРА И АКВИЗИЦИЈА

Значај подршке лидера током процеса трансформације је кључан за успешно спровођење промена (Hendry, 1966). Goeltom, Kristiana, Juliana, Bernato, и Pramono (2020) тврде да лидери изазивају интересовање и својим примером утичу на запослене да дају свој максимални учинак. Менторске иницијативе лидера могу послужити као позитиван утицај на запослене који ће допринети бољем суочавању са променама у организацији (Kelloway, Turner, Barling, и Loughlin, 2012). Приликом спровођења процеса аквизиција, лидери преносе визију и инспирацију својим следбеницима и стварају организациону структуру и културу која омогућавају позитивна понашања запослених и истовремено утичу на смањење страха и неизвесности (Nemanich и Keller, 2007). Shamir и сар. (1993) су сугерисали да је одговорност лидера да конвертују вредности, потребе, склоности и тежње њихових следбеника од појединачних ка колективним интересима (стр. 583).

Постоје различити ставови о стилу лидерства који треба предузети у циљу минимизирања страха и неизвесности код запослених и побољшању њиховог задовољства. Goleman (2000) тврди да ефикасно вођство приликом организационих трансформација захтева ауторитативни стил руковођења, при чему је важно створити хармонију и консензус, као и постављање високих стандарда за остварење перформанси (стр. 85). Међутим , теорија о значају лидерства током организационих трансформација фокус помера са трансакционог ка трансформационом лидерству. Трансформационо лидерство подразумева тип лидерства када лидер утиче на следбеника кроз идеализован утицај (харизму), инспирацију, интелектуалну стимулацију или индивидуално разматрање (Bass, 1999). Експлозивни раст значаја трансформационог лидерства настаје услед потребе за контролисањем неизвесности запослених и других негативних ефеката које изазивају организационе трансформације (Burns, 1978).

Lowe, Kroeck и Sivasubramaniam (1996) су извршили упоредно истраживање ставова запослених према трансакционом и трансформационом лидерству и дошли до закључка да ће значајно већи утицај на запослене остварити трансформациони лидери (стр. 413). Они инспиришу и мотивишу запослене да буду иновативни и инсистирају на томе да запослени приступе решавању проблема кроз различите перспективе, при чему их обесхрабрују да користе традиционалне методе за решавање проблема.

Bass (1999) издваја четири димензије трансформационог лидерства: инспирациона мотивација, харизма (идеализовани утицај), индивидуална разматрања и интелектуална стимулација. Инспирациона мотивација се односи на степен у којем лидери артикулишу пожељну будућности и својим примером демонстрирају запосленима како до ње доћи. Идеализован утицај се често назива харизматским утицајем и односи се на ситуацију када следбеници лидера доживљавају као узора, и на основу поштовања и поверења које према њему имају, спремни су да га следе у процесу остварења организационих циљева. Интелектуална стимулација од стране трансформационих лидера подстиче своје следбенике да буду креативни и да пронађу нове начине решавања проблема у циљу подстицања иновативности и превазилажења рутине у обављању посла. Индивидуално разматрање подразумева да трансформациони лидери имају улогу ментора који помажу запосленима да управљају својим циљевима и потребама, што ће довести до њиховог развоја.

У литератури се наводе разне студије које су доказале позитиван однос између трансформационог лидерства и задовољства запослених (Rafferty и Griffin, 2004; DeGroot, Kiker, и Cross, 2000; Jacobsen и House, 2001). Лидерство је одавно препознато као један од критичних фактора који утичу на успех спровођења организационих трансформација (Lind и Stevens, 2004; Sitkin и Pablo, 1992; Nemanich и Keller, 2007). У циљу даљег испитивања везе између трансформационог лидерства и задовољства запослених, спроведена су истраживања о различитим димензијама трансформационог вођства на задовољство. Chipunza, Samuel и Mariri (2013) истичу значај харизматског лидерства (идеализован утицај) на задовољство запослених и последично на раст перформанси (стр. 8341). Запослени осећају поштовање и поверење према харизматичном лидеру што

доприноси повећању посвећености запослених организацији и њиховој већој мотивацији ка остварењу бољих перформанси. Такође, Rafferty и Griffin (2004) закључују да интелектуална стимулација од стране лидера позитивно утичу на посвећеност запослених организацији (стр. 341). Запослени ће бити мотивисанији уколико имају простора за развој креативних решења превазилажења насталих проблема. Teerikangas, Very, и Pisano (2011) наглашавају значај инспирационе мотивације као аспекта трансформационог лидерства које ће утицати на задовољство запослених, а која се односи на активно укључивање лидера при помоћи запослених у реализацији организационих циљева (стр. 672).

На основу претходних закључака о утицају трансформационих лидера на запослене, постављена је следећа хипотеза:

Х2: Подршка трансформационих лидера током аквизиционог процеса има директан и позитиван утицај на задовољство запослених.

Такође, предмет истраживања је утицај трансформационог лидера на осећаје неизвесности и анксиозности код запослених услед организационих промена. Чак и када највиши менаџери знају до каквих ће промена доћи, често нису у могућности или не желе да разговарају о променама са запосленима. Тада, услед недостатка адекватних информација, запослени се ослањају на гласине и друге начине добијања информација које често нису истините. То доводи до пораста неизвесности, тензије и стреса. Ово имплицира да је једини начин да менаџери утичу на пораст неизвесности које носе мерџери и аквизиције јесте да комуницирају са запосленима о свим предвиђеним ефектима промене (Schweiger и DeNisi, 1991). Главни циљ адекватне комуникације са запосленима је да се утиче на њихову неизвесност (Bastien, 1987). Ефекат смањења неизвесности је редукција негативних исхода који из ње произилазе-пад перформанси запослених, губитак воље и тенденција промене посла (Ashford, Lee, и Bobko, 1989).

У циљу сагледавања утицаја трансформационог лидерства на емотивне реакције запослених, формирана је трећа истраживачка хипотеза у раду:

Х3: Подршка трансформационих лидера током аквизиционог процеса доводи до смањивања неизвесности код запослених.

2.3. ПЕРЦИПИРАН УТИЦАЈ НА КАРИЈЕРУ УСЛЕД ПРОЦЕСА АКВИЗИЦИЈЕ

За компаније велики губитак и потенцијални разлог неуспешних процеса мерџера и аквизиција може узроковати одлазак талентованих кадрова. Galpin и Hendon (2000) су након спроведеног истраживања последица процеса аквизиција на запослене, дошли до података да 47% запослених аквизиране компаније одлазе у року од годину дана од почетка процеса аквизиције, а 75% њих у року од три године од почетка процеса. Пораст нивоа стреса, ширење гласина у компанији и осећај страха и неизвесности могу имати негативан утицај на перцепцију запослених у погледу будуће каријере у аквизираној компанији (Mace и Montgomery, 1962). У литератури, негативни ефекти који се јављају код запослених услед ових промена названи су „синдромом спајања"(Buono, Bowditch, и Lewis, 1985). У спроведеним истраживањима потенцијалних ефеката аквизиције, бројни аутори (Coff, 1997; Somaya, Williamson, и Lorinkova, 2008; Mace и Montgomery, 1962) су дошли до закључка да запослени услед насталих промена осећају страх за сигурност своје позиције, што може изазвати високу стопу одласка кадрова. Међутим, у литератури постоје и схватања да позитивна пракса управљања људским ресурсима и адекватна организациона култура могу током ових облика реструктурирања утицати позитивно на ставове запослених о будућој каријери у компанији. Такве закључке истакли су аутори Froese, Pak, и Chong (2006) у студији о интернационалним аквизицијама у Кореји (стр. 104). Присуство позитивних ефеката на запослене услед процеса аквизиције доказано је и у студијама аутора Fairfield-Sonn, Ogilvie, и DelVecchio (2002) и Kavanagh и Ashkanasy (2006).

У циљу утврђивања утицаја процеса аквизиције на перципирани утицај на каријеру од стране запослених, постављења је четврта истраживачка хипотеза у раду:

Х4 : Запослени доживљавају аквизиције као прилику за напредовање у каријери.

3. РЕЗУЛТАТИ ИСТРАЖИВАЊА

Табела 1: Дескриптивна статистичка анализа и анализа поузданости

Варијабле	Н.	А.С.	Модус	Станд.девијација
Неизвесност запослених, Cronbach's Alpha = 0.833	103	5,3368	5,43	,74666
Током процеса аквизиције, имали сте страх да ћете остати без посла	103	5,7767	6,00	1,05656
Током процеса аквизиције, имали сте страх да ћете радити на позицијама за које нисте адекватно обучени	103	4,8350	4,00	,98117
Током процеса аквизиције, имали сте страх да ћете морати да промените локацију радног места	102	5,0784	5,00	1,05948

Током процеса аквизиције, имали сте страх да ће Вам бити промењен колектив	102	5,4804	5,00	1,10561
Током процеса аквизиције, имали сте страх да се нећете се уклопити у промењене услове рад изазване аквизицијом	103	5,544	6,0	1,1528
Током процеса аквизиције, имали сте страх да је будућност организационог дела у коме радите неизвесна	102	5,2451	5,00	,91669
Током процеса аквизиције, имали сте страх да ћете бити приморани да прихватите раније пензионисање	103	5,4369	6,00	1,13474
Током процеса аквизиције, имали сте страх да ће Вам бити промењена примања и број радних сати током недеље	101	5,208	5,0	1,0800
Подршка трансформационих лидера током аквизиционог процеса, Cronbach's Alpha = 0.843	103	5,4913	5,88	,78998
Инспирационо лидерство				
Надређени менаџер оптимистично говори о будућности	103	5,6990	6,00	1,11878
Надређени менаџер комуницира запосленима своје најважније вредности и уверења	103	5,0388	5,00	1,03774
Надређени менаџер сагледава потребе, вредности и уверења сваког запосленог	103	5,6408	6,00	1,15346
Идеализовани утицај				
Менаџери су својим примером деловали подстицајно на запослене	101	5,2673	5,00	1,17381
Надређени менаџер сагледава различите перспективе приликом решавања проблема	103	5,3107	5,00	1,08492
Индивидуална разматрања				
Надређени менаџер ми пружа помоћ у превазилажењу тешкоћа кроз аквизициони процес	103	5,6699	7,00	1,23184
Интелектуална стимулација				
Менаџери су наглашавали важност и неопходност спровођења промена у предузећу	103	5,5728	5,00	1,09008
Задовољство запослених, Cronbach's Alpha = 0.771	102	5,6967	7,00	,47817
Задовољан сам у целини послом који обављам	102	5,8529	6,00	1,08452
Задовољан сам својим колективом и међуљудским односима у компанији	99	5,4343	6,00	1,26299
Са својим руководиоцем имам одличну сарадњу	99	5,5253	6,00	1,28049
Задовољан сам општом политиком компензације у компанији	102	6,0392	5,00	,64365
Мислим да су могућности и шансе за унапређење задовољавајуће	99	5,4444	7,00	1,18857
Мислим да је лидерство у организацији позитивно	96	5,8125	6,00	1,01890
Верујем да систем подршке од стране руководиоца олакшава обављање посла	99	5,7273	6,00	1,00831
Перципиран утицај на каријеру, Cronbach's Alpha = 0.822	**103**	**3,4223**	**3,00**	**,98264**
Моја тренутна позиција у банци је адекватна, тако да не намеравам да променим посао у периоду краћем од годину дана	95	3,1684	2,00	1,34206
Након процеса аквизиције, могућности за мој лични развој су се повећале	98	3,7449	2,00	1,77794
Настале промене видим као изазов да развијам своју каријеру	95	3,4632	4,00	1,07000

Извор: Аутор на основу Schweiger и DeNisi (1991)

На основу вредности у Табели 1 можемо закључити да је неизвесност запослених током аквизиционог процеса била висока, како је аритметичка средина изнад 5 (АС = 5,33). Највећи степен слагања био је са констатацијом да су запослени осећали страх да ће остати без посла (АС = 5,77 ; МОД=5,43).

Испитаници су исказали висок степен слагања са сваком констатацијом о осећају неизвесности током аквизиционих процеса, како су за све варијабле просечне вредности релативно високе (АС > 4,8) и како се највећи број испитаника за наведене исказе опредељивао за оцену 5 (Делимично се слажем), и оцену 6 (Углавном се слажем), на основу чега се закључује да ће сам аквизициони процес изазвати пораст неизвесности, чиме је потврђена прва истраживачка хипотеза (Х1).

За тестирање друге постављене хипотезе у раду, мерен је утицај трансформационог лидерства (независне варијабле) на задовољство запослених (зависне варијабле), путем вишеструке линеарне регресије (Табела 2). Спровођење регресионе анализе подразумева испуњеност степена мултиколинеарности између променљивих. Сматра се да мултиколинеарност, односно присуство јаке корелације између променљивих, не представља проблем уколико је вредност VIF коефицијента мања од 5, у свим паровима варијабли. У овом случају, VIF коефицијент се за све независне променљиве креће се испод 2, што значи да није присутна мултиколинеарност. На основу резултата у Табели 2 закључујемо да најзначајнији утицај на задовољство запослених има има

варијабла инспирационе мотивације (β= 0,508; p= 0,00), док димензија интелектуалне стимулације нема директан утицај на задовољство запослених (β = 0,104; p= 0,180).

Tabela 2: Регресиона анализа димензија трансформационог лидерства на задовољство запослених

Model	Beta	t	Significance(p)	Adjusted R²	VIF
Инспирациона мотивација	.508	6.502	.000	0.494	1.208
Идеализован утицај	.406	5.308	.000		1.155
Индивидуална разматрања	.417	5.676	.000		1.066
Интелектуална стимулација	.104	1.351	.180		1.170

Извор: Аутор

Модел је статистички значајан (p=0,00) и објашњава 49,4% варијансе зависне променљиве. Резултати регресионе анализе показују трансформационо лидерство има статистички значајан утицај на задовољство запослених током аквизиционих промена, чиме је потврђена друга истраживачка хипотеза (X2).

Затим, испитиван је утицај трансформационог лидерства на неизвесност запослених (Табела 3). Модел је статистички значајан (p= 0.00), а на основу коефицијента β = -0.333 може се закључити да ће се неизвесност смањивати за 0,33 уколико се варијабла трансформационог лидерства повећа за једну јединицу. Наведени резултати указују да ће трансформационо лидерство у предузећу довести до смањења неизвесности код запослених, и тиме је потврђена трећа истраживачка хипотеза у раду (X3).

Табела 3: Регресиона анализа трансформационог лидерства на неизвесност запослених

Model	Beta	t	Significance(p)	Adjusted R²	VIF
(Constant)		5.204	0.000		
Трансформационо лидерство	-.333	-2.920	0.004	0.279	0.000

Извор: Аутор

Четврта постављена хипотеза у раду испитује ставове запослених о перцепцији аквизиционих промена као шанси за унапређење каријере. Испитаници су на тврдње о могућностима напредовања након аквизиционог процеса већином опредељивали за оцену 3-делимично се не слажем (МОД= 3), док је вредност аритметичке средине износила 3,17. Најнижи степен слагања испитаници су показали са констатацијом „Моја тренутна позиција у банци је адекватна, тако да не намеравам да променим посао у периоду краће од годину дана" (АС = 3,17; МОД= 2), на основу чега се закључује да су запослени најчешће тежили промени посла услед насталих организационих промена. Сагледавајући резултате дескриптивне статистике (Табела 1), примећујемо да је са свим исказима варијабле перципираног утицаја на каријеру просечан степен слагања био испод 3,7 (АС < 3,7) што указује на релативно негативну перцепцију могућности за развој каријере након аквизиционих процеса.

Према добијеним резултатима, хипотеза X4 се не може прихватити. Запослени углавном неће перципирати аквизиционе промене као шансу за унапређење каријере.

4. ЗАКЉУЧАК

У условима комплексних промена, као што је процес преузимања предузећа, адекватно трансформационо лидерство може значајно утицати на повећање задовољства запослених и на редукцију њихове неизвесности. У циљу смањења стопе одласка квалитетних кадрова из компаније током процеса припајања, било је потребно сагледати које су то карактеристике и стилови понашања лидера, који ће утицати на раст задовољства запослених током организационих промена. Лидери који су фокусирани на морал, етику и повереље, који помажу запосленима у достизању инспиративне визије компаније, као и лидери који подржавају нове начине размишљања, директно ће допринети порасту задовољства запослених.

Резултати истраживања имају значајне теоријске и практичне импликације. Теоријске импликације односе се на сагледавање дејства трансформационих лидера на неизвесност и задовољство запослених током организационих промена. Имајући у виду да су се студије из области трансформационог лидерства углавном фокусирале на утицај трансформационог лидерства на организационе перформансе, спроведено истраживање доприноси попуњавању јаза у литератури фокусирајући се на утицај лидерства на задовољство послом и неизвесност код запослених. Практичне импликације студије односе се на давање одређених смерница менаџерима укљученим у процесе преузимања предузећа. Пре свега, неопходно је трансакционо лидерство заменити трансформационим, и на руководеће позиције селектовати кадрове који имају потребне особине трансформационих лидера. Уколико компаније немају одговарајуће кадрове, пожељно је организовати обуке за стицање неопходних вештина трансформационог лидера.

Осим тога, студија је указала да ће најава процеса аквизиције довести до пораста неизвесности код запослених. Менаџмент компаније може проактивно деловати на смањење неизвесности тако што ће запосленим комуницирати правовремено све релевантне информације о променама које се тичу могуће промене позиције и будућности организационог дела у којем тренутно раде.

Ограничење ове студије огледа се у томе што узорком нису обухваћени топ менаџери банака, и њихови ставови поводом процеса припајања. Такође, коришћена метода за прикупљање података била је попуњавање анкетног упитника од стране запослених. Спровођењем директних интервјуа са запосленима, могуће би било спровести детаљнију анализу њихових ставова и реакција.

У будућим истраживањима, значајно би било направити компарацију ставова запослених компанија која врше аквизицију и оних која су предмет аквизиције, у циљу дубље анализе истраживачког проблема. Затим, пожељно је истраживање спровести у сукцесивним временским интервалима, како би се извршило поређење ставова запослених о променама пре најаве процеса аквизиције и након самог завршетка процеса. Како би закључци били обухватнији и темељнији, пожељно је узорком обухватити менаџере сва три нивоа, у циљу сагледавања различитих перцепција о ефектима процеса припајања.

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НАМЕРА КОРИШЋЕЊА УСЛУГА ЗЕЛЕНОГ БАНКАРСТВА У КОНТЕКСТУ ЕНЕРГЕТСКИХ ИЗАЗОВА

Апстракт: Сукоб у Украјини изазвао је низ поремећаја у различитим секторима, укључујући и енергетски. Раст цена енергената, нарочито гаса и нафте, поново је у први план ставио коришћење обновљивих извора енергије и смањење енергетске зависности. Један од проблема у тој области тиче се финансирања. У складу са тим, у раду је представљен концепт зеленог банкарства, његови основни циљеви и услуге. Посебна пажња је посвећена анализи намера коришћења услуга зеленог банкарства, узимајући у обзир одређене демографске карактеристике испитаника. Подаци су прикупљени помоћу упитника, где је намера коришћења наведених услуга мерена са скалом која се састоји из четири ставке. Узорак је чинило 98 испитаника. Након провере поузданости и валидности скале, спроведене су одговарајуће анализе 2023. године. Резултати истраживања указују на постојање високог нивоа намера коришћења услуга зеленог банкарства.

Кључне речи: зелено банкарство, намера, енергетски изазови

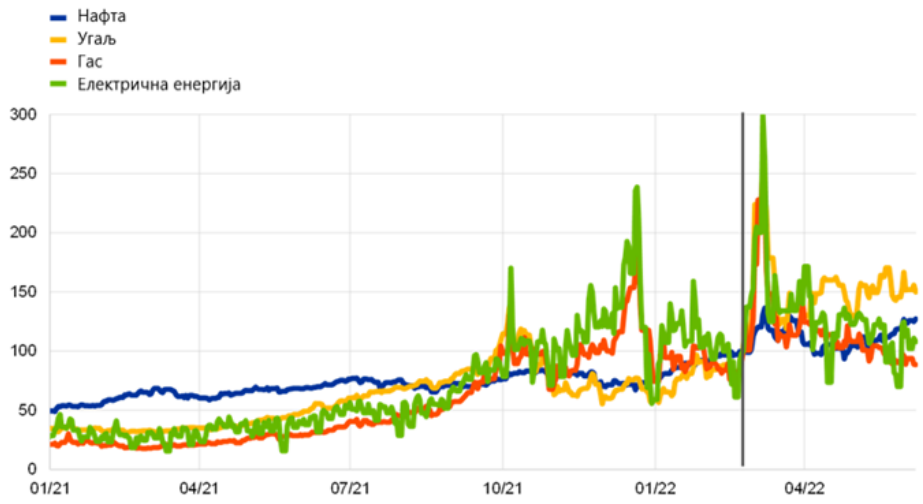
INTENTION TO USE GREEN BANKING SERVICES IN THE CONTEXT OF ENERGY CHALLENGES

Abstract: The conflict in Ukraine has caused a series of disruptions in various sectors, including the energy sector. The rise in energy prices, especially gas and oil, has once again brought the use of renewable energy sources and the reduction of energy dependence to the fore. One of the problems in that field concerns financing. Accordingly, the paper presents the concept of green banking, its basic goals, and its services. Special attention was paid to the analysis of intentions to use green banking services, taking into account certain demographic characteristics of respondents. The data was collected using a questionnaire, where the intention to use the aforementioned services was measured with a scale consisting of four items. The sample consisted of 98 respondents. After checking the reliability and validity of the scale, appropriate analyses were conducted in 2023. The research results indicate a relatively high level of intention to use green banking services.

Keywords: green banking, intention, energy challenges

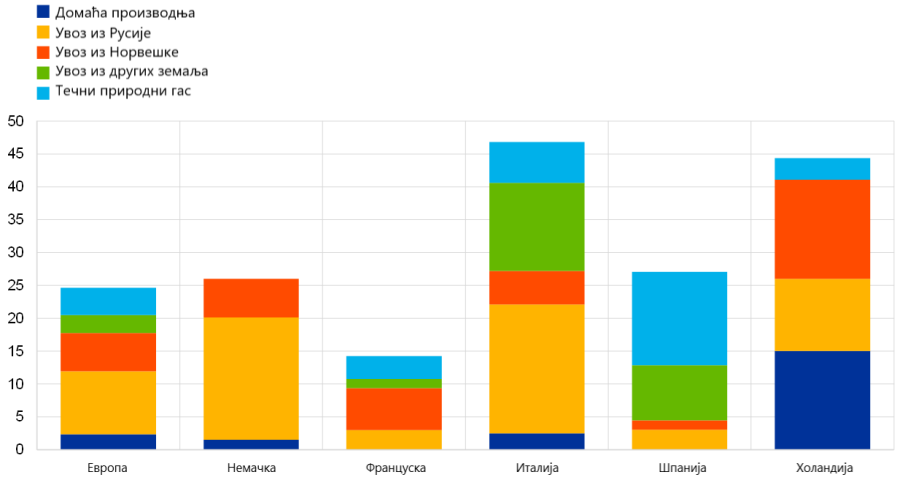
1. УВОД

Сукоб у Украјини уроковао је низ проблема, укључујући и економске. Као што се може видети на Слици 1. након почетка сукоба, цене нафте, угља, гаса и електричне енергије значајно су се повећале. Ситуација на тржишту је додатно закомпликована са увођењем санцкија Руској Федерацији од стране Европске Уније.



Слика 1: Цене енергената пре и након почетка сукоба у Украјини (индекс: 23.02.2022. = 100)
Извор: https://www.ecb.europa.eu/pub/economic-bulletin/focus/2022/html/ecb.ebbox202204_01~68ef3c3dc6.en.html

Један од проблема на пољу енергетике за већи број европских земаља тиче се зависности од увоза нафте и природног гаса. На пример, када је у питању Немачка, највећи део потребе за природним гасом задовољава се увозом из Русије, док се знатно мањи део надомешћује кроз домаћу производњу, односно увоз из Норвешке (Слика 2).



Слика 2: Учешће увоза гаса у примарној потрошњи
Извор: https://www.ecb.europa.eu/pub/economic-bulletin/focus/2022/html/ecb.ebbox202204_01~68ef3c3dc6.en.html

У светлу наведених проблема, све већа пажња се посвећује примени енергетски ефикасних решења и коришћењу обновљивих извора енергије, како од стране привредних субјеката, тако и од стране домаћинстава. Важну улогу у томе могу имати банке, које кроз понуду адекватних производа и услуга могу повећати еколошку свест и подстаћи жељено понашање код својих клијената. У складу са тим, у наставку рада су предсатвљене основе зеленог банкарства, након чега су истражене намере у вези са коришћењем његових услуга.

2. КОНЦЕПТ ЗЕЛЕНОГ БАНКАРСТВА

Концепт зеленог банкарства први пут је представљен 1980. године од стране „Triodos“ банке (назив банке потиче од грчке речи “tri hodos” или „тросмерни приступ“ – људи (енгл. „people“), планета (енгл. „planet“) и профит (енгл. „profit“)); при томе, сама идеја о таквој иницијативи је потекла још 1968. године од студијске групе која је истраживала одрживе начине управљања новцем (Apostoaie и сар., 2019, стр. 2-3). За зелено банкарство се везују различити појмови, као што су друштвено одговорно банкарство, одрживо банкарство, или етично банкарство (Zhang и сар. 2022), и различита објашњења. Нека од њих су приказана у следећој табели.

Табела 1: Објашњења зеленог банкарства

Објашњења	Извори
Зелено банкарство је банкарство у свим аспектима пословања (прикупљање депозита, давање кредита, финансирање спољнотрговинских послова, лизинг послови, инвестициони фондови, кастоди услуге итд.) које је оријентисано на очување животне средине.	Zhelyazkova и Kitanov (2015, стр. 310)
Зелено банкарство је нови облик банкарства оријентисан ка заштити животне средине и одрживог развоја.	Alam и сар. (2017, стр. 11)
Зелено банкарство је је облик банкарства са крајњим циљем очувања животне средине и заштите природних ресурса, узимајући у обзир све друштвене и еколошке факторе.	Zhang и сар. (2022, стр. 2)
Зелено банкарство се односи на банке које спроводе и асистирају у реализацији еколошких пракси кроз своје интерне и екстерне операције.	Bose и сар. (2020, стр. 165)
Зелено банкарство је банкарска идеологија коју је банкарски сектор усвојио са циљем инкорпорирања вредности еколошке етике у свакодневне банкарске операције и финансијски портфолио.	Bukhari и сар. (2022, стр. 288)
Зелено банкарство је инклузивна банкарска активност која поред остваривања профита, укључује и унапређење благостања.	Bouteraa и сар. (2021, стр. 190)

Извор: Аутори

Bouteraa и сар. (2021) зелено банкарство доводе у везу са различитим финансијским производима и услугама, заснованим на примени савремених информационих система (електронско банкарство, мобилно банкарство, електронска плаћања и др.). Детаљан преглед производа и услуга зеленог банкарства дали су Park и Kim (2020, стр. 7), издвајајући следећих шест категорија, са припадајућим поткатегоријама:

- зајам за „зелене“ пројекте и опрему (зајам предузећима, зајам физичким лицима, финансирање пројеката),
- осигурање (осигурање електричних аутомобила),
- секјуритизација („зелене обвезнице“ и „warehousing“),
- инвестирање у предузећа и фондове посвећене зеленим пројектима и технологијама („venture capital“ и „private equity funds“),
- брокерски и маркет мејкер послови са зеленим обвезницама и карбонским кредитима,
- техничка подршка (саветодавне услуге и изградња капацитета).

Кроз понуду наведених производа и услуга, циљеви зеленог банкарства нису стриктно везани само за остваривање профита. Према Bouteraa и сар. (2021), зелене банке теже ка испоруци поузданих и ефикасних услуга, праћених нижим трошковима, са циљем заштите природног окружења и успостављања друштвеног благостања.

3. МЕТОДОЛОГИЈА ИСТРАЖИВАЊА

У раду је истражена намера коришћења услуга зеленог банкарства. Узорак чини 98 испитаника, од којих су 51% особе женског пола; просечан број година испитаника је мањи од 38.
За мерење намере, коришћена је скала (прилагођена према Taneja и Ali (2021)), која се састоји из четири ставке. Испитаници су исте вредновали оценама од 1 („у потпуности се не слажем“) до 5 („у потпуности се слажем“). Када је у питању тестирање поузданости скале, добијена је задовољавајућа вредност коефицијента „Cronbach's Alpha“ (већа од 0,7). Резултати KMO мере адекватности узорковања од 0,684 су прихватљиви, а потврђена је и статистичка значајност „Bartlett“ теста од $p<0,01$ (Табела 2).

Табела 2: KMO и Bartlett тест

Kaiser-Meyer-Olkin Measure of Sampling Adequacy		0,684
Bartlett's Test of Sphericity	Approx. Chi-Square	346,205
	df	6
	Sig.	0,000

Извор: Аутори

У Табели 3. може се видети да је издвојен један фактор који објашњава 71,679% варијансе.

Табела 3: Објашњење варијансе

Factor	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	3,181	79,519	79,519	2,867	71,679	71,679
2	0,496	12,391	91,909			
3	0,260	6,508	98,418			
4	0,063	1,582	100,000			

Извор: Аутори

У наставку, намере коришћења услуга зеленог банкарства су сагледане са аспекта пола и узраста. За ту сврху, примењени су т-тест и корелациона анализа 2023. године.

4. РЕЗУЛТАТИ ИСТРАЖИВАЊА

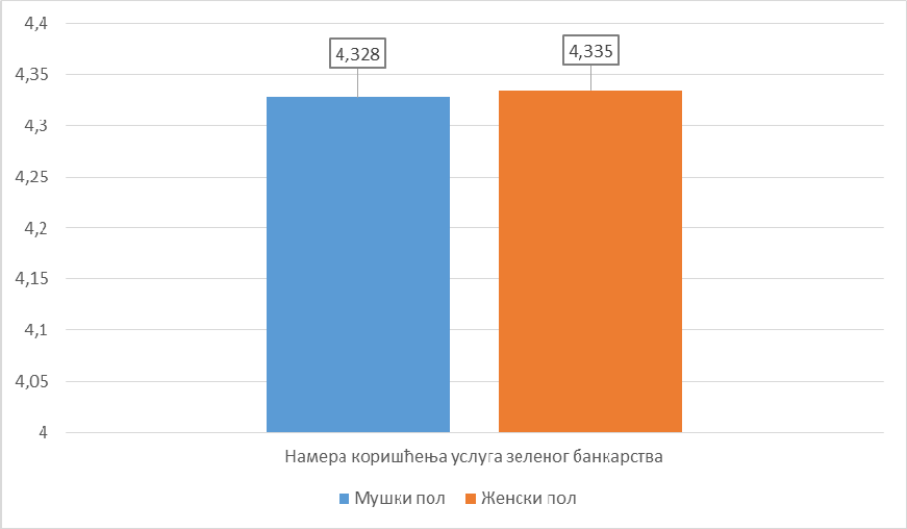
Просечне оцене испитаника за сваку ставку, укључујући и њихов заједнички просек, приказане су у Табели 4.

Табела 4: Намере коришћења услуга зеленог банкарства

Ставке	Просечне вредности
Намеравам да користим услуге зеленог банкарства.	4,3980
Предвиђам да ћу у будућности користити услуге зеленог банкарства.	4,2449
У будућности планирам да користим услуге зеленог банкарства.	4,3061
Подржао бих и препоручио коришћење услуга зеленог банкарства.	4,3776
Укупан просек	4,3316

Извор: Аутори

Компарација просечних вредности намера коришћења услуга зеченог банкарства је извршена са аспекта пола. Као што се може видети на Слици 3, незнатна разлика је на страни испитаница женског пола.



Слика 3: Намера коришћења услуга зеленог банкарства – пол
Извор: Аутори

Разлика између испитаника мушког и женског пола тестирана је применом Т-теста. Његови резултати (Табела 5) показују да са аспекта пола не постоји статистички значајна разлика у просечној вредности намера коришћења услуга зеленог банкарства.

Табела 5: Т-тест

Independent Samples Test						
	Levene's Test for Equality of Variances		t-test for Equality of Means			
	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference
Equal variances assumed	3,815	0,054	-0,061	96	0,951	-0,00688
Equal variances not assumed			-0,062	93,040	0,951	-0,00688

Извор: Аутори

Када је у питању однос узраста испитаника и намере коришћења услуга зеленог банкарства, извршена је корелациона анализа. Њени резултати су представљени у Табели 6.

Табела 6: Корелациона анализа

		Године	Намера
Године	Pearson Correlation	1	0,183
	Sig. (2-tailed)		0,071
	N	98	98
Намера	Pearson Correlation	0,183	1
	Sig. (2-tailed)	0,071	
	N	98	98

Извор: Аутори

Вредност коефицијента корелације од 0,183 указује на постојање позитивне везе између намере коришћења услуга зеленог банкарства и узраста. Међутим, како је $p>0,05$, може се закључити да она није статистички значајна.

5. ЗАКЉУЧАК

Просечна вредност намере коришћења услуга зеленог банкарства је висока, имајући у виду да на скали од 1 до 5, она прелази 4. Важно је напоменути да је просечна вредност већа од 4 забележена и код сваке од четири појединачне ставке. Када је у питању однос намере коришћења услуга зеленог банкарства и две демографске карактеристике испитаника (пола и узраста) нису идентификовани статистички значајни резултати.

Висок ниво намера указује на спремност испитаника да користе услуге зеленог банкарства. У складу са тим, банке би требало да већу пажњу посвете наведеним услугама, и (уколико још нису) уврсте их у свој портфолио. На тај начин, не само да ће потенцијално одговорити захтевима клијената, и побољшати свој имиџ, већ могу и допринети очувању животне средине.

Поред банака, значајну улогу у реализацији целог концепта може имати држава, али и организације из других привредних и друштвених сфера. Успостављање партнерске сарадње између различитих учесника допринело би бољој промоцији и ефикаснијем коришћењу услуга зеленог банкарства, што би за резултат могло имати већи број еколошки прихватљивих пројеката.

Будућа истраживања могу укључити више социо-демографских варијабли испитаника. Такође, намера клијената може бити истражена и са аспекта типова услуга зеленог банкарства.

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CIRCULAR ECONOMY FUNDING AND ITS POTENTIAL IMPACT ON FINANCIAL PERFORMANCE: A BIBLIOGRAPHIC REVIEW

Abstract: Circular Economy initiatives have created new challenges and opportunities for companies. Literature on the Circular Economy Funding is scarce as well as it is for Circular Economy impact on Financial Performance.
Understanding the scientific knowledge about the connection of the Circular Economy with these two different concepts is important to advance theory and identify the literature gap in this field. To achieve this, we used a bibliometric analysis tool: R Bibliometrix. Relevant literature up to 2022 is collected using the Web of Science database. First, this study intends to analyze the literature from multiple aspects, including journals, keywords, and countries, to define the characteristics of publications. Then, a bibliographic factorial analysis is conducted. Despite the high contribution of present publications, this is a recent area in the literature, so updating scientific production is a relevant contribution.

Keywords: Circular Economy; Sustainability; Public Funding; Financial Performance; Bibliometric Analysis; bibliometrix.

1. INTRODUCTION

The greater the circularity of materials in product chains, the smaller the natural resources needed to produce new materials, so, avoiding material production benefits the environment. The most of studies on circular economy traditionally focus on the environmental aspect, however, the main issue, regarding the industrial adoption of these initiatives is the financial viability (Bockholt et al., 2020).
Knowing that funding eases the challenges faced by companies in a highly competitive environment, incentivizes their growth, and bolsters the region in which they operate (Brzakova & Pridalova, 2016), turns out to be a crucial instrument for promoting the adoption of these policies and initiatives (Wang et al., 2014). Thus, on the other hand, is pertinent to study the potential relationship between the concepts of funding and the circular economy but, on the other hand, comprehending the benefits and potential impacts of the circular economy on financial performance is also crucial. The circular economy might optimize the use of resources by extending their lifespan, reducing waste, and promoting closed-loop systems that minimize the extraction of new raw materials, leading to more resilient and stable economic systems.
Given that the circular economy has become an area of increasing concern, the amount of academic research on this topic has increased significantly in recent years, becoming increasingly difficult to keep up with all the latest studies. So, the present study aims to map the research trends of the circular economy in terms of funding and financial performance based on a bibliometric approach. Specifically, the objectives of this article are to answer the following questions:
1. Which countries have contributed the most to this field research?
2. How do the countries relate to and cooperate with each other in academic research?
3. What are the most journals and keywords that are worth attention?
4. What are the research hotspots in this field?

By contributing to the systematization of the existing literature in the field of circular economy, it is hoped that this article can provide an "overview" of this topic for future studies and help researchers to identify topics that deserve further

analysis. The study is articulated as follows. Section 2 presents a brief theoretical framework of the relationship established and studied between the circular economy, funding and financial performance. Section 3 describes the research methods we used to collect and analyze the data. Section 4 illustrates the main results of the bibliometric analysis and Section 5 presents the conclusions and implications for research.

2. LITERATURE REVIEW

2.1. Funding and Financial Performance in Circular Economy

The concept of circular economy has considerable attention from both academic scholars and practitioners, as it is viewed as a practical means for businesses to implement the widely-discussed objective of sustainable development (Ghisellini et al., 2016).

One of the prevalent definitions attributed to the circular economy pertains to an industrial system that is restorative or regenerative in both intention and design. This approach eschews the traditional paradigm of 'end of life' in favor of a restorative approach. Additionally, the circular economy emphasizes the use of renewable energy, disapproves of toxic chemicals that may impede reuse, and aims to eradicate waste through an enhanced focus on material design, products, systems, and business models (Kirchherr et al., 2017).

A circular economy involves a fundamental shift from the traditional linear economic model towards a circular system. The primary objective of this transition is to decrease the dependency on raw materials and energy and mitigate the adverse environmental impact of production and consumption. The key goals of a circular economy include minimizing the flow of materials, improving energy efficiency, and ensuring the sustainable renewal of natural and social capital across various stages. By adopting a circular economy, the production process requires fewer resources to maintain a steady level of output, either through a reduction in resource consumption or the substitution of virgin materials with recycled ones (Scarpellini et al., 2020).

The contemporary literature underscores that the circular economy model accentuates the financial gains for companies and the reduction of resource consumption (Geissdoerfer et al., 2017). There is evidence that the adoption of circular economy initiatives can have a positive impact on financial performance (Yu et al., 2022). Similarly, Kwarteng et al. (2022) shows that the implementation of circular economies policies, such as the reducing, reusing, recycling, recovery, and restoration of resources used in manufacturing, distribution, and consumption processes, contributes to improved financial efficiency.

Being circular economy contribute to financial performance, funding is presented as one big catalyst. Capital-intensive industries can benefit from the adoption of circular economy principles in achieving long-term sustainability. However, the high initial costs associated with implementing clean and lean production practices and technologies present a significant financial barrier for companies. The lack of financial resources and funding is considered the primary impediment for these industries in transitioning towards a circular model (Khan & Ali, 2022).

According to Triguero et al. (2022), the adoption of eco-innovation practices can be positively impacted by funding sources such as grants, guarantees, or loans. External factors, such as government support, are also critical determinants in the successful transition toward a circular economy model.

3. METHODOLOGY

Bibliometric analysis is a systematic method that involves quantifying and examining the patterns of scientific publications, citations, and collaborations within a particular field or research area. In recent years, various bibliometric software tools have been developed to aid researchers in analyzing and visualizing bibliometric data. In this study, we used the Bibliometrix R package as scientometric software tool (Aria and Currurullo, 2017) to analyze the research output, citation patterns, and collaboration networks in the field of circular economy funding and its impact on Financial Performance. The primary objective of this analysis is to acquire a comprehensive understanding of the research landscape in this domain.

3.1. Data Collection

To obtain the publications' dataset we used the Web of Science (WOS), a powerful research database that offers access to a vast collection of scientific literature. It is operated by Clarivate Analytics and provides advanced search capabilities that allow users to conduct keyword searches and export the returned records. Inside WOS, we selected de following databases: Science Citation Index Expanded (SCI-EXPANDED), Social Sciences Citation Index (SSCI), and Emerging Sources Citation Index (ESCI).

We queried the platform with the following keywords, under the fields: title, abstract or keywords: ("Circular Economy" AND "Funding") OR ("Circular Economy" AND "Financial Performance") OR ("Circular Business Model" AND "Funding") OR ("Circular Business Model" AND "Financial Performance").
The search is limited to documents written in English in the form of articles, review articles and proceeding papers. Documents published in the incomplete year of 2023 were not included. The platform WOS allows the user to select documents by categories, reducing the probability of out of context document integration. The categories select were: Environment Sciences, Green Sustainable science Technology, Environmental Studies, Engineering Environmental, Management, Business, Economics and Business Finance. Table 1 presents the applied search criteria and the number of documents that remained in the process of the conducted analysis.

Table 1 - Search criteria in WOS platform

Search Criterias	Entry	Results
Search field	Article title, Abstract, Keywords	-
Keywords and Boolean terms	"Circular Economy" AND "Funding" OR "Financial Performance" "Circular Business Model"" AND "Funding" OR "Financial Performance"	156
Filter 1	Publication year: 2023 (NOT)	147
Filter 2	Document types: Articles, Review articles, Proceeding Paper	144
Filter 3	Language: English	140
Filter 4	Web of Science Categories: Environment Sciences, Green Sustainable science Technology, Environmental Studies, Engineering Environmental, Management, Business, Economics and Business Finance.	112

The next step involved the reading of the abstracts of the 112 resulting scientific publications. Only the articles approaching the scope of the study were selected. As a result, a total of 103 documents were considered relevant to the research.
The results were exported in plain text format from the WOS. Plain text format provides a convenient way to store and process bibliographic data outside of the WOS platform. It is a simple, human-readable format that can be easily imported into various software tools and programming languages for further analysis. In this case, the extracted dataset was imported into the R tool bibliometrix (Aria & Cuccurullo, 2017), a user-friendly software capable of identifying emerging trends, influential authors, and key research topics. Its flexible and customizable nature makes it a valuable tool for bibliometric analysis.

3.2. Data Analysis

Our analysis focused on scientific publications related to annual, country, and source production. By studying the annual production, we gained insight into the development of the theme over time. Similarly, by examining country production, we were able to assess the global reach of the theme. Finally, our investigation into source production provided us with valuable information about the top publishers in this field.
The analysis of the most frequently used words is a crucial aspect of this bibliometric study, as it enables us to gain a better understanding of the prevalent themes, concepts, and topics within the research field. By examining the most commonly used words, we can identify the key topics that are frequently discussed in the literature on the Circular Economy together with Funding and Financial Performance.
Conceptual Structure represents relations among concepts or words in a set of publications. Factorial Analysis was the chosen method for conceptual structure study, as it allows for data dimension reduction, and it is useful to identify subfields and clusters of topics. We have used Multiple Correspondence Analysis since it permits us to represent a summary of the relationship existing between a set of categorical variables forming multiple contingency tables (Di Franco, 2016), we opted to represent these values in a dendrogram diagram.

4. FINDINGS

4.1. Circular Economy relationship with Funding and Financial Performance

This bibliometric analysis presents an overview of 103 documents sourced from 52 journals, books, and other scholarly sources between 2012 and 2022. The analysis examines the growth rate, age, and citation impact of these documents, as well as the keywords, authors, and collaboration patterns present in the literature. Figure 1 presents the main metrics.

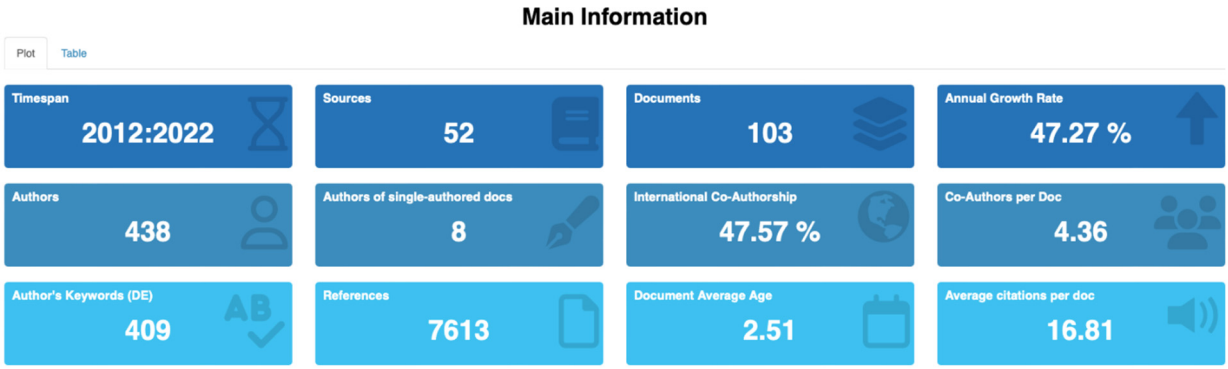

Figure 1 - Main Information

4.1.1. Annual Scientific Production

The Figure 2 shows the trend in quantity of documents published between 2012 and 2022. A slowly growing trend from 2012 until 2020, with some variations, later, in 2022 it highly surged. It is a recent topic, with growing interest and study, the graph suggests that the relationship of the Circular economy with Funding and Financial performance is emerging at a notoriously high rate. Of the total of 103 analyzed documents 48 of them were published just in 2022, nearly 47%.

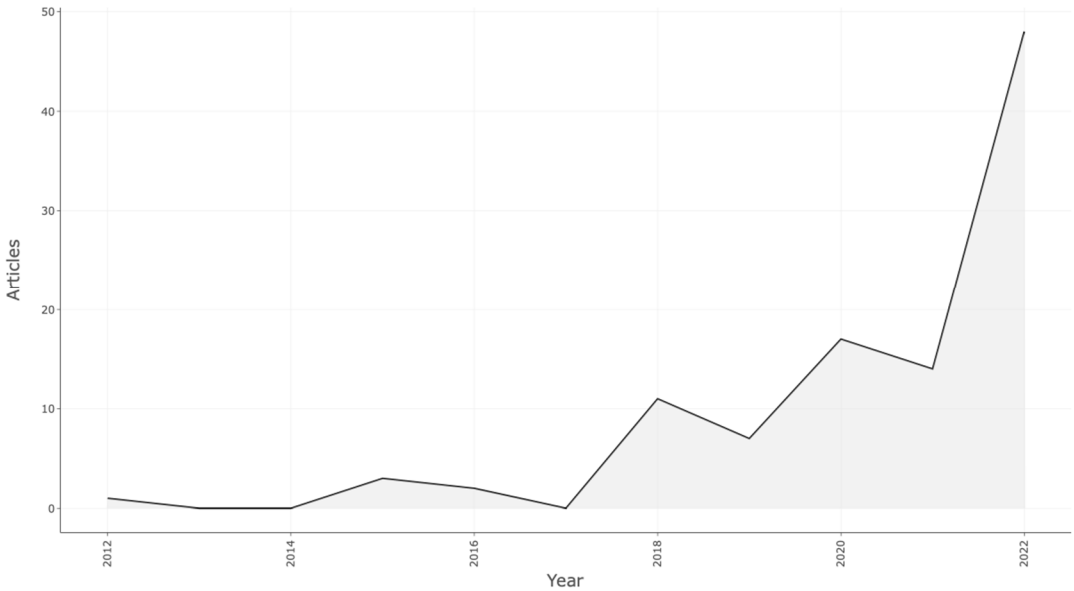

Figure 2 The annual number of publications

4.1.2. Scientific Production by Country

This analysis indicates the number of documents published by each country. This measure requires at least one author from a particular country, so the document is associated with the country. Figure 3 represents the distribution of the most productive countries, where the darkest blue areas are the most productive ones. The United Kingdom leads with 37 documents and 36% of the global scientific production, followed by China, with 33 documents (32%), and Italy with 25 documents (24%).

Figure 4 represents the country's collaboration in scientific production. The pink bar represents Multiple Country Publications (MCP) and the cyan ban represents Single Country Publications (SCP). MCP allows researchers to combine different countries´ expertise and resources to develop complex research questions and produce high-quality research

outputs. Between the group of countries that published the most, we can highlight Romania, Spain, and Sweden with full SCP. We can also find Countries that only have MCP, being Netherlands, Austria, and France.

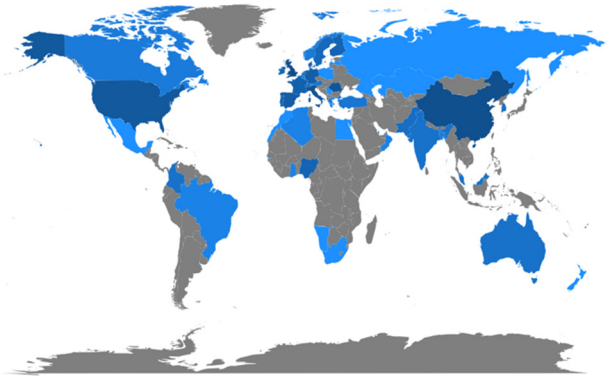

Figure 3 Scientific Production Global Map

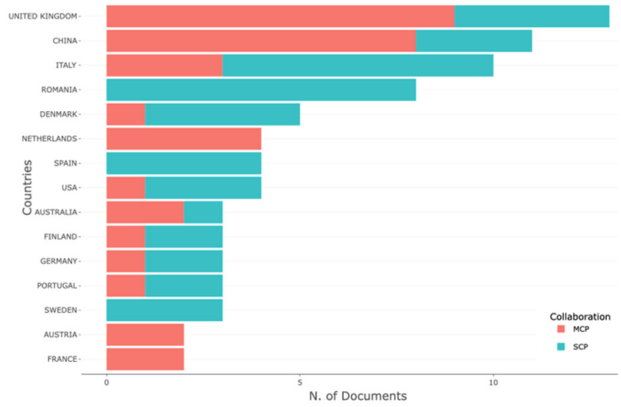

Figure 4 Collaborations by Country

4.1.3. Scientific Production by Source

The source h-index, Figure 5, is calculated based on the number of papers published by the source and the number of citations that each paper has received. To obtain the h-index, a source's publications are ranked in descending order of the number of citations they have received. The h-index is then defined as the highest number of h such that the researcher has h publications that have each received at least h citations.
The h-index can be used as a metric to evaluate the impact of different sources on publishing in the Circular Economy together with Funding or Financial Impact. In this field *Journal of Cleaner Production* leads, followed by *Sustainability* and *Business Strategy and the Environment*, respectively.

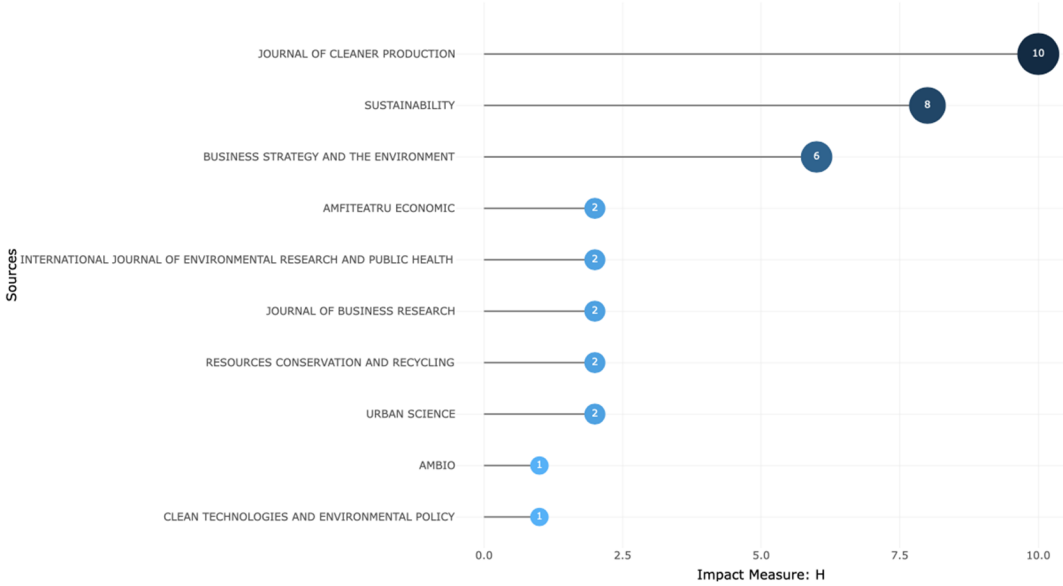

Figure 5 Most Relevant Sources

4.1.4. Most Frequent Words

The most frequent word analysis, Figure 6, is based on the keywords plus the recorded documents. Keywords Plus is generated by a computer algorithm, rather than being assigned by authors or indexers. It provides a way to expand a search and retrieve articles that are related to the original query (author's keywords) but may not include the exact terms used in the search.
The concepts with the highest frequency are "circular economy" and "financial performance", which are no surprise once they are part of the search query, so they naturally surged as frequently addressed topics.
Apart from these two concepts, others may indicate a strong connection with the researched field, and a potential key to further studies. Management and Impact are the most recurrent words, with 18 occurrences, followed by Barriers with 15

occurrences, Sustainability appearing 14 times, and Corporate Social Responsibility and Supply Chain Management both with 11 occurrences.

Figure 6 Most Frequent Words

4.2. Factorial Analysis

We performed an analysis of the keywords plus using a Factorial Approach, which enables the reduction of data dimensionality and representation of the data in a low-dimensional space. The dendrogram was chosen as the graphical representation of the factorial analysis, as depicted in Fig 7. The height in the dendrogram represents the distance or proximity between words or clusters of words, signifying the degree of mutual essence between them. The closer the words appear, the larger the proportion of documents that discuss them together. We identify closely situated words as similar words or words that contribute to a common topic.

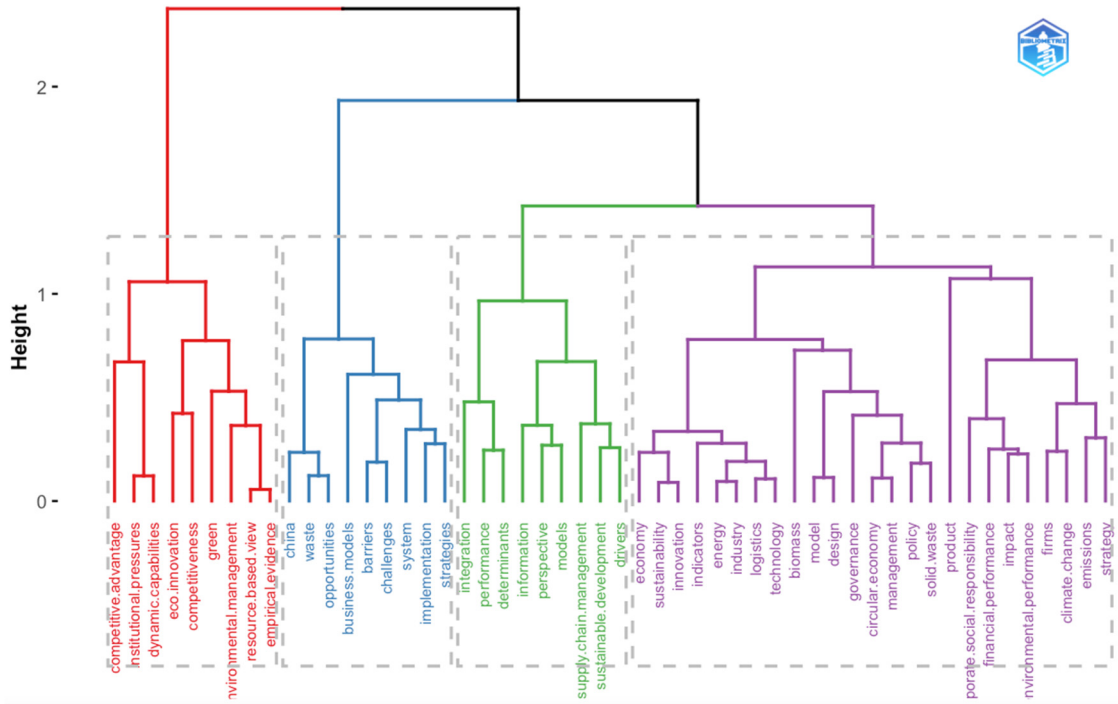

Figure 7 Topic Dendrogram (Factorial Analysis)

The four principal clusters that we have identified are conveniently color-coded. The interpretation of the meaning of these clusters was primarily based on a review of the documents analyzed in this study. However, we recognize that this interpretation may not be entirely unquestionable, and other interpretations may be possible. As such, the interpretation provided below is presented with the fundamentals of the literature supporting it.

The red cluster compiles keywords related to *competitiveness*, *environmental management*, and *ecological innovation*. Literature shows that competitiveness is a major driver to engage in green activities and stimulate environmental management initiatives (Chatzistamoulou & Tyllianakis, 2022).

The blue cluster gathers topics such as *business models*, *strategies*, *challenges,* and *opportunities*. The implementation of circular economy business models has become a subject of interest in recent literature, with a focus on the challenges, such as the high investment needed and lack of governmental support, and also on the opportunities, as firm growth and economic and environmental benefits (Demirel & Danisman, 2019).

The green cluster includes words such as *supply chain management* and *information*. A strong connection between these concepts is referred to in literature, S. Khan et al. (2021) defends that the possession of informational advantages can provide firms with a valuable means to evaluate their circular performance across various supply chain processes, particularly in comparison to their competitors.

Last cluster, represented in purple, groups some of the *macro disciplines* and *environmental* and *financial performance*. This cluster indicates how multidisciplinary and embracing environmental and financial performance is, appearing in the literature related to various fields of knowledge.

From the analysis carried out, it is also notorious the proximity of these concepts: *Circular Economy, Management,* and *Solid Waste*. The use of virgin materials can be substituted by industrial and consumer wastes, thereby effectively mitigating the inefficient and hazardous disposal of such wastes. The solid waste consists of roughly 85% biomass and other combustible substances that serve as a blend of energy-rich fuels highly contributing to a Circular Economy (Fiksel et al., 2021).

Another strong connection is shown between *financial performance* and *environmental performance*. Authors like Scarpellini et al., (2020) show us that Circular Economy related activities introduced by businesses improve the environmental and financial performance of firms in a CE framework. The overall literature reveals a close positive correlation between these concepts.

5. CONCLUSION

We conducted a bibliometric analysis to identify relevant literature up to 2022 and analyzed the characteristics of the publications from various aspects, including journals, keywords, and countries. Literature defines the concept of circular economy and its potential benefits for the environment, including the use of renewable energy and the reduction of waste and resource consumption. Analyzed literature also highlights the importance of funding for promoting circular economy initiatives and the positive impact that circular economy has on financial performance. By the employed conceptual structure study, four principal clusters have been identified in the literature through factorial analysis. These clusters

represent topics that are frequently discussed within the same documents. Notably, a strong positive correlation between financial and environmental performance has been observed in the literature.
Overall, the article concludes that circular economy is a recent area in the literature, and updating scientific production knowledge is a relevant contribution to the field.

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СТРАТЕГИЈЕ ИНТЕРНЕ КОМУНИКАЦИЈЕ У БАНКАМА БОСНЕ И ХЕРЦЕГОВИНЕ

Апстракт: Комуникациони процес обухвата дијељење порука које подразумијевају садржај, канале комуникације, примаоце порука који ће кроз јасне циљеве разумјети поруку. Кроз дефинисање циљева комуникације, наративна, импликацијска и одлучујућа стратегија су карактеристичне за већину комуникативних процеса. Како стратегија предузећа подразумијева идентификовање и планирање дугорочних циљева које ће предузеће да слиједи, кроз употребу доступних ресурса, а у циљу стицања конкурентске предности, тако комуникационе стратегије представљају планове за преношење информација везаних за одређену тему. Стратешки ефикасна комуникација игра круцијалну улогу за достизање конкурентске предности предузећа, али и незамјењив елемент за постизање успјеха у тимским пројектима. Њихов главни циљ је преношење порука које су кредибилне у што једноставнијем облику, које ће изазвати позитивну или негативну конотацију у предузећу. Ефикасна стратешка комуникација је много више од дијељења идеја унутар предузећа. Разумијевање ефикасних комуникационих стратегија може побољшати односе између запослених, те унаприједити пословање кроз много аспеката. Комуникационе стратегије требају да обухвате дефинисане циљеве, интересне групе, издвојене круцијалне поруке, методе комуницирања, те појашњене механизме фидбека (eng. *feedback*) о дефинисаној стратегији. Ефикасна стратешка комуникација, кроз подршку у предузећу те комуникациони план, обезбиједиће јасно разумијевање порука и вриједности које се преносе примаоцима. У дигиталном пословању, електронска размјена информација (eng. *Electronic Data Interchange - EDI*) чини комуникацију ефикаснијом, а одјељења предузећа мотивише да раде динамичније, продуктивније и ефективније. Транспарентност према запосленима се сматра једном од најефикаснијих комуникационих стратегија која је предузећу на располагању. Претварање мисли у ријечи, те јасно разумијевање истих кроз одабране канале комуникације, помаже да се јасно и ефикасно дијеле потребне информације. За кориштење различитих комуникационих канала, потребно је да постоји адекватна комуникациона политика за запослене, како би комуникација била организована, без много грешака, те досљедна. Различити састанци, електронске поште о доступним пројектима, годишњи билтени и други облици комуникације помажу у постављању очекивања од запослених у различитим ситуацијама. Снажна стратешка пословна комуникација је двосмјерна кроз стварање подстицајне културе предузећа, те обезбјеђење повратних информација. Циљ и сврха рада је испитати које су то савремене стратегије интерног пословног комуницирања с акцентом на банкарски сектор у Босни и Херцеговини. Пословна комуникација је врло битно средство у банкарском систему у Босни и Херцеговини, јер као и у осталим дјелатностима, ефикасна пословна комуникација је постала критична за данашњу радну снагу – више него икада прије.

Кључне речи: стратегија, пословна комуникација, интерна комуникација, банкарски сектор, Босна и Херцеговина.

STRATEGIES OF INTERNAL COMMUNICATION IN BANKS OF BOSNIA AND HERZEGOVINA

Abstract: The communication process is the sharing of messages that include content, communication channels, and message recipients who will understand the message through clear objectives. By defining the goals of communication, narrative, implicational and decisive strategies are characteristic of most communicative processes. As the company's strategy implies the identification and planning of long-term goals that the company will achieve by using available resources, and with the aim of gaining a competitive advantage, communication strategies represent plans for transmitting information related to a specific topic. Strategically effective communication is crucial in achieving the company's competitive advantage, but also an irreplaceable element for achieving success in team projects. Their main goal is to convey messages that are credible in the simplest possible form, which will cause a positive or negative connotation in the company. Effective strategic communication is much more than sharing ideas within a company. Understanding effective communication strategies can improve relationships between employees, and improve business through many aspects. Communication strategies should include defined goals, interest groups, selected crucial messages, communication methods, and clarified feedback mechanisms on the defined strategy. Effective strategic communication, through company support and a communication plan, will ensure a clear understanding of the messages and values that are being conveyed to the recipients. In digital business, the electronic exchange of information (Electronic Data Interchange - EDI) makes communication more efficient and motivates company departments to work more dynamically, productively, and effectively. Transparency with employees is considered one of the most effective communication strategies available to a company. Converting thoughts into words, and clearly understanding them through selected communication channels, helps to share the necessary information clearly and efficiently. To use different communication channels, it is necessary to have an adequate communication policy for employees, so that communication becomes better organized, without any errors, and consistent. Various meetings, e-mails about available projects, annual newsletters, and other forms of communication help set expectations for employees in different situations. Strong strategic business communication is two-way through creating a stimulating company culture and providing feedback. The goal and purpose of the work are to examine what are the modern strategies of internal business communication in the banking sector in Bosnia and Herzegovina. Business communication is a very important tool in the banking system in Bosnia and Herzegovina. As in other industries, effective business communication has become critical for today's workforce - more than ever before.

Keywords: strategy, business communication, internal communication, banking sector, Bosnia and Herzegovina.

УВОДНА РАЗМАТРАЊА

Комуникација представља пренос информација кроз комуникациони канал од примаоца до пошиљаоца поруке. Комуникација утиче на сваки аспект организације, од ефикасности до задржавања и ангажовања запослених. Неколико кључних елемената добре комуникације – корпоративне или друге – су учесталост, непосредност, јасноћа, инклузивност и безбједност. Сваки од ових фактора има свој утицај, али је њихов комбиновани ефекат чак и већи од збира појединачних фактора. Учесталост је један од најизазовнијих аспеката корпоративне комуникације, посебно у времену када је рад на даљину заступљенији него што је икада био. Дигитално пословање кроз електронско размјењивање информација мотивише тимове да раде ефикасније и ефективније. Са великим бројем запослених који раде на даљину, важно је осигурати да контактирају довољно често како би се избјегао осјећај изолованости од остатка свог тима. Брза комуникација може направити значајну разлику у укупном искуству запослених. Било да су информације широко примјенљиве, као у случају великих организационих промјена, или коначне, као у случају повратних информација менаџера, ријетко је случај да је брза испорука штетна. Непосредност такође омогућава понављање и побољшање. Што је мање времена потребно да се пренесу информације, менаџмент има више времена да дјелује на њих. Транспарентна комуникација помаже да се изгради повјерење и да сви буду на истој страни. Подразумијевана транспарентност поједностављује комуникацију и није изазов да се примијени у различитим аспектима рада тима. Интерна комуникација је комуникација унутар компаније, која омогућава грађење културе која чини да се запослени осјећају као дио „породице“. Ефикасна комуникација унутар предузећа је слика и окосница успјеха пословања. Развијајући ефикасну комуникацију у склопу предузећа, циљ је обезбиједити да сви запослени разумију циљеве компаније, гдје се уклапају у организационе токове, те су им јасне њихове улоге у раду. Добра интерна комуникација пружа јасне и разумљиве информације. Запослени који знају шта њихова компанија ради и куда иде претпоставља се да ће бити више мотивисани од оних који су ван круга. Успјешна интерна комуникација у склопу предузећа се не дешава сама од себе. Различити типови лидерства, тј. начина управљања и вођења организацијом, могу јако пуно да утичу на промовисање интерактивне, брижне, визионарске, инспиративне и

оснажујуће комуникације међу запосленима. Послодавац мора препознати потребу за стратегијом, дефинисати је и примијенити, како би крајњи циљ пословања био достигнут, а то је задовољан клијент. Модерно друштво које се брзо мијења и све више повезује учинило је запослене једним од најважнијих стратешких конституената организација. С једне стране, запослени су производна снага организације, која директно доприноси бољим перформансама. С друге стране, запослени су корпоративни амбасадори и заступници бренда, како банкарског сектора у Босни и Херцеговини, тако и свих осталих сектора, те представљају организацију спољним стејкхолдерима (тј. купцима и акционарима). Предности успјешне комуникационе стратегије су бројне, а укључују разумијевање, повећану продуктивност, уштеду, јасноћу, спречавање преоптерећења информацијама. Шаблон стратегије интерне комуникације је користан алат јер може промовисати јасно и логично размишљање.

1. ЕФИКАСНА ИНТЕРНА КОМУНИКАЦИЈА

Постоји велики број дефиниција комуникације, како интерне, тако и екстерне, те утицаја комуникације на организационе токове. Неки од њих биће наведени у наставку. „Комуникација је амалгам свих активности и резултат њиховог дјеловања у директним, индиректним, физичким или виртуелним везама са окружењем“ (Војиновић и Капор, 2021, стр. 184). Комуникација је процес размјене идеја, мишљења и информација унутар и ван пословног окружења ради постизања пословних циљева. Према Bovee и сар. (2003) комуникација је процес слања и примања порука и само је ефикасна када се порука разумије и када подстиче акцију или подстиче примаоца да размишља на нове начине. Ricks и Gow (1987) дефинишу комуникацију као систем који је одговоран да утиче на промјене у цијелој организацији. Комуникација се може посматрати као ресурс за изградњу конкурентске предности и достизања успјеха предузећа, фокусирајући се на адекватну интерну и екстерну комуникацију. За ефикасну комуникацију је неопходна стратегија која је заснована на визији предузећа. Визија је дугорочна амбиција предузећа, тежња онога што компанија жели да постане у будућности, а која захтијева чланство свих запослених који су мотивисани, укључени, флексибилни и спремни за примјене нових алата. „Кроз јачање тимске структуре и продуктивности, флексибилнији ће и у будућности успијевати да опстану на тржишту и буду успјешнији од конкуренције“ (Капор и Николић, 2022, стр. 348). Да би била ефикасна, комуникација треба да буде редовна, правовремена, искрена, јасна, интерактивна и лако разумљива са могућношћу двосмјерне комуникације јер у супротном програм промјене може пропасти (Smith, 2006). Frank и Brownell (1989), дефинишу интерну комуникацију као трансакције између појединаца и група у организацијама на различитим нивоима. Интерна комуникација се сматра главним дијелом сваког предузећа. Лоша интерна комуникација на крају утиче на остале перформансе предузећа и може резултирати лошим осјећањима и слабим односима међу запосленима, што утиче на тимску продуктивност. Са развојем предузећа, повећањем броја запослених долази и до ометања интерне комуникације, која ће резултирати негативним фидбеком код потрошача/корисника услуга. Зато све већи број студија говори о ефикасности комуникације како унутар, тако и изван предузећа, како би се предуприједили фактори који утичу на ометање главних активности у комуникационом процесу. Укупна продуктивност се повећава када компаније имају ефикасну стратегију комуникације. Кроз редовне састанке један на један и тимске састанке, менаџмент предузећа може побољшати начин комуникације на радном мјесту, што ће увеликоме утицати на процес рада. Међутим, за глобалне компаније са члановима тима који се налазе у различитим градовима, комуникација у цијелој организацији може бити мало изазовнија. Важност електронске размјене информације (енг. *Electronic Data Interchange – EDI*), у том случају долази до изражаја, те одабир адекватног комуникационог канала помоћу кога ће се поруке преносити. Многе студије су се фокусирале на важност ефикасне интерне комуникације као средства за постизање и задржавање конкурентске предности. Конкурентска предност стратешке интерне комуникације произилази не само из очигледних предности задовољства и продуктивности запослених, већ и из позитивних доприноса које добро информисани запослени могу дати напорима компаније за шире окружење. Са друге стране, многе студије повезују ниво задовољства и пожељних односа управе и запослених као двије главне карактеристике интерне комуникације (Jo и Shim, 2004; Gray и Laidlaw, 2002). Према Hallahan и сар. (2007), стратешка интерна комуникација се дефинише као сврсисходна употреба комуникације од стране организације да испуни своју мисију, гдје је укључено шест дисциплина у развој, имплементацију и процјену комуникације од стране организација: менаџмент, маркетинг, односи са јавношћу, техничка комуникација, политичка комуникација и информационе/друштвене маркетиншке кампање (стр. 3). Ефикасна комуникација у глобалним организацијама укључује праву комбинацију „меког” и „тврдог” прикупљања информација, супериорну међуљудску комуникацију и одговарајућу употребу информационих и комуникационих технологија (Nwabueze и Mileski, 2018; према Uchida и сар. 2011). Комуникациона стратегија је постала кључни изазов за предузећа. Chmielecki (2015, стр. 26) према Argenti (1998), наводи неколико главних циљева интерних комуникација: 1) Стварање осјећаја да су запослени важна имовина организације; 2) Побољшање морала и његовање добре воље између запослених и менаџмента; 3) Информисање запослених о интерним промјенама; 4) Објашњење планова накнада; 5) Повећање разумијевања запослених о организацији и њеним производима, етици, култури и спољашњем окружењу; 6) Промјена понашања запослених како би постали продуктивнији и предузетнички настројени; 7) Повећање разумијевања запослених о главним

здравственим/социјалним питањима или трендовима који утичу на њих; 8) Подстицање учешћа запослених у активностима заједнице. Основни капитал компанија у 21. вијеку треба да буде људски капитал, који је од велике важности, јер запослени могу и морају да учествују у важним одлукама компаније, дају различита мишљења те омогућавају развијање корисних алата за боље пословно управљање. Chmielecki (2015, стр. 27) према Daly и сар. (2003) су као императиве за успјешну интерну и организациону комуникацију прогласили сљедеће тачке: разумијевање организационе комуникације може помоћи у разумијевању стратегије управљања; виши менаџмент треба да буде посвећен комуникацији, да буде одговоран за осмишљавање и одржавање комуникационог система; запослени треба да перципирају поруке као релевантне за њих, а поруке треба да буду у складу са радњама; комуникациони систем треба редовно пратити и оцјењивати; боље разумијевање перцепције запослених о проблемима у комуникацији у њиховим организацијама би помогли менаџерима да ефикасније комуницирају у цијелој организацији. Интерна комуникација је препозната као један од најважнијих стратешких фокуса за пословну комуникацију, одмах иза бриге о руководству организације (Barnfield, 2003). Менаџери, који су комуницирали, подстицали повратне информације запослених, слушали, показали интересовање и уважавање су у стању да мотивишу своје запослене да смисле важне иновације (Nwabueze и Mileski, 2018; према Hebda et al, 2007), посебно ако су прикупљене информације комбинација „меких“ и „тврдих“ података. Ефикасна интерна комуникација управљања повећава флексибилност потребну за одабир одговарајућег стила управљања и максимизирање комуникације (Al-Asfour и Lettau, 2014). Men (2014) према Ni (2007), међу четири широко проучавана индикатора односа (тј. повјерење, узајамност контроле, посвећеност и задовољство), те наводи да је задовољство добило највећу пажњу у литератури и коришћено је као главна мјера за ефективне односе са запосленима, јер када су запослени задовољни већа је вјероватноћа да ће се посветити дуготрајној вези са предузећем. Запажање, похвала, изазивање и ескалација су напори који помажу професионалцима да унесу промјене за побољшање комуникације и услуга (Sykes и Durham, 2014). Управљачка комуникација утиче или усмјерава групу да постигне заједнички циљ (Vickery и сар., 2015). Комуникација често подразумијева организационо реструктурирање, као и развој функција везаних за посао и нове организационе културе, што подстиче организационе промјене (Barratt-Pugh и сар., 2013). Комуникациона стратегија има велику одговорност да комуникацију учини кохерентном и да пошаље јасну слику компаније у складу са њеним циљевима. Комуникационе стратегије треба да нагласе циљ/циљеве комуникације како би се идентификовале интересне стране, дефинисале најважније поруке, идентификовале потенцијалне методе и технике саопштавања информација, те омогућио крајњи фидбек (повратна информација од примаоца поруке). Међутим, често се у процесу транспарентности, ефикасности и покушавања достизања највећег могућег успјеха предузећа, долази до неуспјеха у бројним активностима. Из тог разлога постоји велики број баријера које онемогућавају ефикасну комуникацију унутар и изван предузећа, а што за циљ има нарушавање репутације, бренда, те немогућности организовања тимова као једне цјелине, због све веће искључености из различитих активности. Према Luthra & Dahiya (2015) неке од баријера које утиче на добру и ефективну комуникацију су: недостатак планирања и сврхе прије комуникације са другима ограничавају менаџмент да ефикасно комуницира са својим тим; избор неодговарајућих алата, техника и језика од стране менаџмента за обављање комуникације са тимом ће дјеловати као баријера те смањује ниво тачног разумијевања комуникације; недостатак повјерења једних у друге и непоштовање је још један фактор који комуникацију чини неефикасном; игнорисање повратних информација током комуникације је такође баријера; недостатак самопоуздања, вриједности, храбрости, главних менаџерских квалитета и знања зауставља комуникацију која постаје неефикасна; немогућност прилагођавања промјенама је такође јака препрека. Посматрајући интерну комуникацију у банкарском сектору и сензибилност посла којим се банкарски службеници баве, закључује се да су запослени најбољи амбасадори, али и највећи критичари једне организације, све у зависности од тога колико су укључени у комуникациони процес, колико су обучени, мотивисани, спремни да се фокусирају на главне циљеве организације, колико је ефикасна интерна комуникација, те како је то презентовано крајњим корисницима њиховим услуга, што ће се одразити на ниво пласираних кредита и осталих банкарских производа. Ефикасност у пословном комуницирању утиче на подизање кредибилитета, отклањања баријера и полуинформација које ометају пословне активности, јер се запослени посматрају као посебно кредибилни извори и представници једног предузећа, од стране екстерних заинтересованих страна.

2.РЕЗУЛТАТИ ИСТРАЖИВАЊА

Како би се боље разумјела тематика, спроведена је анкета у периоду од фебруара - марта 2023. године на територији Босне и Херцеговине, гдје је учествовало 125 испитаника. Кориштена је онлајн, енг. *online* форма анкете, која је послата путем имејла, енг. *e-mail*. Анонимност испитаника је загарантована и прикупљени подаци ће се користити у научне сврхе. Анкета је послата на 150 адреса, а повратних одговора је било 125. Стопа одбијања је 16,67%, што је прихватљиво с обзиром на немогућност контроле структуре испитаника. Структуру испитаника чини 55,6% жена и 44,4% мушкараца сљедећих старосних структура: 20-24 укупно 10,8%, 25-29 година укупно 24,7%, 30-34 година 23,5%, 35-39 година 13,3%, 40-44 година 14,5%, 45-49 година 6,6%, те преко 50 година укупно 6,6% испитаних. Најчешће су испитаници одговарали да имају завршен факултет, укупно 60,9%, са завршеном средњом школом је 21,5%, са завршеним мастер студијама је 15,4%

испитаника, са завршеним докторским студијама и вишом школом 1,8%, док испитаника са завршеном основном школом није било. Са аспекта статуса запослења, укупно 53,3 % испитаних је запослено у приватном сектору, 39,6% је запослено у државном сектору, 5,9% испитаних је покренуло сопствени бизнис, док је 1,2% осталих. Стални посао обавља 86,4%, сезонски посао обавља 11,8%, док хонорарни посао ради 1,8% испитаних.
Са аспекта мјесечних примања, највећи проценат од 27,8% чине испитаници који остварују примања од 974-1.127 EUR, затим проценат од 18,3% чине они који мјесечно зарађују од 512 – 665 EUR, проценат испитаника од 15,4% чине лица која зарађују од 666 - 819 EUR, 13,6% испитаника мјесечно прима плату у износу од 820 - 973 EUR, испитаници који зарађују 358 - 511 EUR обухватају проценат од 10,7%, док испитаници који мјесечно зарађују преко 1.128 EUR обухватају 9,5%, а испитаници који примају испод 357 EUR чине 4,7% испитаних. Укупно 125 испитаника се изјаснило да је корисник једног или више кредита, тако да је та скупина даље испитивана у складу са темом рада. Износ кредита до 5.112 EUR има укупно 21,6% испитаних, износ 5.113 – 10.224 EUR 15,2%, износ 10.225 EUR– 15.337 EUR 16,8%, кредитно задужење у износу 15.338 EUR - 20.450 EUR има 17,6%, износ 20.451 EUR – 25.563 EUR има 14,4% испитаника, док износ кредита преко 25.564 EUR има укупно 14,4% испитаних. Укупно 42,2% испитаних користи ненамјенски кредит, 28,8% испитаних користи хипотекарни кредит, стамбени кредит користи 22,4%, док намјенски кредит укупно користи 6,4% испитаника. Проценат од 56,8% испитаника користи кредит по варијабилној стопи, док 43,2% испитаника користи кредит по фиксној стопи.
У табели број 1. су представљене просјечне оцјене ставова испитаника, укупно 125 одговора. На основу дескриптивне анализе и питања која су постављена везано за комуникациони процес који тече између службених лица банака и клијената/корисника услуга жељели су се испитати ставови и ниво задовољства кроз посјету банкама и начином комуникације службеника са потенцијалним клијентима. Такође се потенцирало на испитивању повјерења испитаника у банкарски сектор у Босни и Херцеговини с обзиром на дешавања на свјетском тржишту и најављеном банкарском кризом у 2023. години. Према Извјештају о пословању на дан 30.9.2022. године, Агенције за банкарство Републике Српске „укупан број банака које су пословале у Републици Српској, није се мијењао у односу на крај 2021. године. Осам банака са сједиштем у Републици Српској пословало је посредством мреже од 284 организационе јединице, док је седам банака са сједиштем у Федерацији БиХ пословало путем 52 организационе јединице у Републици Српској (стр. 14)“. Према Извјештају о пословању на дан 30.9.2022. године, Агенције за банкарство Федерације БиХ (стр.19) „банкарску дозволу има 14 комерцијалних банака и све банке су чланице АОД-а. У односу на крај 2021. године број банака је исти. Банке из ФБиХ на дан 30.09.2022. године имају укупно 516 организационих дијелова, што је за 11 организационих дијелова или 2,1% мање у односу на крај 2021. године. На подручју ФБиХ послују 453 организациона дијела банака. Седам банака из ФБиХ има 52 организациона дијела у РС-у, а девет банака има 11 организационих дијелова у БД-у. Три банке из РС-а имају 28 организационих дијелова у ФБиХ, што је на истом нивоу у односу на крај 2021. године.“

Табела 1: Просјечне оцјене ставова испитаника (укупно 125)

Тврдње	Н	Минимум	Максимум	Σ	Аритметичка средина	Стандардна девијација
Да ли сте задовољни нивоом услуге коју сте добили од банке?	125	1,0	5,0	458	3,66	1,10
Да ли сте задовољни комуникацијом коју сте остварили са службеником?	125	1,0	5,0	448	3,58	1,23
Да ли сте осјетили слободу и транспарентност кредитног службеника при комуникацији?	125	1,0	5,0	481	3,85	1,00
Да ли сте осјетили нетрпељивост између запослених у банци у којој сте подигли кредит?	125	1,0	5,0	454	3,63	1,13
Да ли сте се осјетили пријатно током боравка у банци?	125	1,0	5,0	469	3,75	1,15
Да ли сте могли да процијените да је службеник желио да пронађе најбоље рјешење за Вас?	125	1,0	5,0	491	3,93	0,90
Да ли је службеник користио формални вид комуникације?	125	1,0	5,0	478	3,82	1,06
Да ли сте могли да осјетите да се службеник залагао за компанијски интерес кроз комуникацију са Вама?	125	1,0	5,0	435	3,48	1,15
Сматрате ли да је постојала веза између начина комуникације са бнаком и Вашом одлуке о подизању кредита?	125	1,0	5,0	452	3,62	1,18
Сматрате ли да су запослени у пословници коју сте посјетили радили као тим, фокусирани	125	1,0	5,0	457	3,66	1,07

на главне циљеве и интересе банке?						
Да ли и даље имате повјерења у банку у којој сте подгили кредит с обзиром на вијести да је финансијска криза у 2023. неизбјежна?	125	1,0	5,0	458	3,66	1,10
Да ли сте се прије коначне одлуке информисали код других банака о условима?	125	3,0	5,0	516	4,13	0,74
Ставови везани за комуникациони процес између банака и клијената	**125**				**3,73**	**1,07**

Извор: аутори, 2023.

Може се закључити да већина испитаних, укупно 125, има позитивно мишљење и позитиван став, које се у великој мјери слаже са тим да комуникациони процес утиче на доношење одлуке о реализацији кредита у банкама (просјечна оцјена 3,73). У наставку рада ће се анализирати и утицај интерне комуникације на процес доношења одлуке о подизању кредита у банкама, с акцентом на то да начин комуникације међу запосленима, одаје слику ефикасног функционисања банке/предузећа, коју потенцијални клијенти итекако осјете те могу на бази субјективне процјене да одаберу Вашег конкурента као бољи избор.

Табела 2: Корелациона анализа (укупно 125)

		Износ (вриједност) кредита.	**Сматрате ли да је постојала веза између начина комуникације са банаком и Вашом одлуке о подизању кредита?**	**Да ли и даље имате повјерења у банку у којој сте подгили кредит с обзиром на вијести да је финансијска криза у 2023. неизбјежна?**
Износ (вриједност) кредита.	Pearson Correlation		-0,18	-0,02
	Sig. (2-tailed)		0,05	0,86
	N	125	125	125
Сматрате ли да је постојала веза између начина комуникације са банком и Вашом одлуке о подизању кредита?	Pearson Correlation	-0,18	1	0,55**
	Sig. (2-tailed)	0,05		0,000
	N	125	125	125
Да ли и даље имате повјерења у банку у којој сте подгили кредит с обзиром на вијести да је финансијска криза у 2023. неизбјежна?	Pearson Correlation	-0,02	0,55**	1
	Sig. (2-tailed)	0,86	0,000	
	N	125	125	125

Извор: аутори, 2023.

На основу табеле број 2. закључује се да није постојала статистички значајна корелација између вриједности подигнутог кредита и повјерења у банкарски систем с обзиром на најављену финансијску кризу у 2023. години (p=0,86>0,05, sig>0.05). Међутим, постојала је мала корелација (негативна) између димензија: износа кредита и начина комуникације банке и потенцијалних клијената (p=0,05=0,05, sig<0.05), што би значило да повећање вриједности кредита, утиче на смањење комуникације између банака и клијената. Ово се може анализирати са два аспекта. Клијенти који су лојални и дугогодишњи корисници услуга једне банке, могу рутински да поднесу захтјеве за репрограмирање/подизање нових кредита, без додатне комуникације са службеницима, из разлога повјерења које имају због дугогодишње сарадње и изграђене кредитне способности. Са друге стране, постоје клијенти којима је из различитих разлога потребан кредит и одлучују се за одређену банку, те им је једино битно да се кредит реализује, без непотребних компликација. Закључује се да постоји јака и позитивна корелација између димензија: начин комуникације са банком и Вашом одлуке о подизању кредита, те повјерења у банку у којој сте подигли кредит с обзиром на вијести да је финансијска криза у 2023. неизбјежна. Посматрајући корелацију претходна два елемента, закључује се да са растом и квалитетнијом комуникацијом између клијената и банака, долази до рушења и отклањања различитих баријера које се појављују у виду неповјерења због различитих пласираних информација о стању на финансијском тржишту, што у коначном има за циљ повећање повјерења у банкарски систем. Појам кризе и маркетиншка обавијештеност јавности јако пуно утиче на доношење одлуке о подизању кредита. Криза банкарског менаџмента, те немогућности стратешког реаговања у правом тренутку, заиста има тенденцију да 'рашири' негативну слику, те да тражња за кредита буде нижа у поређењу са претходним периодима. С обзиром да се тренутна банкарска криза још увијек не сматра довољно критичном за велику узбуну, остаје да се у наредном периоду финансијски сектор покуша одупријети притисцима, отпорима, како се не би поновио сценарио из 2008. године. На основу презентованих резултата,

трендови који су актуелни на финансијском тржишту, кроз процес глобализације и дигитализације пословних активности, све већом конкурентском снагом, неизвјесним окружењем, промијењеним начином размишљања клијената и потрошача, маркетиншке и менаџерске стратегије захтијевају од финансијских оријентисаних актера да укључе ефективну и ефикасну стратегију како интерне, тако и екстерне комуникације, користећи елементе маркетинг микса, кроз интегрисани процес задовољења потреба и жеља потрошача кроз омогућавање проналаска најбољег могућег рјешења од тренутно доступног асортимана производа.

2.1. ТЕСТ ПОУЗДАНОСТИ

Како би се провјерила поузданост (интерна хомогеност) у раду је коришћен тест поузданости (Cronbach Alpha) за успостављање везе између комуникационог процеса, квалитета и повјерења у банкарском сектору у Босни и Херцеговини. Пошто су се анализирале двије димензије (квалитет банкарске услуге у Босни и Херцеговини, те комуникација између клијената и банкарских службеника), овим тестом се жељела испитати статистички значајна повезаност између тврдњи које чине једну димензију. У табели број 3. се налазе резултати теста поузданости.

Табела 3: Тест поузданости (Cronbach Alpha тест)

Скала	**Тврдње**	**Cronbach's Alpha након брисања ставки**
Тест поузданости скала за мјерење квалитета банкарске услуге α= 0,865	Да ли сте могли да процијените да је службеник желио да пронађе најбоље рјешење за Ваш кредит?	0,892
	Да ли сте задовољни нивоом услуге коју сте добили од банке?	0,750
	Да ли сте осјетили нетрпељивост између запослених у банци у којој сте подигли кредит?	0,824
	Сматрате ли да су запослени у пословници коју сте посјетили радили као тим, фокусирани на главне циљеве и интересе банке?	0,822
Скала	**Тврдње**	**Cronbach's Alpha након брисања ставки**
Тест поузданости скала за мјерење комуникације између клијената и банкарских службеника α= 0,890	Да ли сте задовољни комуникацијом коју сте остварили са службеником?	0,885
	Да ли сте осјетили слободу и транспарентност кредитног службеника при комуникацији?	0,873
	Да ли сте се осјетили пријатно током боравка у банци?	0,887
	Да ли је службеник користио формални вид комуникације?	0,868
	Да ли сте могли да осјетите да се службеник залагао за компанијски интерес кроз комуникацију са Вама?	0,868
	Сматрате ли да је постојала веза између начина комуникације са банаком и Вашом одлуке о подизању кредита?	0,889
	Да ли и даље имате повјерења у банку у којој сте подгили кредит с обзиром на вијести да је финансијска криза у 2023. неизбјежна?	0,849

Извор: аутори, 2023.

Cronbach's Alpha коефицијент показује да постоји статистички значајна повезаност између тврдњи које чине обје димензије које су анализиране. На бази добијених резултата (након спроведене анализе поузданости тј. интерне хомогености) закључује се да квалитет банкарских услуга у Босни и Херцеговини испуњава услов интерне хомогености (α = 0,865), као и тврдње које чине димензију комуникација између клијената и банкарских службеника, са коефицијентом (α = 0,890), те се као такви могу користити за оцјену мјерења стратешки ефикасне комуникације у банкама, с акцентом на приступ, стање тимске структуре у банци, посвећеност циљевима, визији и мисији, те транспарентност коју клијенти могу да осјете приликом посјете.

2.2. ПРИМЈЕНА χ^2 ТЕСТА

Примјеном χ^2 теста у раду се жели испитати да ли постоје статистички значајне разлике у погледу сљедећих хипотеза:

X 0 : Не постоје статистички значајне разлике у погледу комуникације између клијената и банака те стеченог повјерења кроз комуникациони процес.

X 1 : Постоје статистички значајне разлике у погледу комуникације између клијената и банака те стеченог повјерења кроз комуникациони процес.

Тврдње		Да ли и даље имате повјерења у банку у којој сте подлили кредит с обзиром на вијести да је финансијска криза у 2023. неизбјежна?					Укупно
		апсолутно немам повјерење	у великој мјери немам повјерење	равнодушан	у великој мјери имам повјерење	у потпуности имам повјерење	
Да ли сте задовољни комуникацијом коју сте остварили са службеником?	јако незадовољан	2	0	1	2	2	**7**
	у великој мјери незадовољан	0	15	2	3	0	**20**
	равнодушан	1	0	22	2	4	**29**
	у великој мјери задовољан	0	0	6	22	3	**31**
	јако задовољан	0	1	6	4	27	**38**
Укупно		**3**	**16**	**37**	**33**	**36**	**125**

	Value	df	Asymptotic Significance (2-sided)			Value	Asymptotic Standardized Error[a]	Approximate T[b]	Approximate Significance
Pearson Chi-Square	189,655a	16,00	0,00	Nominal by Nominal	Phi	1,23			0,00
Likelihood Ratio	147,49	16,00	0,00		Cramer's V	0,62			0,00
Linear-by-Linear Association	45,27	1,00	0,00		Contingency Coefficient	0,78			0,00
Укупно	**125**			**Укупно**		**125**			

Слика 1: Добијене вриједности χ^2 теста (симетричне вриједности) – однос повјерења и комуникације у банкарском сектору у Босни и Херцеговини
Извор: аутори, 2023.

На слици број 1. приказани су резултати χ^2 теста гдје је вриједност Sig. (P) <0.05 те се закључује да постоје статистички значајне разлике између ових варијабли. Одбацује се нулта хипотеза (X0), у корист алтернативне хипотезе (X1), и закључује се да постоји статистички значајна веза у погледу комуникације између клијената и банака те стеченог повјерења кроз комуникациони процес. Иако је велики дио испитаника навео да су или јако или у великој мјери задовољни комуникацијом која је остварена са банкарским службеницима, као и да већина испитаника има повјерење још увијек у оно што банке раде на тржишту Босне и Херцеговине, доноси се закључак да банке послуђују по законским правилима и процедурама, кроз адекватну и квалитетну комуникацију, још увијек пласирају кредите неометано.

X 0 : Не постоје статистички значајне разлике у погледу интерне комуникације у банци и одлуке о подизању кредита.
X 1 : Постоје статистички значајне разлике у погледу интерне комуникације у банци и одлуке о подизању кредита.

Тврдње		Сматрате ли да су запослени у пословници коју сте посјетили радили као тим, фокусирани на главне циљеве и интересе банке?					Укупно
		у потпуности се не слажем	у великој мјери се не слажем	равнодушан сам	у великој мјери се слажем	у потпуности се слажем	
Сматрате ли да је постојала веза између начина комуникације са банком и Вашом одлуке о подизању кредита?	уопште није постојала	2	0	0	2	1	**5**
	у великој мјери није постојала	0	16	4	1	1	**22**
	равнодушан сам	0	0	8	8	7	**23**
	у великој мјери је постојала	1	0	13	17	10	**41**
	у потпуности је постојала	0	0	9	12	13	**34**
Укупно		**3**	**16**	**34**	**40**	**32**	**125**

	Value	df	Asymptotic Significance (2-sided)			Value	Asymptotic Standardized Error[a]	Approximate T[b]	Approximate Significance
Pearson Chi-Square	121,901a	16,00	0,00	Nominal by Nominal	Phi	0,99			0,00
Likelihood Ratio	88,50	16,00	0,00		Cramer's V	0,49			0,00
Linear-by-Linear Association	27,45	1,00	0,00		Contingency Coefficient	0,70			0,00
Укупно	**125**			**Укупно**		**125**			

Тврдње		Да ли сте осјетили слободу и транспарентност кредитног службеника при комуникацији?					Укупно
		у потпуности се не слажем	у великој мјери се не слажем	равнодушан сам	у великој мјери се слажем	у потпуности се слажем	
Сматрате ли да је постојала веза између начина комуникације са банком и Вашом одлуке о подизању кредита?	уопште није постојала	2	0	1	1	1	**5**
	у великој мјери није постојала	0	8	6	3	5	**22**
	равнодушан сам	0	0	12	7	4	**23**
	у великој мјери је постојала	0	0	10	19	12	**41**
	у потпуности је постојала	0	1	5	11	17	**34**
Укупно		**2**	**9**	**34**	**41**	**39**	**125**

	Value	df	Asymptotic Significance (2-sided)			Value	Asymptotic Standardized Error[a]	Approximate T[b]	Approximate Significance
Pearson Chi-Square	98,312a	16,00	0,00	Nominal by Nominal	Phi	0,89			0,00
Likelihood Ratio	55,01	16,00	0,00		Cramer's V	0,44			0,00
Linear-by-Linear Association	22,90	1,00	0,00		Contingency Coefficient	0,66			0,00
Укупно	**125**			**Укупно**		**125**			

Слика 2: Добијене вриједности χ^2 теста (симетричне вриједности) – однос одлуке о подизању кредита и интерне комуникације у банкарском сектору у Босни и Херцеговини
Извор: аутори, 2023.

На слици број 2. приказани су резултати χ^2 теста гдје је вриједност Sig. (P) <0.05 те се закључује да постоје статистички значајне разлике између ових варијабли. Одбацује се нулта хипотеза (X0), у корист алтернативне хипотезе (X1), и те закључује да постоји статистички значајна веза у погледу интерне комуникације између клијената и банака те одлуке о подизању кредита код потенцијалних клијената. Иако је велики дио испитаника навео да у великој мјери није постојала веза између интерне комуникације и одлуке о подизању кредита, у прилог статистичкој значајности алтернативне хипотезе иду резултати анкете да су испитаници примијетили да су радници радили као тим, фокусирани на циљеве банке и задовољење њихових потреба.

ЗАКЉУЧНА РАЗМАТРАЊА

Да би се пословна интерна комуникација унаприједила потребно је одредити приоритете, прихватити ауторитет од стране управе, те константно усавршавати и често контролисати процесе са менаџерима. Уколико се процијени тренутна стратегија коју предузећа користе у склопу интерне комуникације, једна од препорука је да се реконструише интерни комуникациони процес кроз рјешавање спорних елемената, слабости, редизајнирање циљева комуникације и тимова. Оваквом процјеном резултат би показао гдје постоје грешке у погледу усложњавања или поједностављења комуникационог процеса. Сљедећа препорука би могла да буде реалније постављање циљева и рокова, поготово уколико се посматра банкарски сектор. Један од начина да се поставе паметнији циљеви је гледање интерних мјерила и запажање гдје се може остварити тренутни утицај, јер циљеви треба да буду специфични, мјерљиви, остварљиви, релевантни и временски оријентисани. Често постоји немогућност мјерења ефикасне пословне комуникације, међутим, управа мора да идентификује кључне метрике за праћење успјеха, како би се анализирао комуникациони процес, поготово уколико се посматра банкарски сектор као релевантан. Одређени одјели више користе један канал у односу на друге одјеле или неки одјели више комуникацију са управом, а не са тимом, што је потребно анализирати и узети у обзир приликом праћења активности који могу побољшати пословну комуникацију. Сегментирање и мапирање циљне публике је једна од јако важних стратешких елемената пословне комуникације. Када постоје идеје о томе шта би могло ојачати стратегију интерних комуникација, потребно је одредити ко ће бити циљна група на коју ће стратегија дјеловати, чак и када је у питању интерна комуникација. Важно је схватити које поруке и формати ће утицати код различитих запослених и различитих одјељења у послу. Стратешко мапирање приступа комуникацији може минимизирати преоптерећење информацијама. Умјесто слања истих информација без обзира на улогу, локацију или одјел, ефикасна интерна комуникациона стратегија треба да се фокусира на испоруку релевантних информација правим људима, у право вријеме. Кључни дио планирања стратегије интерне комуникације је креирање процеса одобравања одређеног садржаја. Ово ће спријечити да било какве непотребне грешке, повјерљиви коментари или вијести случајно буду објављене у погрешном времену што би нарушило дневне активности тима. Идентификација својих интерних комуникационих алата је још једна од начина како се комуникациони процес може унаприједити. Одређене поруке су најприкладније за одређене канале. Често би интерне промјене процеса могле бити боље прилагођене ажурирању путем е-поште. Потребно је да као компанија процијените дневне, мјесечне, те годишње напретке и рационалишите. Кључни индикатори учинка не би се требали користити само за праћење напретка, већ треба да послуже да се учи од њих и континуирано оптимизира рад предузећа уз постизање резултата. Данас све више предузећа почињу да схватају да је једносмјерна комуникација ствар прошлости. Запослени који осјећају да се њихово мишљење уважава, пружаће и клијентима квалитетније услуге, покушавајући да се повежу са тимом, да раде транспарентно, да уважавају све што им надређени сугеришу. Програми ангажовања запослених и комуникација на радном мјесту два су најважнија фактора на која се треба фокусирати приликом развоја пословања. Стратегија ангажмана која је укоријењена у комуникацији требала би омогућити сваком запосленом да се осјећа образовано, информисано и мотивисано. Када су у питању ефикасне комуникацијске стратегије, важно је размотрити како оснажити своје запослене да појачају вашу поруку и буду заговорници предузећа. Данашњи запослени захтијевају виши ниво аутентичности од брендова, чинећи брендирање послодавца важнијим него икад. Запослени ће наставити да се појављују као најважнији глас компаније, осигуравајући аутентичност приликом повезивања с новим запосленима, потенцијалним клијентима, купцима, колегама и свима између. Трансформацијом својих запослених у маркетиншке стручњаке, предузеће уводи динамику равноправних односа у своју интерну комуникациону стратегију, јачајући бренд, привлачећи боље потенцијалне клијенте, квалификованије запослене и боље пословне резултате.

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EXPENSE EVALUATION OF ACCOUNTING AUTOMATIZATION FOR SMES COMPARED TO A HUMAN ACCOUNTANT

Abstract: Automatization of accounting is a trend which companies are getting implemented. There are several solutions in the Slovakian market, which vary by the technical approach, costs, and operating expenses. On the sample of 10 real organization's general ledgers, we compare costs and expenses for running automated accounting to the human accounting. We calculated benchmark to be around 1850 accounting documents a year, from which it is advantageous to move to the automatic machine accounting.

Keywords: Accounting, automatization, digitalization

1. INTRODUCTION

Automatization of accounting procedures is the trend which companies are getting implemented all around to world. (Vlčko, Meluchová 2022). While software solutions are used for accounting for years now, there still must be a human who operates the software by taping the data from the accounting documents into the software. Such human occupancy is called bookkeeper. Once data from the accounting documents are in the accounting software, the human accountant must account them properly. Accounting documents have forms of standardised business correspondence, where standardization is only on the matter of the necessity information held by the documents. There are not standardised forms or standardized appearance of the accounting documents. For example: it is standardised which information must be included in the invoice, but the invoice appearance is not standardised. As a result, each company in each country use own appearance of invoices which up until recent times was inappropriate for automated machine processing.
Automatization and automatic solutions capable of making decision is not only in the field of accounting. We can observe automatization in fields such as medicine (Kumar, Chauhan, Awasthi, 2023), transportation (Zhang et al., 2023), etc. This paper aims to determine whether it is viable for SMEs in Slovakia to implement any solution available currently in the market. SMEs are usually not capable to develop own solutions so they mostly rely on available commercial solutions. SMEs are companies who have no market significance due to their small business, but in 2020 SMEs in Slovakia bear 99.5% of all business according to OECD (Financing SMEs and Entrepreneurs, 2020). European Commission keen to make bureaucracy for SMEs less burden by proposing to reduce their reporting obligations. (Commission, 2020) It is important to find out when the SME shall start to consider moving from human bookkeeper to an automated solution replacing the human. (Brown et al. 2020). The purpose of a company is mainly to generate the profit. Therefore, the answer to this research question shall be first investigate in terms of either increase of revenues or decrease of expenses. To prevent misunderstanding of digital documents processing within the company by omitting the context of the document, the common procedures applied not only to the accounting department, but throughout the entire organisation must be implemented. (Daniela, Antonio, Carmela, 2022). Digitalization has its place not only in profit-driven environment, but also in the public sector, when it bears fruit by increasing its efficiency. (Agostino, Saliterer, Steccolini, 2022) Digitalization, data processing and data evaluation through the company may help to promote its sustainability. (AlNasrallah, Saleem, 2022) Accounting management shall reflect to the digitalization applying its advantageous

properties to the company's day-to-day operation in order to increase efficiency. (Varaniute, Zickute, Zandaraviciute, 2022)
Replacing humans by machines is advantageous for the companies but the impact on economy is questionable. Human workers are subject to the labour code. (Act no. 311/2001 Coll. Labour Code, 2001) and their salary is taxed. While machines are not subject to any labour law and expense of their operation is not subject of a salary tax. In the other hand machined increased productivity of the company (Chyzhevska et al., 2021) which transfers into higher profit which is subject to the tax (Act no. 595/2003 Coll. on Income Tax 2003).

1.1. Machine learning capabilities for automatization of data extraction from accounting documents

The first and fundamental capability is the ability to read and process information from the text. Up until recent days such capabilities had been solely performed by humans. By releasing software solutions capable of reading a written text and extracting information out of it, the implementation of automated accounting documents may happen. Most of the current models are based on machine learning when software model is trained to determine information from given documents. By training the model on a significant number of documents it gains the ability to not only to read the information, but also to evaluate it, which is crucial for the further processing of the information.(Brown et al. 2020). Once the software is able to read the document and extract relevant information for the further information processing it can replace a human who up until now was in charge of reading and extracting the information from the documents. Human accountants have been in operation for decades, while automatic machine solutions are getting implemented just now. There are some uncertainties when any new technology is getting implemented. The crucial element is Risk management. (Vlčko, Meluchová, 2022).
One of the breakthroughs in replacing humans by a software solution is publicly announcement of replacing employees in the Black Rock investment firm by the machine learning software (Tokic, 2018). Applying Machine learning solutions in the accounting occupancy is mainly welcome by accountant expecting software to perform repetitive work tasks while humans may focus on more advanced tasks (Holmes, Douglass, 2022). Machine learning capabilities could be used not only for getting data from the documents but also for the evaluation of data (Tumpach et al., 2020) or for evaluation of strategies to gain some goal, for example environmental sustainability. (Raza et al., 2022)

1.2. Legality of automated accounting documents processing in Slovakia

Up until 31.12.2021 the accounting act (Act no. 431/2002 Coll. on Accounting 2002) did not allow to process digital versions of paper accounting documents for the official use. Companies could store digital versions of paper documents but for the Tax investigation purpose, the companies must show paper originals. Since 01.01.2022 the Accounting act have been amended to allow digital accounting documents to be used for the official purpose. A company which would like to apply digital accounting documents handling must meet certain criteria and establish certain procedures stated by the accounting act. Mainly, the company must meet 3 crucial criteria to be eligible to handle digital documents for the official purpose (Act no. 431/2002 Coll. on Accounting 2002):

1. Credibility of origin. Company must provide an evidence that the document, for example invoice, have been issued by the one who is declared by the document itself as issuer. Such condition must prevent artificial or false documents to be considered by a company. The same appearance that has been issued by issuer must be also proceed by the receiver of the document.
2. Integrity of content. Digital version must bear exact the same appearance as the original paper version of the document. This condition is applicable only for documents which have been delivered in paper form and are transformed into digital format.
3. Readability with the eye. Digital documents must be readable by a human eye. This condition is applicable mainly for the automatic data exchange, when information is exchanged in standardized data format, for example XML. Such digital format must be transferable into the format easily readable by a human.

Despite of legal possibility to proceed digital accounting documents, it is still the responsibility of the company to declare and prove that accounting is performed according to the law. Accounting act is strict in Slovakia in the term of breaching the accounting rules and the company may be punished up to 3 mil. € for breach of the accounting act (Act no. 431/2002 Coll. on Accounting 2002). Therefore, some companies may not to be keen to apply the digitalization of accounting to prevent any unintentional breach of accounting act. Even the automatization or digitalization of accounting documents is applied in the company, the company must have implemented internal control system.

2. METHODOLOGY AND RESEARCH

Research is performed on the sample of 10 real SME organizations. Data are provided anonymously by an accounting company which disclosed only statistical data of the companies from the sample. Due to protection of business secret, no documents of the sampled companies have been disclosed to the researchers; real names of the companies have been

replaced by letters a-j. Sample have been chosen randomly. For each company, the total number of accounting documents have been exported from the accounting software for the years 2020, 2021, 2022. The aim of this research is to find out whether application of an automated document processing solution is viable for SMEs. Therefore, we must eliminate possible extraordinary increase of the number of documents in the examined year. We do so by checking how the number of documents evolve over at least last three years. We expect that examined company runs its operation regularly, therefore the number of accounting documents shall be similar each year. The overview of the sample can be seen in the Table 1. For the purpose of this research, we took into consideration the average number of the accounting documents form the years 2020-2022.

Table 1: Sample overview. Number of accounting documents in years 2020, 2021 and 2022

Company	2022	2021	2020	Average
a	7471	4556	3615	5214
b	9101	8877	8435	8804
c	3885	8344	10743	7657
d	3365	4411	4320	4032
e	4517	4717	5002	4745
f	5659	3483	1976	3706
g	2466	2547	2473	2495
h	5078	4498	4423	4666
i	6520	6724	6314	6519
j	225	466	99	263

Source: Own processing from the sample of the investigated companies

Processing of one accounting document by a human accountant takes in average 45 seconds per document. Some documents take more time, some less; for the purpose of the research, we take an average time. Hour rate of an accountant also vary depending on the several conditions such as language requirements, experience etc. For this research we take an average labour hourly expense calculated based on the offered labour vacancies on internet, where gross salary varies around 9.8 €/hour which represents by rough calculation 13 € labour expenditure.
There are several solutions for automated document processing it the Slovakian market dedicated for SMEs. By automated document processing we understand automated data extraction from either PDF documents or any other similar data file. PDF document can be delivered to the company by email, by automated data exchange or by scanning paper documents into PDF. Extracted data are then sent into the accounting software. The process flow can be seen in the Chart 1.

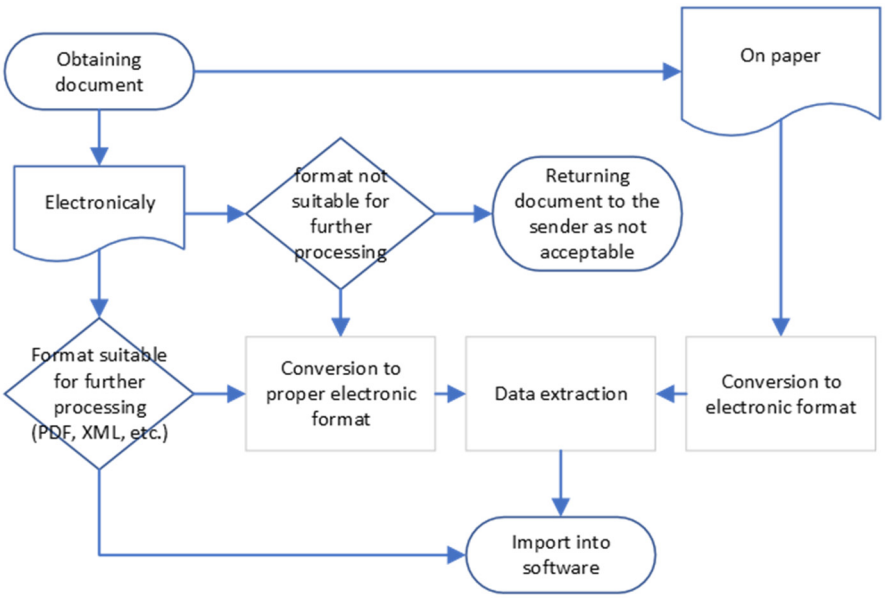

Chart 1: Process flow of automated document processing from received accounting documents into accounting software for further accounting.
Source: Own processing

For this research we took sample of 4 providers currently providing solutions to the SMEs for the data extraction. There are more providers of automated data extraction in Slovakia, we took into consideration those who revealed their prices in their web sites. Due to commercial advertisement restrictions, we replaced real named of the providers by the number of 1-4. The overview of prices can be seen in the Table 2.

Table 2: Overview of prices per automated data extraction solutions currently available at the Slovakian market.

Solution	Implementation cost	fixed operational expenses a month	variable operational expense per document	Disadvantage
1	$0	$25	$0	Slovak language not yet supported. Fixed monthly fee is for 1000 documents a month.
2	0 €	300 €	0 €	
3	0 €	20 €	0,10 €	
4	216	7 €	0,40 €	

Source: Own processing from the sample of the investigated companies

Comparison between labour expense and automatic solution expense can be seen in the Table 3. This comparison represents rough expense situation, not taking into consideration other factors such as other fixed and variable expenses, for example: utilities, office supplies, computer maintenance, etc. Also risk evaluation is not taken into consideration in this paper. This calculation does not contain compilation of the financial statements. The comparison includes only time and expense for processing accounting documents.

Table 3: Rough comparison between labour expenses and automatic document solution expenses on a yearly base.

Company	Average number of accounting documents	time spending in man-hours	Labour expense	Yearly expense solution no.1	Yearly expense solution no.2	Yearly expense solution no.3	Yearly expense solution no.4
a	5 214	65,18	847 €	$300	300 €	761 €	2 170 €
b	8 804	110,05	1 431 €	$300	300 €	1 120 €	3 606 €
c	7 657	95,72	1 244 €	$300	300 €	1 006 €	3 147 €
d	4 032	50,40	655 €	$300	300 €	643 €	1 697 €
e	4 745	59,32	771 €	$300	300 €	715 €	1 982 €
f	3 706	46,33	602 €	$300	300 €	611 €	1 566 €
g	2 495	31,19	405 €	$300	300 €	490 €	1 082 €
h	4 666	58,33	758 €	$300	300 €	707 €	1 951 €
i	6 519	81,49	1 059 €	$300	300 €	892 €	2 692 €
j	263	3,29	43 €	$300	300 €	266 €	189 €

Source: Own processing from the sample of the investigated companies

The price benchmark from the Table 3 is 300 €. Once the labour expense exceeds 300 € (with maximum 1000 documents a month), the automatic solution is cheaper than a human worker. To calculate the exact number of accounting documents from which automatic solution is more viable than human we follow the formula:

$$(number\ of\ accountign\ documents) = \frac{\frac{(automatic\ solution\ expense)}{(manhour\ labour\ expense)} \times 3600}{(time\ for\ processing\ 1\ documents\ in\ seconds)}$$

$$(number\ of\ accountign\ documents) = \frac{\frac{300€}{13€/h} \times 3600}{45 seconds} \cong \mathbf{1846}$$

We found out that for SMEs with more than 1846 accounting documents a year, a commercially available automatic solution for accounting documents handling is more financially viable than a human worker. By turning into digitalization of accounting document handling instead of paper accounting document handling the expenses for storing accounting documents also decay. Accounting documents must be stored at least of 10 years. Savings on digital archive instead paper archive are not taken into consideration in this research as this research is focused on SMEs. For SMEs the archive expenses are not significant due to low number of documents.

3. CONCLUSION

As shown in this research, automatization of accounting document handling is financially viable for SMEs which exceed 1846 accounting documents a year. Despite of other practical aspects which are not mentioned in this paper, automatization of accounting document handling saves time, and money for companies. To implement automatic accounting document handling, the company must ensure that the process is not making mistakes. In Slovakia, it is required to have in place an internal control mechanism to ensure that accounting is provided according to the law. By implementing automated solutions companies can release saved man-hours of labour force into other need working occupancies which, if properly managed, can contribute to the increase of the company output and profit. For the micro companies which less than 1800 accounting documents a year it is questionable whether automatic solutions are viable. Most of the suppliers of the digitalization solutions provide also cloud storage and other support, which is not considered in this research, but those services also save time, money and effort to SMEs. There are enough suppliers in Slovakia providing automatic digital document handling solutions for SMEs capable to extract data. Data are then directly imported into accounting software where they may be processed by a human accountant or by automatic software "accountant". Digitalization and solutions based on machine learning are trend which is getting implemented in almost any area of business. Therefore, it is only a matter of time when everyone would have to move forward to implement the handling of digital documents. Companies who implement such solution in time, may gain the advantage which have been shown in the recent days of Covid pandemic, when companies which already moved into digital documents handling were able to adapt to restrictions by easily allowing employees to work from home (or from anywhere else). Companies which implement also automatically data extraction form delivered documents may show their further advantage of technological adaptability to a quickly changing business environment.

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ПРИМЕНА ТЕХНОЛОГИЈЕ РОБОТСКЕ АУТОМАТИЗАЦИЈЕ ПРОЦЕСА: ПРИМЕР ФАКТУРИСАЊА

Апстракт: Позадина: Дигитална трансформација пословања представља концепт чији утицај је неспоран у готово сваком сектору пословања. Овај период трансформације се понекад назива дигиталном ером коју карактерише широк спектар дигиталних могућности из које се не сме изоставити тренд роботизације који постаје све важнији и наглашенији. У том контексту, технологија роботске аутоматизације пословања (РПА) несумњиво чини један од најважнијих аспеката дигиталне трансформације пословања. РПА има за циљ да ослободи људе од обављања понављајућих, структуираних и ниско когнитивних задатака који имају тенденцију да запосленима постану досадни а тиме и да резултирају већим бројем грешака. **Сврха:** Циљ овог рада је упознавање са теоријским основама РПА технологије и представљање студије случаја тј. тока и начина развоја робота насталог током реализације пројекта дигиталне трансформације пословања у производној фирми средње величине. **Резултати/закључци:** Резултати студије случаја нуде приказ начина размишљања и решавања проблема у аутоматизацији реалног процеса фактурисања. **Ограничења/будућа истраживања:** Ограничења се односе првенствено на немогућност приступа ресурсима компаније током развоја робота што за резултат има робота који захтева одређена прилагођавања у циљу његове имплементације у реално окружење. Пошто компанија није одобрила употребу њиховог ЕРП (енгл. *Enterprise Resource Planning*) система у којем врше креирање фактуре, за реализацију овог пилот пројекта су коришћене алтернативне могућности и ресурси. Упознавање руководства компаније са овом технологијом кроз пример роботизације процеса фактурисања би требало да резултира потпуним прихватањем овог пројекта. То би довело до потребе да се у будућности креирани робот прилагоди стварним ресурсима компаније и имплементира у њихово свакодневно пословање.

Кључне речи: robotic process automation, rpa, invoicing, invoice, financial sector, fintech, financial institution

APPLICATION OF ROBOTIC PROCESS AUTOMATION TECHNOLOGY: EXAMPLE OF INVOICING

Abstract: Background: Digital business transformation is a concept whose impact is undeniable in almost every business sector. This period of transformation is sometimes called the digital era, which is characterized by a wide range of digital possibilities, from which the trend of robotization, which is becoming increasingly important and emphasized, must not be left out. In this context, robotic process automation technology (RPA) undoubtedly constitutes one of the most important aspects of the digital transformation of business. RPA aims to free people from performing repetitive, structured and low-cognitive tasks that tend to bore employees and thus result in more errors. **Purpose:** The aim of this paper is to familiarize with the theoretical foundations of RPA technology and to present a case study, i.e. flow and method of development of robots created during the realization of the project of digital transformation of business in a medium-sized manufacturing company. **Results/conclusions:** The results of the case

study offer a representation of the way of thinking and solving problems in the automation of a real-world invoicing process. **Limitations/future research:** Limitations refer primarily to the inability to access the company's resources during robot development, which results in a robot that requires certain adjustments in order to implement it in a real environment. Since the company did not approve the use of their ERP (*Enterprise Resource Planning*) system in which they create invoices, alternative possibilities and resources were used for the realization of this pilot project. Acquainting the company's management with this technology through the example of robotizing the invoicing process should result in full acceptance of this project. This would lead to the need to adapt the created robot in the future to the real resources of the company and implement it in their daily business.

Key words: robotic process automation, rpa, invoicing, invoice, financial sector, fintech, financial institution

1. УВОД

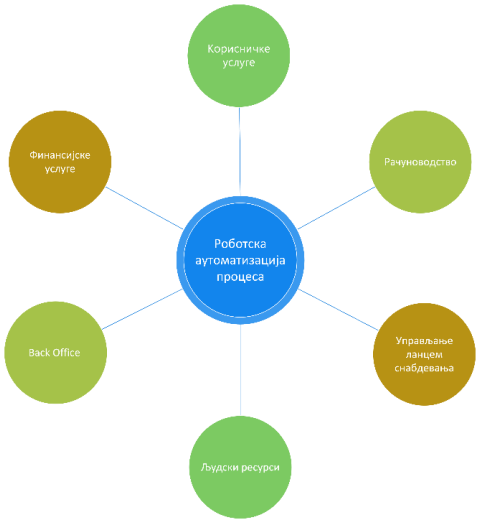
Динамичну данашњицу карактеришу непрестане промене. Оне су допринеле да решавање различитих проблема попут ажурирања застарелих система, увођења напреднијих технологија и пословних модела потпуно окупирају пажњу пословног света (Choubey & Sharma, 2021). Овакав тренд је довео до тзв. дигиталне ере у којој се тренутно налазимо и коју карактерише велики утицај технологије како на интерно понашање организација тако и на њихову комуникацију са тржиштем.

Постојећа литература неспорно сугерише на значај дигиталне трансформације пословања и њен утицај на генерисање нових видова посматрања окружења као и начина за диференцијацију организација (Lievano Martinez & Fernandez Ledesma, 2022). Компаније теже да кроз употребу различитих решења из широког спектра дигиталних могућности остваре конкурентску предност (Veliyeva, 2021). Мобилне технологије, рачунарство у облаку (енгл. *Cloud Computing*), вештачка интелигенција (енгл. *Artificial Intelligence*), блокчејн (енгл. *Blockchain*), масовни подаци (енгл. *Big Data*) и интернет ствари (енгл. *Internet of Things*) чине део широке лепезе доступних технологија које привлаче пажњу пословног света (Met et al., 2020). Поменуто набрајање би било непотпуно без навођења феномена роботизације који је велик, динамичан и последњих година све више наглашен (Lacurezeanu et al., 2020). У том контексту, технологија роботске аутоматизације процеса несумњиво чини један од најважнијих аспеката дигиталне трансформације пословања. То потврђују и прогнозе компанија за анализу података које указују на алате за аутоматизацију процеса као најбрже растућу групу технологија дигиталне трансформације на тржишту информационих технологија (Sobczak, 2021).
Роботи се користе у различитим индустријама и пословним процесима (Lacurezeanu et al., 2020). Историјски посматрано први робот је настао крајем 1950-их година у *General Motors*-овој фабрици и представљао је почетну тачку на путу ка аутоматизацији (Iden, 2017). Током времена, значај робота је еволуирао до тог нивоа да су постали неопходност и нормалност која произвођачима чак и не доноси никакву предност у односу на конкуренте. Како је технологија напредовала, у данашње време је уведен још један тип робота - виртуелни робот (Iden, 2017). Реч је о софтверском решењу које чини основу овог истраживања и које ће у наставку бити детаљно објашњено и приказано кроз теоријску анализу али и практичну аутоматизацију процеса фактурисања.
Дигитална радна снага, виртуелни робот, бот или само робот представљају различите начине дефинисања софтверских решења које чине резултат пројекта роботске аутоматизације процеса. РПА технологија је дизајнирана за извршавање пословних процеса заснованих на правилима опонашајући људске поступке (Villar & Khan, 2021). Многобројни понављајући и заморни пословни процеси који су карактеристични за компаније свих сектора могу да се аутоматизују имплементацијом софтверских робота. РПА решења могу позитивно утицати на запослене, ослобађајући их извршавања рутинских, монотоних и понављајућих активности уз истовремено усмеравање њихове пажње ка извршавању изазовнијих и занимљивијих задатака који захтевају креативност, виши ниво знања и људско расуђивање. Поред тога, гаранција квалитета и брзине, уз минимум грешака у пружању услуга, повећава задовољство и руководиоца компанија али и корисника (Maček et al., 2020).
Главни циљ овог рада је да се прикаже студија случаја аутоматизације процеса фактурисања који је развијен и презентован у једној производној компанији која је кренула путем дигиталне трансформације пословања. Због тога ће наставак рада бити структуиран на следећи начин: најпре ће се представити постојећа знања о роботској аутоматизацији процеса која ће представљати основу за наредну секцију и објашњење тока развоја пилот студије. Последње поглавље садржи закључна разматрања.

2. РОБОТСКА АУТОМАТИЗАЦИЈА ПРОЦЕСА

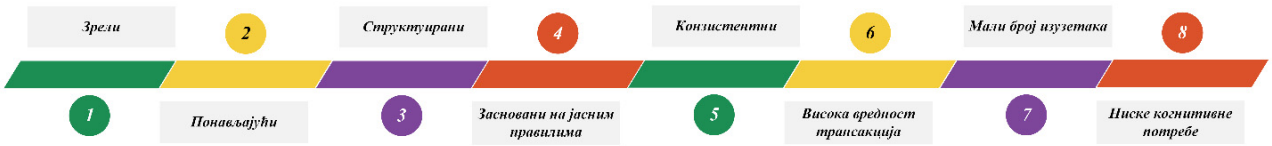
Роботска аутоматизација процеса представља модерну и иновативну технологију која омогућава компанијама да кроз замену људи софтверским роботима остваре значајна побољшања у оперативној продуктивности и ефикасности (Kanakov & Prokhorov, 2020). Развијена дигитална радна снага би требало да ради раме уз раме са

запосленима и елиминише готово све мануелне процесне активности и задатке које би иначе морали људи да обављају (Maček et al., 2020). На овај начин, док су роботи укључени у репетитивне задатке, запослени могу да буду укључени у сложеније задатке који стварају додатну вредност, захтевају људску интеракцију и укључују доношење комплекснијих одлука (Abdulla et al., 2022; Met et al., 2020).
Запослени у току извршавања својих активности користе постојеће информационе системе са којима комуницирају путем њиховог корисничког интерфејса. У основи постоје две врсте радњи које се могу извршити путем корисничког интерфејса: клик мишем ради пребацивања екрана и/или унос садржаја помоћу тастатуре (Choi et al., 2021). С обзиром да софтверски роботи извршавају дефинисане задатке на идентичан начин на који би то урадили и запослени, они комуницирају са другим системима кроз презентациони слој али много ефикасније од људи (Kanakov & Prokhorov, 2020). Овакав приступ аутоматизацији људских активности побољшава квалитет информација, избегава људске грешке, смањује трошкове, али нуди и предности у виду поузданости, скалабилности, доследности, транспарентности, усклађености и квалитета уз додатно смањење напора и раст морала запослених (Devarajan, 2018; Maček et al., 2020). Додатно, Rashed et al., (2023) наводе уштеде у трошковима и смањење броја грешака уз повећање брзине и продуктивности као главне предности имплементације роботске аутоматизације процеса.
Технологија роботске аутоматизације процеса се лако имплементира у секторима у којима су токови посла зрели, засновани на правилима, понављајући и структуирани (Met et al., 2020). Коначна решења развијена употребом ове технологије се разликују између сектора, међутим, посматрање области употребе РПА може резултирати општим закључком. Оперативно интензивни и стандардни процеси се најчешће могу пронаћи у ИТ сектору, људским ресурсима, финансијском сектору али и у одељењу које обавља операције које се дефинишу као *back-office* (Ahmet Unal & Bolukbas, 2021). *Back-office* задаци су често досадни и понављајући те њихово додељивање људима има тенденцију да исцрпи или досади након одређеног времена, што повећава ризик од грешака и продужава време обраде. Са друге стране, роботи немају поменуте потешкоће (Séguin et al., 2021). Слика 1. приказује како компаније стичу користи од РПА и задржавају своју конкурентску предност у трци ка дигиталној трансформацији (Bisht et al., 2022).



Слика 1: Најчешће примене роботске аутоматизације процеса
Извор: (Bisht et al., 2022) (адаптирано)

Уз централну предност роботске аутоматизације процеса која лежи у њеној ефикасности, велики обим трансакција и подложност људској грешци се често третирају као показатељи који одређују прикладност датог процеса за аутоматизацију помоћу РПА. Све док је системско окружење компаније стабилно, РПА се може конфигурисати за приступ подацима из више система. Због тога се критеријуми стабилности постојеће ИТ инфраструктуре и потребе за приступом већем броју система често примењују на процесе идентификовања кандидата за аутоматизацију. Пошто је РПА заснован на правилима, одговарајући задатак је потребно разложити на недвосмислена правила која захтевају ниске когнитивне способности у погледу њихове обраде (Kedziora & Penttinen, 2021). Han Ping Fung (2013) је идентификовао 9 услова за избор РПА, и то: велики обим трансакција, висока вредност трансакција, употреба већег броја система, конзистентност процеса, минимална потреба за људском интервенцијом, мали број изузетака, мануелни и понављајући задаци, једноставна декомпозиција процеса на јасне кораке и могућност процене текућих трошкова процеса. Ради лакше систематизације, најзначајније карактеристике процеса погодних за аутоматизацију су приказани и шематски (Слика 2).

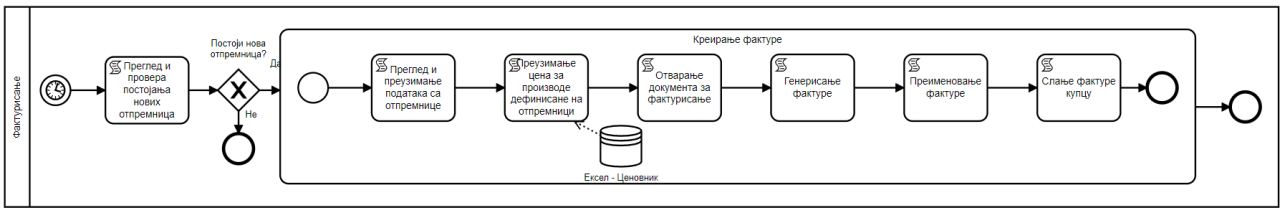


Слика 2: Карактеристике процеса који су погодни за аутоматизацију
Извор: аутор

3. РЕЗУЛТАТИ СТУДИЈЕ СЛУЧАЈА - ПРИМЕР ФАКТУРИСАЊА

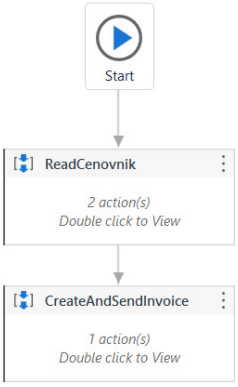
У уводном делу је споменуто да је идеја за писање овог рада проистекла из учешћа аутора на пројекту дигиталне трансформације пословања у једној производној фирми средње величине. Компанија је препознала важност спровођења промена ради опстанка на тржишту које је све више било окупирано од стране друге производне компаније која је поседовала далеко веће капацитете производње, могућности пласирања готових производа на удаљенија тржишта а самим тим и могућности потискивања конкуренције са тржишта. Водећи се овим притисцима посматрана компанија је кренула путем дигиталне трансформације пословања почевши од пројекта идентификовања и анализе кључних пословних процеса. Неколико месеци рада на поменутом пројекту је резултирало процесном документацијом која се састојала од графички приказаних токова процеса, њиховог текстуалног описа, закључних разматрања као и предлога за будуће пројекте. Нотација која се користила за визуелизацију токова пословних процеса је *BPM* нотација која нуди могућност приказивања готово сваког пословног процеса и која је општеприхваћена у свету моделовања. Један од предложених пројеката на путу ка дигиталној трансформацији пословања је била и примена технологије роботске аутоматизације процеса ради аутоматизације оних процеса који су свакодневно одузимали превише времена запосленима а нису стварали неку конкретну корист. Недостатак знања о РПА технологији је ипак кочило даљу реализацију овог пројекта. Из тог разлога, постигнут је договор који је подразумевао израду и презентацију пилот пројекта аутоматизације неког пословног процеса, након чега би се донела одлука о прихватању или одбијању пројекта. Одлука је пала на процес фактурисања који се и у литератури често наводи као најподеснији процес за аутоматизацију. Потребно је нагласити да компанија није дала одобрење за приступ њиховим ресурсима односно да приликом израде пилот пројекта није омогућен приступ њиховом ЕРП систему у којем се заправо креирају фактуре. Због тога је овај пројекат модификован у складу са доступним могућностима и на концептуалном нивоу приказао поступак фактурисања заједно са могућностима аутоматизације. Такође, важно је напоменути да поменута ограничења не мењају суштину целокупног процеса фактурисања и да у случају одобравања реализације овог пројекта креирана аутоматизација може веома лако да се модификује и примени у пракси. Алат који је коришћен за развој софтверског робота је *UiPath*.

У компанији се процес фактурисања реализује кроз ЕРП систем на основу података са раније креираних отпремница. Овај задатак је у надлежности *back office*-а чији радници сваки дан потроше пола, а некада и више од пола радног времена на мануелно креирање фактура. Отпремнице за које је потребно креирати фактуру се налазе у ЕРП систему. Након њиховог одабира запослени има обавезу да мануелно провери исправност података на њој. Проверавају је општи подаци о купцу, подаци о производима, количинама али и ценама. Након мануелне провере отпремнице, запослени копира број отпремнице на нови документ у ЕРП систему путем којег се врши креирање фактура. Број отпремнице се лепи на за то предвиђено место у циљу повезивања два документа. Уносе се и поново проверавају сви потребни подаци попут назива купца, врсте документа, датума, финансијских показатеља итд. Јасно је да ови мануелни поступци копирања, дуплог проверавања и уношења података не захтевају велико знање људи и њихово расуђивање. Након уноса свих података и завршеног креирања фактуре следи њихово штампање, припрема ради слања поштом као и слање путем мејла. Сви ови кораци су одлични кандидати за аутоматизацију употребом роботске аутоматизације процеса и на тај начин ослобађање запослених од ових послова. Ради израде пилот пројекта приказан је AS-IS модел који је прилагођен потребама алата за аутоматизацију (Слика 3).



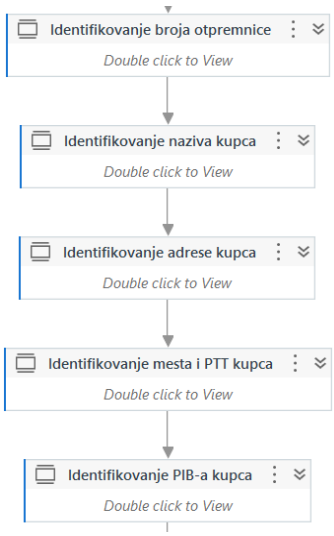
Слика 3: Прилагођени AS-IS модел процеса фактурисања
Извор: аутор

Ограничење повезано са немогућношћу приступа ЕРП систему ради креирања фактуре је превазиђено употребом онлајн генератора фактура (https://invoiceto.me/). Овај генератор се попуњава са подацима који су претходно екстраховани са отпремнице која је у ПДФ формату. На овај начин, концепт фактурисања остаје непромењен. Уместо пријављивања у ЕРП систем и попуњавања поља која се тамо налазе отвара се веб страница и попуњавају се поља на тој страници. У коначној верзији пројекта би се ова промена лако имплементирала. Уместо учитавања података са отпремнице из ЕРП-а коришћен је ПДФ документ. Овај поступак екстраховања података са ПДФ документа се може окарактерисати као тежи од прикупљања података из ЕРП система због потребе за коришћењем вештачке интелигенције и ОЦР (енгл. *Optical Character Recognition - OCR*) технологије као њене појаве. ОЦР представља технику за претварање руком писаног, физичког текста у дигитални формат са којим РПА може да ради. Због свог огромног потенцијала примене он чини једну од најпопуларнијих области у препознавању образаца (Lima et al., 2021). Претпоследњи корак у *UiPath*-у представља промену назива фактуре у број фактуре. Процес аутоматизације се завршава чином слања креиране фактуре путем мејла на адресу купца.
Пошто се приликом израде робота предлаже започињање пројекта са дијаграмом тока или секвенцом, пројекат је подељен на две логичке целине које су представљене секвенцама (Слика 4). Прва секвенца *ReadCenovnik* служи за учитавање ценовника из ексел (енгл. *Excel*) документа у којем се налазе две колоне: назив производа и цена. Све цене из ценовника су сачуване у варијабли *tblCenovnik* који је типа *DataTable*. Променљива овог типа служи за чување података у облику табеле.

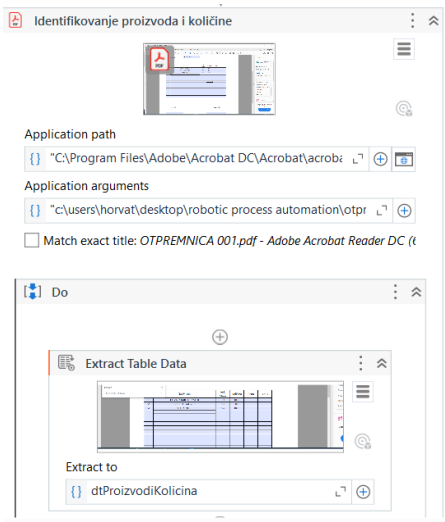


Слика 4: Пројекат процеса фактурисања
Извор: аутор

Након решавања питања ценовника на ред долази и главни део процеса фактурисања који је развијен у секвенци *CreateAndSendInvoice*. Ову секвенцу логички има смисла поделити и на две секвенце али је из практичних разлога чин креирања и слања фактуре смештен у једну секвенцу. Овај део пројекта се састоји из следећих корака: екстраховање података са отпремнице и њихово чување у варијаблама, одређивање цена за сваки од производа који је екстрахован у претходном кораку, креирање фактуре користећи податке који су добијени у претходна два корака, промена назива фактуре и слање фактуре.
Први корак најпре укључује проверу постојања нове отпремнице а резултат овог поступка утиче на почетак рада робота. Уколико постоји нова отпремница, подаци са исте се екстрахују и чувају у варијаблама. На овај начин се долази до следећих података (Слика 5): броја отпремнице, назива купца, адресе купца, места и ПИБ купца, назива производа и количине производа - који се заједно са називима производа чувају променљивој типа *DataTable* (Слика 6).

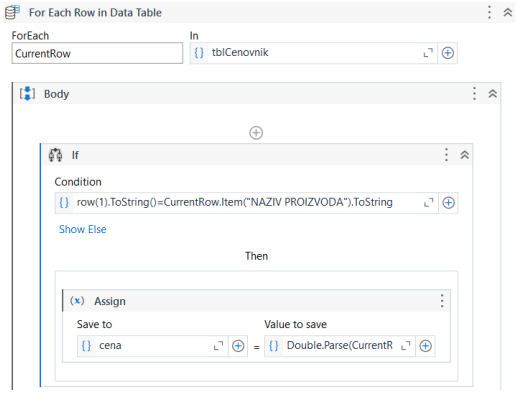


Слика 5: Екстраховање података са отпремнице
Извор: аутор



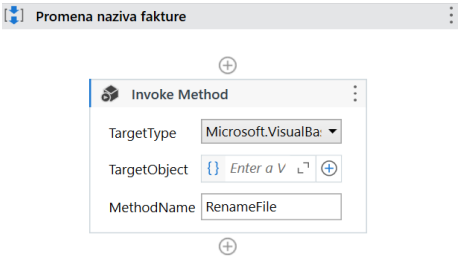
Слика 6: Идентификовање производа и цена
Извор: аутор

Одређивање цене за сваки од производа са отпремнице се вршио употребом *For-Each* петље која пролази кроз ценовник који је био смештен у променљивој *tblCenovnik* (Слика 7).

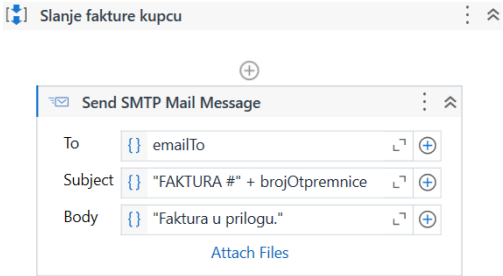


Слика 7: Одређивање цене за сваки производ
Извор: аутор

Овим кораком се завршава прикупљање свих података неопходних за израду фактуре и успешно се испуњавају сви неопходни предуслови за њихову израду. Подаци сачувани у варијаблама су унети у фактуру употребом елемента *Type Into*. Након уноса свих података фактура се чува у ПДФ формату на за то предвиђеном месту а њихово име се мења употребом *Invoke Method* активности (Слика 8). Процес фактурисања се завршава слањем креиране фактуре на мејл купца што је извршено на начин који је приказан на слици 9.



Слика 8: Промена назива фактуре
Извор: аутор



Слика 9: Слање фактуре купцу
Извор: аутор

Начин који је приказан и објашњен у претходном делу представља ток израде пилот пројекта аутоматизације процеса фактурисања који је презентован директору и руководиоцима посматране компаније. Потенцијални

наредни корак би требало да укључи анализу утицаја аутоматизованог начина рада на смањење времена обраде, трошкова и броја грешака.

4. ЗАКЉУЧАК

Дигитална ера је извршила притисак на пословну област и све индустрије да почну са аутоматизацијом својих радних токова и операција (Petkova et al., 2020). Том притиску је била изложена и анализирана производна компанија средње величине која је додатно, за своју конкуренцију имала и компанију која је својом величином претила да потисне све остале конкуренте. Жеља за променама је довела до дефинисања првог пројекта који је укључивао снимање постојећих пословних процеса и израду процесне документације заједно са предлозима будућих пројеката. Међу предлозима будућих пројеката се нашао и предлог за имплементацију технологије роботске аутоматизације процеса која је требала да ослободи првенствено запослене у *back-office*-у трошења ресурса на свакодневно извршавање истих и монотоних активности који не захтевају никакво људско знање и вештине. Без обзира на изложене бенефите, недостатак знања о овој технологији је допринео да се овај пројекат иницијално не прихвати. Због тога је постигнут договор о развоју пилот пројекта процеса фактурисања који је требао да прикаже могућности оваквог приступа аутоматизацији.

Упознавање са општим могућностима и карактеристикама технологије роботске аутоматизације процеса је допринело идентификовању карактеристика РПА и процеса погодних за аутоматизацију. То теоријско знање је у комбинацији са знањем из области управљања пословним процесима омогућило спознају потребе за РПА као и процеса фактурисања који је предложен као предмет пилот пројекта. Идентификовање процеса погодних за аутоматизацију је захтевало спровођење анализе постојећих пословних процеса и трагање за онима који поседују карактеристике попут репетитивности, структуираности, мануелености и ниског степена потребе за људским расуђивањем. Ове карактеристике су идентификоване и у процесу фактурисања чија аутоматизација је чинила језгро овог рада. Детаљно су прикупљене информације о свим појединачним корацима који се извршавају у овом процесу и сваком податку који је неопходно проверити или дефинисати ради креирања фактуре. Ови кораци су пренете на софтверског робота употребом *UiPath* алата. На тај начин је развијен пилот пројекат чији је резултат софтверски робот који би уз мало прилагођавања због ограничења која су постојала током његовог развоја могао да се употреби у свакодневном пословању. На тај начин би се остварилe предности РПА које су многи истраживачи представљали у својим радовима. Резултат креиране аутоматизације је представљен управљачком делу компаније те би наставак овог рада требало да укључује потпуно прилагођавање пилот пројекта реалном окружењу, опис процеса имплементације и почетак коришћења робота у свакодневном пословању.

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СТАВОВИ ПОТРОШАЧА ДИГИТАЛНОГ ДОБА О УТИЦАЈУ ДРУШТВЕНИХ МРЕЖА НА КУПОВИНУ ПРОИЗВОДА СА ЗЕЛЕНИХ ПИЈАЦА

Апстракт: Савремено доба је период брзог развоја технологије који карактеришу брзе промене и начин свакодневног живота потрошача. Сходно променама и потрошачи свежих пољопривредних производа желе да се прилагоде том тренду. Предмет истраживања базира се на анализи понашања, преференције и потреба потрошача с циљем прилагођавања продаваца на пијаци начину размишљања дигиталних потрошача. Наиме, резултати истраживања имају за циљ прилагођавање циљној популацији потрошача. Резултати истраживања након Пандемије Ковид-19, показују да је генерација потрошача дигиталног доба веома бројна са релевантним тржишним потенцијалом и идентитетом у односу на раније генерације потрошача пијачних производа. Бројност ових потрошача је велика и утиче на промену стратегије продаје свежих пољопривредних производа. Дакле, тим променама се морају прилагодити пијаце и продавци уколико желе уз своје традиционалне потрошаче придобити и задржати нове дигиталног доба. Друштвене мреже су основни чинилац прилагођавања онлајн продаји и доношењу одлуке о куповини. Циљ рада је истражити улогу и значај друштвених мрежа у процесу куповине и усредсређивање на потрошача у контексту дигиталне продаје и комуникације. Истраживање се базира на теоријском приступу утицаја друштвених мрежа на доношење одлуке о куповини са становишта потрошача, искуству аутора и онлајн анкети потрошача који користе друштвене мреже старости до 30 година, на узорку од 200 потрошача. На основу задовољства потрошача структуиран је концептуални модел истраживања и дефинисане хипотезе које су проверене методама статистичке обраде података. Резултати истраживања анализирани су и презентовани путем метода статистичке обраде података у виду табела и графикона. Препоруке у виду закључака приказују теоријски оквир утицаја друштвених мрежа на одлуку о куповини и презентују ставове испитаника спроведеног истраживања како би се извели закључци колики је њихов утицај на домаћем тржишту.

Кључне речи: понашање потрошача, дигитално доба, друштвене мреже, зелене пијаце, одлука о куповини.

DIGITAL ERA CONSUMERS' ATTITUDES ABOUT SOCIAL NETWORKS INFLUENCE ON GREEN MARKETS PRODUCTS PURCHASE

Abstract: The modern era is a period of rapid development of technology that is characterized by rapid changes of everyday life of consumers. According to the changes, consumers of fresh agricultural products also tend to adapt to the trend. Object research is based on the analysis of consumers' offers, preferences and needs, with the aim of market sellers' acceptance of digital consumers' way of thinking of. Namely, the research results are aimed at adapting to the targeted population of consumers. The research results after the Covid-19 Pandemic show that the generation of digital

age consumers is very numerous and has a relevant market potential and identity, in comparison to previous productions. The number of these consumers is significant and affects the change in the sales strategy of fresh agricultural products. So, markets and sellers must accept these changes if they want to win and keep new digital age customers along with their traditional customers. Social networks are a fundamental factor in adaptation to онлајн sales and making purchasing decisions. The aim of this work paper is to investigate the role and importance of social networks in the purchase process and focus on the consumer in the context of digital sales and communication. The research is based on a theoretical approach to the influence of social networks on making a purchase decision from the consumer's point of view, the author's experience, and an онлајн survey of consumers who use social networks under the age of 30, on a sample of 200 consumers. Based on consumer satisfaction, a conceptual research model was structured and hypotheses were defined, and they are verified using different statistics softwares. The research results were analysed and presented using statistical data processing methods in the form of tables and graphs. Recommendations in the form of conclusions present the theoretical framework of the influence of social networks on the purchase decision and show the views of the respondents of the conducted research in order to draw conclusions about the extent of their influence on the domestic market.

Key words: consumer behaviour, digital era, social networks, green markets, purchase.

1. УВОД

Дигитална ера пословања иницирала је развој нових услуга у продаји производа па тако и производа са зелених пијаца. Пандемија ковид-19, само је убрзала трансформацију продаје и примену дигиталног маркетинга у продаји свежих и здравих производа са зелених пијаца. Сама примена продаје путем друштвених мрежа одговор је на нову потребу потрошача. У случају продаје производа са зелених пијаца потребно је, анализирати потребе и понашање потрошача, с циљем усмеравања продаје путем друштвених мрежа. Е-маркетинг на друштвеним мрежама разликује се од традиционалних маркетинг метода, па захтева посебну пажњу и изградњу стратегије за постизање имица и лојалности бренда. (Костић, 2022). Е-истраживање има за циљ да повећа продају производа пијачних продаваца коришћењем друштвених мрежа, као додатни вид маркетиншких усмеравања на потрошаче дигиталног доба. Вредновање перцепције корисника посматра се из угла поузданости и сигурности куповине путем друштвених мрежа, као и цене и квалитета производа. Суштина продаје путем друштвених мрежа је проширење продаје као допуна традиционалној пијачној продаји у сврху трансформације маркетиншке стратегије на основу перцепције потрошача и додатне вредности за исте. Наиме, циљ задовољења потреба потрошача дигиталног доба темељи се на стратегији очекиваних прихода у продаји. Задовољство се односи на купчевој процени очекивања, односно ризика између очекиване и добијене вредности. (Zeithaml, Bitner и Gremler, 2018). Усмеравање ка потрошачима дигиталног доба, подразумева примену дигиталних технологија и маркетинга који доприноси бољим економским резултатима у продаји. Наиме, задовољство потрошача води лојалности, како пијацама тако и продавцима на пијаци. (Прдић, 2022). У том контексту се ставови испитаника, идентификују као смернице за израду маркетиншке стратегије стварања нових купаца. Према истраживањима које је спровела Statista.com, 20% испитаника купује онлајн једном недељно, 24% сваке две недеље, и 31% њих месечно. (Kristensen, 2020). У раду ће се класичне перцепције купаца пијачних производа надоградити могућностима куповине путем друштвених мрежа, где ће крајњи резултат бити увећање продаје пијачних продаваца кроз дигиталну трансформацију пословања. Маркетиншко усмеравање ка потрошачима дигиталног доба ствара нову димензију трговине и олакшава продавцима комуникацију ка специфичним преференцијама потрошача. (Прдић и Костић, 2023).

Циљ овог рада је истражити међузависност интереса продаваца продајом и потрошача куповином пијачних производа коришћењем друштвених мрежа. Међузависност ће бити проверавана помоћу хипотеза о позитивној повезаности између поузданости и сигурности и цена и квалитета на задовољство потрошача. Поред научних сазнања, рад има за циљ да омогући пијачним продавцима препознавање фактора који утичу на куповину међу потрошачима дигиталног доба.

2. ПРЕГЛЕД ЛИТЕРАТУРЕ И ХИПОТЕЗЕ ИСТРАЖИВАЊА

Спроведена су различита истраживања како би се утврдили чиниоци који утичу на задовољство потрошача онлајн куповином. (Schott, 2017). Ова истраживања базирају се на процесу дигиталне трансформације пословања антиципирајући нови систем продаје и услуга применом савремених технологија. Истраживања која повезују интернет трговину са поузданошћу и сигурношћу повезују различита истраживања у ранијем периоду попут (Jun, Yang и Ki., 2004; Parasuraman, Zeithaml и Malhotra, 2005). Ранија истраживања и ставови потврђени су и кроз пословну праксу, где се трговина путем друштвених мрежа сматра веома значајном и битном у смислу стварања

угледа. Ове чињенице и примена интернета и сталних иновација постале су смер и правац одређивања пословних перформанси предузећа. Интернет трговина путем друштвених мрежа добија на посебном значају у току и нако Пандемије Ковид-19. Друштвене мреже су се појавиле као моћно и ефекасно средство за одржавање пословних комуникација. (Hussian, Chen и Nurunnabi, 2019). Акценат истраживања је на коришћењу дигиталног маркетинга у сврху снабдевања урбаног становништва прехрамбеним пољопривредним производима и задржавање основног квалитета живота појединаца и урбане средине. (Прдић и Костић, 2022). Задовољан је онај потрошач који је спреман да плати створену вредност производа који је доспео на тржиште. (Газдић и Нађ, 2022). Неке земље постижу више с мање улагања у иновације. (Ахметагић, Петковић и Родић, 2022). Онлајн трговина сматра се једним таквим технолошким богатством, поготово за људе који имају мањак времена. (Harirmani, 2017). Онлајн куповина представља трансакције средстава између потрошача и предузећа. (Ibrahim, Raihan, Rose, Lumat, Ismail, 2019). Куповина путем друштвених мрежа (онлајн) чини потрошњу једноставнијом. (Frick и Matthies, 2020). Поузданост web информација доприноси поверењу и подстиче онлајн куповину. Дакле, купци су ти који на темељима информација формирају своја очекивања у вези производа. Савремено окружење и продаја здравих пољопривредних производа са зелених пијаца спадају у специфичне факторе и имају утицај на здравље и безбедну исхрану. Данас су јавни расходи усмерени на остваривање различитих циљева. (Михајловић и Савић, 2022). Иако је примена нових технологија на продавцима, јавни интерес се огледа и у трансформацији рада пијаца као непосредног чиниоца у продаји и задовољству корисника. Пословна анализа, као посебна пословна функција, јесте непрекидан процес систематског испитивања и оцењивања. (Чавлин, 2022). Наиме, зато је важно истражити и анализирати све чиниоце који утичу на перцепцију потрошача и свих корисника пијачних услуга, како би при обликовању маркетиншких стратегија имали могућност целовите пословне анализе пословања. На основу циља истраживања о утицају друштвених мрежа на понашање потрошача о куповини пољопривредних производа са зелених пијаца и њихов утицај на маркетинг стратегију продаваца формиране су и хипотезе истраживања.

X1: Постоји значајна позитивна повезаност између поузданости и сигурности куповином путем друштвених мрежа и задовољства потрошача истом.

X2: Постоји значајна позитивна повезаност између цене и квалитета куповином путем друштвених мрежа и задовољства потрошача истом.

3. МАТЕРИЈАЛИ И МЕТОДЕ

Истраживањем се жели постићи такво сазнање које ће омогућити извођење одређених ставова у виду препорука и закључка када је у питању куповина пољопривредних производа са зелених пијаца. Након Пандемија Ковид-19, створила се већа група потрошача који су спремни да користе друштвене мреже за куповину производа. Ова сазнања из претходних истраживања основа су за анализу ставова савремене генерације младих до 30. година старости. За мерење ставова коришћена је Ликертова скала прихватања или неприхватања кроз пет нивоа мерења. (1- нимало се не слажем до 5- у потпуности се слажем. Истраживање се базира на теоријском приступу утицаја друштвених мрежа из претходних истраживања, искуства аутора, као и међузависности интереса за куповину у виду поузданости и сигурности куповине и међузависности куповине која зависи од цене и квалитета. Истраживање је спроведено путем онлајн анкете потрошача који користе друштвене мреже старости до 30 година, на узорку од 200 потрошача. Анкета је спроведена на друштвеним мрежама (Фејсбук и Инстаграм), у току новембра месеца 2022. године. Услов истраживања је био да су испитаници старости до 30 година. Узорак се састајао од 110% особа женског пола и 95% особа мушког пола. Просечна старост је била 25 година. Око 70% њих су имали више и високо образовање 20 % су још били студенти а 10% је било средњег нивоа образовања. На основу задовољства потрошача структуиран је концептуални модел истраживања и дефинисане хипотезе које су проверене методама статистичке обраде података. Резултати истраживања базирају се на примени метода маркетинг истраживања путем историјског метода и метода маркетинг истраживања коришћењем анкетног упитника. Резултати су презентовани путем табела и графикона.

4. РЕЗУЛТАТИ СА ДИСКУСИЈОМ И ПРЕПОРУКЕ ИСТРАЖИВАЊА

Искуство квалитета онлајн куповине позитивно утиче на целокупан ниво куповине. (Gehrt, Onzo, Fuyita и Rajan, 2007). Продаја и куповина путем Интернета мора се попут традиционалне трговине заснивати на жељама и потребама купаца. Према подацима из јануара 2021. године 7.83 милијарде људи на свету користи интернет, што чини 56,4% укупне популације из урбаних средина. Од тога је 4, 2 милијарде активних корисника друштвених мрежа, што чини 53,6% популације интернет корисника чија је просечна животна доб 31 година. (Дигитал, 2021). Најновији подаци указују да се број корисника друштвених мрежа, стално повећава. Јасно је а посебно након Пандемије Ковид-19 да пијачни продавци своје маркетиншке активности у продаји морају усмерити и на друштвене мреже. Живот у урбаним срединама је континуиран, и купци желе да у свако доба, поседују информације везане за било коју врсту услуга а свакако и за здравим производима. Ако анализирамо ове податке јасно је да се путем друштвених мрежа као маркетиншког канала може утицати на понашање потрошача и њихову одлуку о куповини. Произилази да је циљ продаваца пијачних производа привлачење потрошача и утицај на

њихову одлуку о куповини. Квалитет производа повећава задовољство купца. (Schaupp и Belanger, 2005). Ако знамо да су производи са пијаца свежи и здрави, продаја путем друштвених мрежа има за циљ двосмерну комуникацију и двосмерни интерес. Квалитет производа игра кључну улогу на тржишту. (Miletić, Čurčić и Simonović, 2020). Ове промене захтевају од пијачних продаваца посебну пажњу. Они морају развити посебан систем мобилних апликација и тако добити директне интензивне и интерактивне комуникације. Из ранијих искустава и након пандемије купцима је најважнији транспарентан приступ. Претерана централизација малопродајног тржишта нарушава жељену концентрацију трговаца на мало. (Grubor, Končar и Marić, 2020). Централизација малопродајног тржишта пољопривредно - прехрамбених производа, представља тренд од којег се продавци пољопривредних производа могу заштитити, свакодневним комуникацијама и наглашавању традиционалне улоге пијаца у куповини и продаји. Међутим, савремене околности изазивају таргетирање конкуренције и развијању продајне стратегије на пијаци. (Прдић, 2021). У складу са теоријом јавних добара, чиста јавна добра обележава једнака могућност њихове употребе од стране свих чланова, који су припадници једне друштвене заједнице, као и једнака корисност за сваког појединца који користи такво јавно добро. (Михајловић и Јеремић, 2020). Пијаце су традиционалне институције настале на јавном интересу, при чему се на њима плански усмерава продаја локалних производа и штити јавни интерес. Наиме, дигитална трансформација у пословању пијаца и продаваца кроз прилагодљивост и флексибилност дигиталном тржишту, омогућавају нову димензију дистрибуције пољопривредних производа у контексту задовољења потреба потрошача и увећања општег јавног интереса.

На основу прикупљених података из истраживања 110 испитаника су биле особе женског пола а 90 особа мушког пола. Просечна старост испитаника је била 25 година. Око 70% испитаника су имали више и високо образовање 20% су још били студенти а 10% је било средњег образовања. Од тога је 60% (120 испитаника) било је запослено у животној доби између 18 и 25 година, 30% од 26 до 29 (60 испитаника) а 10% је имало 30 година (20 испитаника). Потребно је напоменути да циљ истраживања није социјална и демографска структура испитаника већ спремност на куповину пољопривредних производа са зелених пијаца. Када су у питању општи подаци из истраживања n=200, у вези учесталости куповине када би она била уведена путем друштвених мрежа резултати су приказани у табели 1, а у контексту поузданости и сигурности, цене и квалитета као и личних разлога куповине у виду временског оквира куповине и уштеде времена.

Табела 1: Предности куповине путем друштвених мрежа

	Учесталост	Проценат (%)
Поузданост и сигурност	78	39%
Цена и квалитет	78	39%
Купујем кад ми одговара	24	12%
Штедим време	20	10%

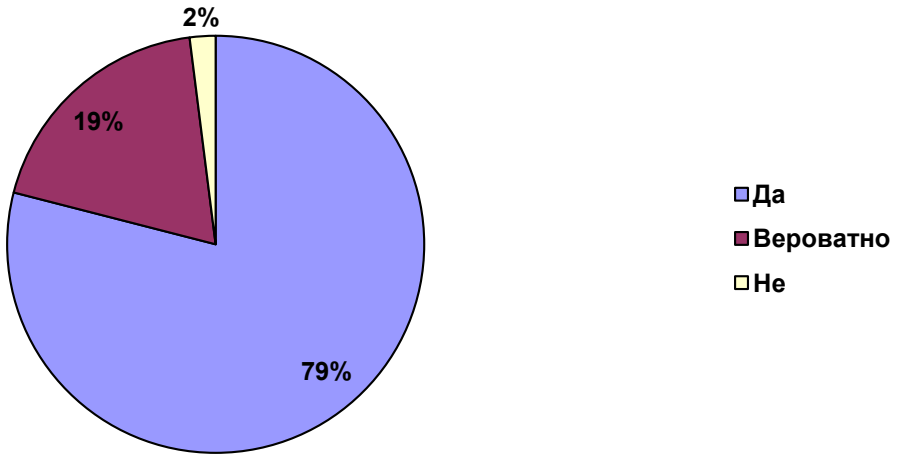
Извор: Истраживање аутора

На конкретно питање из упитника дати су следећи одговори. Да ли се слажете да је потребно увести сталну продају путем друштвених мрежа:

Да 79%

Вероватно 19%

Не 2%.



Слика 1: Ставови потрошача о потреби увођења куповине путем друштвених мрежа
Извор: Истраживање аутора

Када су у питању хипотезе истраживања испитаници су имали могућност да оцене своје мишљење о различитим тврдњама које се односе на поједине хипотезе. Хипотезе истраживања односиле су се на међузависност интереса за куповину у виду поузданости и сигурности и међузависност куповине која зависи од цене и квалитета. За мерење ставова коришћена је Ликертова скала прихватања или неприхватања кроз пет нивоа мерења. (1- нимало се не слажем до 5- у потпуности се слажем. Када је у питању хипотеза истраживања:

X1: Постоји значајна позитивна повезаност између поузданости и сигурности куповином путем друштвених мрежа и задовољства потрошача истом.

Табела 2: Подаци о процечној оцени задовољства потрошача куповином у виду поузданости и сигурности (тестна вредност =4). One-Sample Statistics

	N	Mean	Std. Deviation	Std. Eror Mean
Задовољство потрошача	200	3,9948	,63870	,06520

Извор: Истраживање аутора

Табела 3: One sample тест, просечна оцена задовољства потрошача (тесна вредност=4). 95% Confidence interval of the Difference.

	t	df	Sig. (2-tailed)	Mean Difference	Lower	Upper
Задовољство потрошача	-,078	199	0,938	-,005041	-,1321	,1211

Извор: Истраживање аутора

Према добијеним резултатима емпиријског истраживања а*=0,994=99,4%, *>5% па видимо да се просечна вредност (жеља за куповином у виду поузданости и сигурности) не разликује од тестиране вредности па се може извести закључак да је прихваћена хипотеза у смислу постојања позитивне повезаности између поузданости и сигурности куповине путем друштвених мрежа и задовољства потрошача. Дакле, просечна оцена жеље за куповином у целој популацији је 4.

Када је у питању хипотеза истраживања:

X2: Постоји значајна позитивна повезаност између цене и квалитета куповином путем друштвених мрежа и задовољства потрошача истом.

Табела 4: Подаци о процечној оцени задовољства потрошача куповином у виду цене и квалитета производа (тестна вредност =4). One-Sample Statistics

	N	Mean	Std. Deviation	Std. Eror Mean
Задовољство потрошача	200	3,9963	,63761	,06621

Извор: Истраживање аутора

Табела 5: One sample тест, просечна оцена задовољства потрошача (тесна вредност=4). 95% Confidence interval of the Difference.

	t	df	Sig. (2-tailed)	Mean Difference	Lower	Upper
Задовољство потрошача	-,079	198	0,947	-,005052	-,1322	,1221

Извор: Истраживање аутора

Према добијеним резултатима емпиријског истраживања а*=0,996=99,6%, *>5% па видимо да се просечна вредност (жеља за куповином у виду цене и квалитета) не разликује од тестиране вредности па се може извести закључак да је прихваћена хипотеза у смислу постојања позитивне повезаности између цене и квалитета куповине путем друштвених мрежа и задовољства потрошача. Дакле, просечна оцена жеље за куповином у целој популацији је 4.

Из спроведеног истраживања могу се извести препоруке у смислу практичне примене. Хипотезе истраживања су прихваћене у целости, те се констатује да се ово истраживање може користи у сврху продаје пољопривредних производа са зелених пијаца. Препорука има за циљ унапређење продаје и увећање пословних резултата пијачних продаваца. Јасно је да се постижу комуникацијски и економски ефекти трговине продаваца који као крајњи резултат имају задовољење потреба потрошача. Ово истраживање и анализа имају и одређена ограничења. Анкетни упитник је био доступан искључиво пуем друштвених мрежа Facebuk и Instagram, због чега је обухваћен само део популације која се може сматрати довољно репрезентативним с обзиром на циљеве из истраживања. Ограничење се може увидети у величини узорка али уз констатацију да се избором узорка желео постићи добро одабрани скуп с обзиром на тржишни аспект истраживања. У будућим истраживањима потребно је побољшати репрезентативност узорка те у концептуални модел детаљније укључити социјалне и демографске факторе.

5. ЗАКЉУЧАК

Радом се истражује међузависност поузданости и сигурности и цене и квалитета у продаји пољопривредних производа са зелених пијаца са задовољством потрошача куповином путем друштвених мрежа. Резултати и анализа истраживања показују позитивну повезаност два тестирана сегмента са задовољством потрошача. Ови резултати потврђују ранија сазнања о повезаности интереса куповине путем друштвених мрежа и задовољства потрошача. Актуелност истраживању дали су процеси који су у трговини добили на интензитету, онлајн продајом након Пандемије Ковид-19. Дакле, потврђене су хипотезе истраживања о позитивној повезаности задовољства потрошача куповином путем друштвених мрежа и чиниоца као што су поузданост и сигурност као и цена и квалитет производа. Закључак је да истраживање има научни допринос, али и практични који може допринети пијачним продавцима бољу онлајн продају у циљу остваривања економских и комуникацијских ефеката. Савремени вид трговине постаје доминантан те захтева константно прилагођавање тржишту и очекивањима потрошача. Истраживање може допринети и менаџменту пијаца да у пракси заједно са пијачним продавцима организују онлајн продају.

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DIGITALIZATION IN WOOD PROCESSING COMPANIES - MANAGERS' PERSPECTIVE

Abstract: Information technology's constant and rapid development affects all industrial branches, including the wood processing industry. There is increased pressure to transform business and operations through digital innovation for companies to respond to accelerated market change, drive energy transition, and accelerate Industry 4.0 adoption. Real-time insights are required to optimize value and manage change continuously. Organizations are also attempting to support new working methods while improving training and safety. Ongoing operations and change programs may clash, and 'business' and 'digital' targets may be misaligned. Speed is critical in driving growth, but it can be challenging to determine where and what to invest in to build a business case for transformational investment and then ensure business value is delivered.

The paper examines the digitalization status of enterprises in the wood processing sector in Herzegovina. Research data is collected through in-depth interviews conducted among managers and owners of wood processing companies. The need for digitalization and the main challenges along the way were identified through interviews. Namely, the analyzed companies are currently not working systematically and planned on digitalization (they do not have an annual digitalization plan, they do not have a yearly budget for digitalization, they do not have annual plans for training employees related to digitalization, as well as a yearly budget for training employees related to digitalization). Companies do not use IoT, robots, augmented or virtual reality, virtual worlds, artificial intelligence, or Big Data technologies. All the interviewees stated that the digitalization of the production process is the biggest challenge due to the need for significant investment in digital equipment and employee training for its use.

Based on data collected through interviews, some general recommendations are given for improving digitalization in analyzed companies. The main recommendation is that the researched companies should upgrade their existing information systems regarding data integration (from different devices and programs) and better reporting. Further, a strategic and planned approach to digitalization is necessary in order to provide funds in the annual budgets both for the acquisition of digital equipment and for the training of employees to work with this equipment.

Keywords: Digitalization, managers, wood industry

1. INTRODUCTION

All aspects of business and society are being reshaped due to the widespread adoption of digital technologies. In some cases, implementing digital technologies causes disruption; in others, they add value by supplementing what already exists. Digital technologies can either completely replace or work in tandem with current technologies. They can sometimes develop new activities, services, innovations, and economic prospects. The power of digitalization lies in the fact that technology not only facilitates automation but also collects and stores data about tasks and activities, providing a record that can be analyzed to improve processes and anticipate future events (Agrawal, Gans, &Goldfarb, 2018). Internet of Things, blockchain, additive manufacturing, big data, artificial intelligence, cloud computing, augmented

and virtual reality, and the like are all hotly debated topics in the realm of digital technologies (Rindfleisch, O'Hern, &Sachdev, 2017). The fields in which digital technology might be applied vary, ranging from manufacturing and agriculture to professional services, health care, and beyond. In this way, the wood sector is no exception (Ciarli, Kenney, Massini, &Piscitello, 2021).

Although concepts of digitalization and digital transformation are sometimes used in the literature and practice as synonyms, there are referring to different phenomena. Some of the authors have attempted to distinguish between digitalization and digital transformation (Bockshecker, Hackstein, &Baumöl, 2018). Both terms are derived from digitization - the technological transformation of analog data into digital data (Da Silva Freitas Junior, Maçada, Brinkhues, &Montesdioca, 2016). Parida et al. (2019, p. 12) state that digitalization is the "application of digital technology to innovate a business model and generate new income streams and value-producing opportunities in industrial ecosystems." According to Hinings et al. (2018), "by the digital transformation, we mean the combined effects of several digital innovations bringing about novel actors (and actor constellations), structures, practices, values, and beliefs that change, threaten, replace, or complement existing rules of the game within organizations, ecosystems, industries, or fields." And according to Vial (2019), digital transformation is "a process that tries to better an entity by triggering major changes to its features using combinations of information, computation, communication, and networking technologies." According to these definitions, digitalization refers to incorporating digital elements into a company's business model as well as its products and services. In contrast, digital transformation refers to the more comprehensive process of adapting the entire company to work in tandem with digitalization.

The term digitalization is employed in this paper since the emphasis is on using digital technology to improve business models, ensure new income prospects, and maintain competitive advantages in the researched firms.

One of the key drivers of digitalization in the manufacturing sector is the ability of manufacturers to boost their responsiveness and agility in reaction to changing market conditions and consumer needs. Manufacturers can reduce waste and customer discontent by aligning their production cycles with seasonal demand. Optimizing processes, performance monitoring, and decision-making is feasible by shifting away from manual operations and toward automated solutions while avoiding rework, downtime, errors, and bottlenecks. As a result, both time and money will be saved. The speed of the manufacturing process is the first noticeable shift as the industry adapts to digitalization

Manufacturers must figure out how to best respond to rapidly evolving market needs and a rapid pace of new product introduction/innovation (Arumugam, Bhaumik, &Rangaraju, 2022). Digitalization boosts productivity instantly, letting businesses take on more demanding deadlines and moving projects forward more rapidly. Particularly, manufacturers will be able to swiftly adapt to new instructions from the engineering staff by switching between the design and production phases. A manufacturing company can digitalize anything from its supply chain and back office processes to its industrial automation and data analytics (Arumugam, Bhaumik, &Rangaraju, 2022).

The evolution of digital technologies may impact every facet of the company. It works well in manufacturing because of the numerous possibilities for increasing efficiency, productivity, and precision. For companies to remain competitive over the long term and to experience profitable development, digital transformation is a must.

Consequently, the manufacturing sector and the wood industry are confronted with a strategic imperative in the form of digital transformation.

The wood processing industry is thought to be delayed in adopting digitalization. The industry still faces data fragmentation, inadequate traceability, and a lack of real-time information (Santos, Carvalho, Barbosa-Póvoa, Marques, &Amorim, 2019). That was the impetus for examining the state of digitalization in the wood industry sector in Herzegovina. The authors examine the managers' perceptions of digitalization in a sample of ten companies from the "Herzegovina" wood cluster.

The data used in this research were gathered as part of the project "Boosting Competitiveness of the Wood Processing Sector in Herzegovina," which is part of the EU4Business initiative co-financed by the European Union and the Federal Republic of Germany.

The following research questions (RQ) are posed:

- RQ1: Do managers in wood companies recognize the importance of digitalization and are ready to invest in it?
- RQ2: What are the key challenges related to digitalization in wood companies from the managers' perspective?
- RQ3: How digitalized are wood companies in general, and how digitalized is their production process?
- RQ4: What are the manager's priorities in terms of digitalization?

The paper is structured as follows. The second section follows the introduction and looks at digitalization as a potentially transformative factor in the wood sector. The methodology is described in the third section. The fourth section contains the results and discussion. The paper finishes with a review of the findings and future research recommendations.

2. DIGITALIZATION AS A TRANSFORMING FORCE IN THE WOOD PROCESSING INDUSTRY

Deploying new digital solutions within an organization is not a simple undertaking, despite the huge impact and potential that the continuously changing digital technologies engender for organizations. Becoming digital is a strategic

decision requiring financial, human, and technological resources. As a result, management involvement is crucial during adopting and implementing new technology. Furthermore, digital transformation extends beyond the firm and affects its business networks. Inter-organizational linkages connect players immersed in the business network, allowing them to engage and build on shared culture, skills, and technologies.

The availability of user-friendly digital technologies, lower digital data storage costs, and the potential efficiency gains that may result in self-reinforcing a positive feedback loop are fundamental forces driving digitalization.

Digitalizing at least a portion of the organizational and business model is becoming more common, with the potential that organizations can realize efficiency improvements through even minor modifications (Björkdahl, 2020). Increasingly advanced new technologies enable firms to connect teams and foster closer working connections between headquarters and branches (Autio, Mudambi, &Yoo, 2021).

Using digital platforms to minimize operational costs, bureaucracy, and expenditures connected with commuting and business trips can result in significant employee savings (Hensher, Wei, Beck, Matthew, &Balbontin, 2021). Finally, digitalization has consequences for minimizing the environmental footprints of businesses (Elliott, Schumacher, &Withagen, 2020). At the same time, while the benefits may be immediate and evident, organizations, employees, and other players may bear costs. From an organizational standpoint, it is unclear whether the loss of subtle nonverbal forms of communication will impair internal efficiency, increase misunderstandings, and decrease empathy (Kniffin et al., 2021).

Yet, there may be direct costs to specific employee groups, likely to be concentrated inside particular firms. As a result, well-being and productivity may suffer, increasing the likelihood of resistance. Contextual factors, ranging from physical infrastructure provision to the architecture of supportive institutions to political pressures at the request of vested interests, can all disrupt things and merge in negative feedback loops (Amankwah-Amoah, Khan, Wood, &Knight, 2021). Furthermore, digitalization introduces numerous unknowns, which may fuel nostalgia and a desire to return to the status quo ante that characterized previous COVID-19 pandemics. Nor is such nostalgia motivated merely by dread and superstition: digitalization brings many high-probability dangers that are difficult to avoid or plan for, ranging from everyday security breaches to internet failures; knowledge of the latter's causes remains limited (Aceto, Botta, Marchetta, Persico, &Pescapé, 2018).

Providing people with the means to use digital technology is a serious challenge. Many small business owners still confront human resource and capability constraints, including lacking technical skills and digital literacy, despite the COVID-19 pressure to embrace digital technology (Amankwah-Amoah, 2021).

Recent studies (Adomako, Amankwah-Amoah, Tarba, &Khan, 2021; Rachinger, Rauter, Müller, Vorraber, &Schirgi, 2019) reveal that digitalization is being driven by increased business process competency, new forms of cooperation and consumer involvement, and a faster speed of innovation. Companies need to use digital technology more extensively in their value-creation processes to take advantage of business openings (Amankwah-Amoah, Khan, Wood, &Knight, 2021).

Research on digitalization varies widely; some studies have concentrated on the technology involved (Sony&Naik, 2020; Porter&Heppelmann, 2015), while others have emphasized the importance of structural shifts inside an organization (Duerr, Wagner, Weitzel, &Beimborn, 2015). There are also requests to broaden the scope of the research to include other types of complex problems, such as the difficulties brought about by the digital transformation of industrial organizations (Sony&Naik, 2020; Verhoef et al., 2019). Matt et al., 2015) have also called for empirical research to examine four dimensions (the use of technologies, shifts in value creation, alterations in organizational structure, and financial considerations) to find similarities and differences in the digital transformation strategies of various organizations. When describing the phenomenon of digitalization in industrial organizations, the existing literature is insufficient (Ivančić, Vukšić, &Spremić, 2019).

The massive amount of data created throughout the wood supply chain process can be used to extract useful information and improve management from forests to wood/paper manufacture (Zhang, Chen, Chen, &Chong, 2021). Similarly, new technologies have the potential to build a cyber-physical environment for the design and manufacturing of wood products, hence optimizing the respective processes (Chang&Chen, 2017). Several scholars are investigating the key features, uptake, and benefits of Industry 4.0 technologies in the wood sector (Molinaro&Orzes, 2022; Zhang, Chen, Chen, &Chong, 2021).

Recent research, however, has stated that the wood sector has made very little technological progress. Landscheidt and Kans (2019) point out that many steps in the production process still require human intervention. Many companies are unaware of the opportunities afforded by automation in this area (Molinaro&Orzes, 2022).

Digitalization in the wood processing industry is understudied in Bosnia and Herzegovina. Most recently published studies have investigated the frequency with which the wood industry introduces new products to the market (Ahmetašević&Gostimirović, 2016), the use of fundamental corporate finance principles in the wood industry (Džafić&Polić, 2018), the use of EU standards in the wood industry in Bosnia and Herzegovina (Panić, Hodžić, &Nezirević, 2015); and the identification of the main problems in the relationship between forestry and wood processing (Džafić, 2021).

There is a lack of literature similar to this paper's study of the managers' perspectives on digitalization in the wood sector in Bosnia and Herzegovina.

3. METHODOLOGY

Empirical research was done in Bosnia and Herzegovina (BiH) between November 29, 2021, and January 22, 2022.
The study was conducted as a qualitative interview study. Data were collected through interviews, more precisely through a semi-structured interview. In order to collect data to form answers to the research questions, respondents answered questions from four thematic blocks:
(1) The importance of digitalization and the readiness to invest in it,
(2) Challenges regarding the digitalization of the company,
(3) Estimation of the current state of digitalization in a company, and
(4) Priorities in digitalization of the company.
In addition to questions related to the mentioned thematic areas, respondents also answered general questions about the company (year of establishment, number of employees, annual income, business activities). They provided information about their position in the company.
Half of the interviews were in person, while the other half was via an online platform (Zoom). The interviews ranged in length from one to two hours. Considering that the research was conducted as an interview, it was necessary to record all the interviews to analyze the respondents' answers adequately. Before the interview, the interviewees were informed of the need to record the interview and consented to those mentioned above. To protect privacy, the names of the companies in the sample and the individuals who participated in the interviews have been omitted.
The results are presented as absolute frequencies; the exception is the length of the company's operations, which is presented as a mean (M) and standard deviation (SD).
Companies whose business activities belong to the wood sector were the target group, specifically the wood cluster “Herzegovina”, which includes 27 companies. After sending an invitation to participate in the research, ten companies from the "Herzegovina" wood cluster expressed their willingness to participate - accordingly, the sample comprised precisely those ten companies from the "Herzegovina" wood cluster (return rate is 37%).
The companies included in the research have been in business for about 25 years (M=25; SD=4). Most of them were founded before 2000, exactly 7 of them. Six companies employ between 10 and 50 workers, three companies have less than 10 workers, and one company has more than 50 workers.
The analysis of the realized annual revenue shows the following: three companies annually generate between 50,000 and 250,000 €, three companies between 250,000 and 500,000 €, while 4 companies annually generate more than 500,000 € of revenue.
The majority of responses (7 out of 10) were CEOs (Chief Executive Officers), while 3 were COOs (Chief Operating Officers).
Respondents provided multiple responses to the question about the primary business activities of the investigated companies. Analysis of their answers showed the following: furniture production – 6 companies; interior planning/design – 5 companies; the processing of panels (folding, cutting, pressing, CNC processing, etc.) – 4 companies; sale of furniture from other manufacturers – 4 companies; cutting, hauling and transporting timber – 3 companies; final production of solid wood panels – 3 companies; production of parquet and underlays for parquet and floors – 1 company; production of briquettes – 1 company.

4. RESULTS AND DISCUSSION

A database of answers was formed by systematizing the collected individual answers, representing the basis for obtaining adequate answers to all four research questions. The representations of answers by individual thematic blocks are shown in Table 1.

Table 1: The most represented managers' answers to four thematic blocks

A thematic block of question • Answers	Number of answers
The importance of digitalization and the readiness to invest in it.*	
• Digitalization has its benefits, but it is not yet a top priority regarding investment.	3
• Digitalization is necessary for the company to retain its competitive advantages, but investment must be financially justified.	4
• Digitalization is critical for increasing productivity, but investment must be financially justified.	6
• Digitalization is necessary, but the company lacks the financial resources to invest in digitalization	1
• The company lacks a systematic approach to digitalization and investment at present.	10
Challenges regarding the digitalization of the company.*	
• Employees have a low level of knowledge about digitalization.	5
• High employee turnover rate.	4
• Resistance to the digitalization of lower levels of management and employees.	2
• Lack of finances.	1
• Digitalization of production.	10
Estimation of the current state of digitalization in the company.	
• Production	
– is not digitalized.	3
– digitalized 10-20%.	5
– digitalized 50-60%.	2
• Digitalization of accounting and financial operations	
– below 50%.	2
– 80%.	8
• The company digitalized	
– 10-20%.	8
– 30-40%.	1
– 80%.	1
Priorities in digitalization of the company*	
• Production digitalization.	8
• Data integration - the exchange and collection (unification) of data from various digital devices and other programs used by companies.	5
• Renewal of existing and purchase of new digital devices and tools.	10
*multiple answers	

Source: Authors' preparation

The first research question (RQ1) sought to find out whether managers in wood companies recognize the importance of digitalization and whether they are ready to invest in digitalization.

The managers' answers to questions in the first thematic part (Table 1) underline their awareness of digitalization's benefits and importance. Previously stated and managers' focus on financial justification also represents the answer to the first research question (RQ1).

More than half of the managers answered that digitalization is critical for increasing productivity, while four answered that digitalization is necessary for a company to retain its competitive advantages. However, managers show a relatively conservative approach regarding investment in digitalization. Namely, without reasonable financial justification, they are not ready to invest in digitalization. Even in that case, a third of managers answered that investment in digitalization is not a priority. Although managers recognized the necessity of digitalization, they all answered that the company lacks a systematic approach to digitalization and investment. According to prior research, flexible organizational structures encompassing independent business units separated from the headquarters, agile organizational forms, and digital functional areas are particularly favored for firms' digital transformation (Sklyar, Kowalkowski, Tronvoll, &Sörhammar, 2019; Verhoef et al., 2019). However, interviewed managers did not recognize the need to set the formal context for digitalization by making digitalization a strategic priority, redefining roles and responsibilities, and providing a continuous flow of finance.

The second research question (RQ2) sought to find out the challenges related to digitalization in wood companies from the managers' perspective. The collected answers offered "digitalization of production" as an answer to RQ2.

All managers saw the digitalization of production as highly challenging. That challenge is highlighted in companies primarily cutting, hauling, and transporting timber (3 companies). Those companies use only mechanical machines, so their managers obviously estimate that their production is not digitalized. However, the managers concluded that replacing those mechanical machines with digitalized devices for the current volume of work has no economic justification. In addition to the challenges related to production, most managers saw a lack of employees' knowledge about digitalization and a high employee turnover rate as the main challenges in digitalization (Table 1).

Two managers answered that resistance to the digitalization of lower levels of management and employees is a high challenge. It's worth noting that only one manager highlighted a lack of financial resources as a significant challenge for digitalization.
The third thematic block of questions was related to managers' estimation of the current state of digitalization in the company and offered an answer to the third research question (RQ3). Only two managers estimated the level of production digitalization between 50-60%, and half of the managers estimated production digitalization between 10-20%. In comparison, three managers answered that the production process in their firms is not digitalized (from companies primarily engaged in cutting, hauling, and transporting timber).
The situation with digitalizing business processes (accounting and financial) is significantly better. Eight of ten managers estimated the digitalization of these business processes as 80%. However, the estimation of the overall digitalization of the company is low (less than 20%) for most companies (Table 1). Only one manager estimated the overall digitalization of his company as 80%, meaning that 4/5 of all business activities in his company are digitalized.
The answers to the fourth thematic block of questions, which covered issues related to priorities in the digitalization of the company, i.e., the fourth research question (RQ4), are also in line with the assessment of the level of digitalization. Namely, eight of ten managers answered that one of the high priorities is the digitalization of production. However, managers from companies that have digitized production to some extent as a high priority saw connecting data from already digitized devices with business information systems that, as a rule, store data related to financial and accounting operations and sales. Also, all managers know the age of the company's existing digital equipment and the necessity to procure new.
The analyzed responses suggested recommendations for enhancing and more intensive digitalization for the assessed companies:

- IS data integration upgrade - ensuring the exchange and gathering (unification) of data from various digital devices and other programs used by businesses is essential.
- Using modern visualization techniques, improve the reporting component of information systems and ensure real-time reporting (ensure monitoring of basic business indicators in real-time and on different devices – mobile phones, tablets, etc.),
- Promote the digitalization of the entire company, particularly the manufacturing process
- Identify the person in charge of carrying out and monitoring digitalization.
- Address the company's digitalization in a planned manner. Create a digital strategy, and annually create a digitalization plan and budget.

5. CONCLUSION

The presented research results indicate that most companies in the wood processing sector in Bosnia and Herzegovina have just stepped onto the digitalization path. Although the data analysis collected through in-depth interviews showed that interviewed managers are aware of the necessity of digitalization, they still struggle with providing human, financial, and IT resources. Data reveal that managers need to set the formal context for digitalization by making digitalization a strategic priority, redefining roles and responsibilities, and providing a continuous flow of finance, which is currently not the case. Also, the findings show that the digitalization of the production process is the biggest challenge due to the need for significant investment in digital equipment and employee training.
Managers should understand their role in easing the organization's transition to a digital mindset. Because digitalization brings uncertainty and may arouse worries in the workforce, managers must understand and address their concerns and strive for a solution that works for everyone. One strategy for shifting mindsets is to involve employees early on and give them the freedom and encouragement to shape the firm's digitalization actively.
Although this research provides valuable insights and recommendations, it has several limitations. First, the analysis is based on the verbal accounts of managers in small and medium wood processing companies from Herzegovina. Due to the small sample size, the generalization of findings to other contexts is somewhat restricted.
Second, the evidence is based on the interview responses of single individuals (managers) and thus may not represent all digitalization efforts in their company. It would be helpful to extend the analysis by interviewing multiple individuals in the company to enhance objectivity and obtain an even deeper understanding of the approaches and initiatives toward digitalization
Future research could expand the sample, i.e., the inclusion of other wood processing companies from Bosnia and Herzegovina and widely in the research, which would enable an analysis of the level of digitalization in the wood processing industry in Bosnia and Herzegovina and its regions. By doing so, it would be possible to gain a deeper insight into the state and practices of digitalization in wood processing companies in Bosnia and Herzegovina and where they may lag or lag behind worldwide trends.

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ИНФОРМАЦИОНЕ И КОМУНИКАЦИОНЕ ТЕХНОЛОГИЈЕ – КЉУЧНИ ФАКТОР КОНКУРЕНТНЕ ДИГИТАЛНЕ ЕКОНОМИЈЕ

Апстракт: Дигитална економија представља економију засновану на дигиталним технологијама и превасходну употребу информационих и комуникационих технологија (ИКТ) у свим областима економије. У савременом пословном окружењу ИКТ постаје најзначајнији покретач иновација, раста конкурентности и извор нових пословних прилика. Сходно томе, главни циљ рада јесте да се утврди да ли и у којој мери информационе и комуникационе технологије утичу на конкурентност и развој дигиталне економије у Србији у поређењу са осталим земљама Западног Балкана. Истраживање је засновано на дескриптивној анализи секундарних података Светског економског форума. Резултати истраживања су показали да земље Западног Балкана не улажу довољно средстава у сектор ИКТ, што се негативно одражава на њихов даљи развој и раст макроконкурентности. Иако је напредак у области дигиталне трансформације Србије изузетан, те је наша земља у бољој позицији у односу на земље Западног Балкана, ипак и даље заостаје за земљама ЕУ када је у питању прихватање ИКТ, инфраструктуре и иновационог система. Резултат тога је низак ниво информационог и комуникационог развоја предузећа, посебно у сегменту имплементације савремених ЕРП и ЦРМ система.

Кључне речи: ИКТ, дигитална економија, конкурентност, иновације.

INFORMATION AND COMMUNICATION TECHNOLOGIES - A KEY FACTOR OF THE COMPETITIVE DIGITAL ECONOMY

Abstract: The digital economy represents an economy based on digital technologies and the predominant use of information and communication technologies (ICT) in all areas of the economy. In the modern business environment, ICT is becoming the most important driver of innovation, growth in competitiveness, and a source of new business opportunities. Accordingly, the main goal of the work is to determine whether and to what extent information and communication technologies affect the competitiveness and development of the digital economy in Serbia compared to other Western Balkans countries. The research is based on a descriptive analysis of secondary data from the World Economic Forum. The research results showed that the countries of the Western Balkans do not invest enough funds in the ICT sector, which has a negative impact on their further development and growth of macro-competitiveness. Although the progress in the field of digital transformation of Serbia is exceptional, our country is in a better position compared to the countries of the Western Balkans, while it still lags behind the EU countries when it comes to the acceptance of ICT, infrastructure and innovation system. The result is the lack of information and communication development of companies in the segment in implementing modern ERP and CRM systems.

Keywords: ICT, digital economy, competitiveness, innovation.

1. УВОД

Информационо-комуникационе технологије (ИКТ) се сматрају значајним фактором привредног раста и развоја. У данашњем времену није могуће замислити ефикасно функционисање појединца, привреде и читавог друштва без употребе ИКТ. Напредак ИКТ последњих година изазвао је значајне структурне промене када је у питању реорганизација економије и ширење нивоа трговине. Исто тако, развој технологије, посебно ИКТ, има значајне ефекте на привреду и друге аспекте људског живота. Поред тога што ИКТ имају значајну улогу у развоју економског сектора, оне утичу и на економски учинак и успех многих компанија, посебно када се комбинује са улагањем у вештине, организационе промене и иновације. Прелазак на постиндустријско друштво омогућило је да ИКТ постану једна од главних компоненти развоја дигиталне економије засноване на знању. Током последње деценије велика дифузија ИКТ изазвала је драматичну трансформацију света у информационо друштво. Развој и имплементација ИКТ је значајно побољшала ефикасност алокације ресурса, значајно смањила трошкове производње и промовисала већу потражњу и инвестиције у свим привредним секторима. Док развој ИКТ у земљама у развоју може послужити као средство за људски и економски развој, политике и акције у развијеним земљама треба да се фокусирају на друге факторе који могу довести до виших нивоа људског развоја. Земље у развоју могле би се лакше интегрисати у напредније економско окружење ако би максимално искористиле могућности које нуде нове технологије. Динамичан раст техничко-економских карактеристика високотехнолошких иновативних производа доприноси значајном повећању рачунарске снаге и интелектуалног потенцијала производа, брзој промени застарелих стандарда и технолошких платформи информационо-комуникационих система и мрежа (Симовић et al, 2022). ИКТ омогућава појединцима приступ информацијама, омогућава социјалну интеракцију, олакшава приступ образовању и здравственој заштити и ствара нове пословне могућности. Ограничени утицај ИКТ на агрегатном нивоу у многим земљама ОЕЦД-а није нужно због недостатка улагања у ИКТ, већ више због недостатка комплементарних промена и инвестиција које омогућавају пуну експлоатацију ИКТ (Домазет, 2018).

Дигитална економија представља економију засновану на дигиталним технологијама и превасходну употребу информационих технологија, хардвера, софтвера, апликација и телекомуникација у свим областима економије, укључујући интерне активности организација (компанија, државе, удружења, непрофитних организација и сл.), затим спољне активности (разне трансакције) између самих организација, између организација и појединаца, као и појединаца међусобно (појединаца и као потрошача и као грађана). Дигитална економија је истовремено и економија знања (knowledge based economy), јер се суштински темељи на стручном и тржишном знању, креативности и иновацијама друштва у целини. У ширем смислу, дигитална економија представља стратегијску одредницу модерног друштва и државе у 21. веку. Дигитална економија подразумева заокрет у начину размишљања, односно прелазак са уобичајених развојних метода који су карактеристични за државне економије на динамичне развојне моделе који се заснивају на континуираном унапређењу и усавршавању (Ивановић et al. 2021). Земље које генеришу нове технологије и подстичу њихово усвајање, као и оне које стварају иновације, расту брже од оних земаља које не промовишу ове активности (Домазет, Лазаревић, 2022).

Рад се састоји из четири целине. Након уводних разматрања у другом делу рада акценат је на прегледу савремене литературе на тему ИКТ као кључног фактора конкурентне дигиталне економије. У оквиру трећег дела рада приказани су резултати истраживања које је у фокусу имало развој ИКТ у земљама Запаног Балкана, са посебним освртом на Србију, док четврти део рада приказује закључке до којих се дошло након спроведеног истраживања.

2. ПРЕГЛЕД ЛИТЕРАТУРЕ

Брзи напредак ИКТ-а широм света у последње три деценије привукао је све већу пажњу многих економиста и истраживача који су се фокусирали на проучавање утицаја ширења ИКТ на економски раст развијених привреда и привреда у развоју. ИКТ револуција се брзо проширила на земље, индустрије и друштвено-економске активности у последњих неколико деценија, са дубоким трансформационим ефектима. Као резултат тога, ИКТ игра све важнију улогу у економском расту и структурним променама Savulescu (2015). Научна литература углавном препознаје позитиван утицај ИКТ на економски раст. У последњих тридесетак година дошло је до значајне трансформације у ширењу ИКТ, развоју индустрије ризичног капитала и економском расту у европским земљама (Domazet et al., 2021). Fernández-Portillo et al. (2020) су се бавили проучавањем односа ИКТ и економског раста у земљама Европске уније, и на основу емпиријских резултата закључују да напредак у примени и употреби ИКТ покреће економски раст земаља које су у оквиру развијених европских економија. Bilan et al. (2019) су се бавили утицајем ИКТ на економски раст на различитим хијерархијским нивоима. На основу глобалних тенденција развоја ИКТ и њиховог коришћења као фактора конкурентске предности, доказано је да је одрживи социоекономски раст добио карактеристике перманентног дигиталног развоја. Коришћењем панел података за период 2000-2018. година, Shodiev et al. (2021) су настојали да утврде да ли постоји веза између економског раста и развоја ИКТ централноазијским земљама. Резултати су показали да инфлација, отвореност трговине, издаци за финалну потрошњу и незапосленост значајно утиче на БДП по

глави становника у земљама Централне Азије. Pradhan et al. (2019). су испитивали могуће међуодносе између улагања ризичног капитала, ИКТ инфраструктуре и економског раста, на основу годишњих података из 25 европских земаља између 1989. и 2016. године. Резултати су показали да и економски раст и развој ИКТ инфраструктуре утичу на све фазе улагања ризичног капитала на дуги рок. Higón et al. (2017) су анализирали утицај ИКТ на животну средину и закључили да су многе развијене земље већ достигле ниво развоја ИКТ, при чему долази до смањења емисије CO2 како ниво развоја ИКТ расте. Stanley et al. (2018) су истраживали да ли постоји веза између ИКТ и националног економског раста и дошли до закључка да су ИКТ позитивно допринеле економском расту. Adeleye & Eboagu (2019) су истраживали утицај ИКТ на економски раст у Африци на узорку од 54 земље у приоду од 2005. до 2015. године и закључили да развој ИКТ има статистички значајну позитивну везу са економским растом. Gërguri-Rashiti et al. (2017) се баве испитивањем утицаја ИКТ и иновационих активности на перформансе предузећа и закључују да ће предузеће побољшати своје перформансе уколико предузме одговарајуће иновационе активности. Barba-Sanchez et al. (2018) су анализирали утицај који интензитет усвајања ИКТ у фирми и привлачност индустрије имају на корпоративне перформансе, при чему su резултати показали да постоји значајан позитиван однос између интензитета употребе ИКТ и корпоративног учинка при чему истичу значај ИКТ у веома конкурентним окружењима (Домазет et al, 2022).

Дигитална економија нуди велике могућности за развој система конкурентности једне земље. Савремене технологије омогућавају коришћење високотехнолошке дигиталне платформе која минимизира људски фактор и пратећу корупцију и грешке, аутоматизује прикупљање статистичких, пореских и других извештаја и доноси одлуке на основу анализе реалног стања (Selishcheva et al., 2020). Miethlich et al. (2020) се у свом истраживању баве националном конкурентношћу као и дигиталном економијом из технолошке, индустријске и друштвене перспективе. Предности дигиталне економије су укључивање иновација; појава нових тржишта; раст продуктивности рада; смањење трошкова производње и продаје; производњу квалитетнијих добара и услуга. Koch & Windsperger (2017) су кроз обављено истраживање закључили да предузећа могу постићи конкурентску предност активним обликовањем дигиталног окружења и креирањем вредности међусобно повезаних фирми у дигиталном окружењу. Упркос све већој употреби дигиталне технологије у индустријској производњи, остаје нејасно како индустријска дигитализација утиче на еколошки учинак производних активности. Wen et al. (2021) су у свом истраживању дошли до закључка да је еколошки учинак производних предузећа значајно побољшан у процесу индустријске дигиталне трансформације, при чему је структурни ефекат главни фактор који доприноси позитивним еколошким ефектима продора информационих и комуникационих технологија. Политика иновација представља све значајнију компоненту управљања привредним развојем у већини, а нарочито у економски водећим земљама у свету (Domazet et al., 2022). С тим у вези Pan et al. (2022) су испитивали ефекте дигиталне економије вођене иновацијама на укупну факторску продуктивност и закључили да дигитална економија делује као покретач за екстензивни и одрживи развој.

3. РЕЗУЛТАТИ ИСТРАЖИВАЊА РАЗВОЈА ИКТ У СРБИЈИ

Бројна емпиријска истраживања потврђују постојање позитивне везе између нивоа развијености привреде и улагања у ИКТ сектор. Односно, развијене земље препознале су потенцијал улагања у ИКТ сектор у домену даљег напретка и раста макроконкурентности, те су улагања ових земаља у сектор ИКТ значајнија у поређењу са износима средстава које мање развијене земље издвајају за те намене.

У овом раду приказани су резултати истраживања на основу секундарних података, са циљем да се утврди степен развоја Србије у поређењу са осталим земљама Западног Балкана. С тим у вези, коришћен је *Network Readiness Index* (НРИ) као један од водећих глобалних индекса о примени и утицају информационе и комуникационе технологије у привредама широм света. Наиме, према овом индексу Србија се у 2022. години налазила на 55 месту од укупно 131 земље. Према оцени Светског економског форума наша земља највише заостаје у домену примене ИКТ када је у питању технологија будућности (113. место). У оквиру овог стуба (технологија будућности) највећи проблем за Србију је потрошња на компјутерски софтвер, где тренутно заузима тек 103 место од укупно 131 земље рангиране према овом индексу. Рангирање Србије по кључним параметрима за период 2020-2022. година, а који се проучавају у оквиру извештаја Светског економског форума, приказано је у Табели 1.

Табела 1: НРИ за Србију, 2020-2022.

	Ранг 2020 (од 134 земље)	Резултат	Ранг 2021 (од 130 земље)	Резултат	Ранг 2022 (од 131 земље)	Резултат
Глобални НРИ	**52**	**52.96**	**57**	**53.60**	**55**	**53.52**
А. Технологија	**53**	**44.89**	**71**	**42.68**	**77**	**42.26**
- приступ	51	74.08	70	64.13	65	65.19
- садржај	42	41.63	44	44.88	46	42.46

- технологија будућности	103	18.97	112	19.05	113	19.12
Б. Људи	**52**	**51.53**	**56**	**51.35**	**57**	**47.42**
- појединци	65	55.95	65	62.71	53	51.45
- предузећа	48	50.79	57	43.57	65	42.84
- Влада	49	47.84	49	47.77	50	47.96
Ц. Управљање	**54**	**59.99**	**50**	**61.64**	**49**	**65.85**
- поверење	57	46.12	51	51.62	53	54.98
- уредбе	63	66.91	54	66.89	48	70.70
- инклузија	56	66.94	56	66.42	50	71.87
Д. Утицај	**54**	**55.41**	**50**	**58.73**	**48**	**58.57**
- економија	48	32.72	52	43.00	59	36.62
- квалитет живота	55	68.35	56	71.51	43	75.11
- допринос СДГ	73	65.17	67	61.69	61	65.99

Извор: Аутори на основу Светског економског форума, 2020-2022.

На основу података приказаних у табели 1. види се пад глобалног НРИ Србије за 5 позиција у 2021. години у односу на 2020. годину. Пад је још израженији имајући у виду да је у 2020. години овај индекс обухватио 134 земље, док је у 2021. години он обухватио 130 земаља. У 2022. години приметан је благи пораст глобалног НРИ за две позиције. Упоређујући анализирани период (2020-2022.) највећа предност Србије је у сегменту управљања и утицаја, док је, са друге стране, евидентан пад када су у питању друга два анализирана стуб: технологија и људи. Највећи простор за побољшање јесте у области технологије.

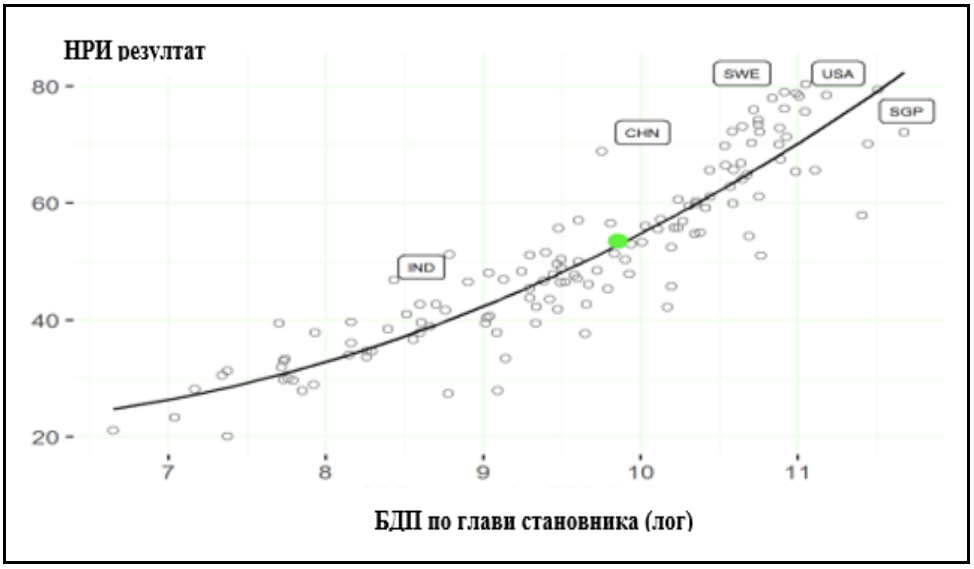
Табела 2: Глобални НИР у земљама Западног Балкана (2022)

	Србија	**БиХ**	**Црна Гора**	**Северна Македонија**	**Албанија**
Глобални НРИ	**55**	**90**	**65**	**69**	**80**
1. Технологија	**77**	**99**	**39**	**95**	**94**
- приступ	65	94	88	101	86
- садржај	46	81	24	77	84
- технологија будућности	113	126	47	106	122
2. Људи	**57**	**96**	**74**	**77**	**48**
- појединци	53	89	56	79	69
- предузећа	65	67	63	68	43
- Влада	50	124	92	80	46
3. Управљање	**49**	**77**	**69**	**61**	**92**
- поверење	53	86	89	61	79
- регулатива	48	70	69	77	63
- инклузија	50	73	58	64	107
4. Утицај	**48**	**85**	**81**	**51**	**79**
- економија	59	88	97	56	111
- квалитет живота	43	59	62	45	47
- допринос СДГ	61	107	73	69	65

Извор: Аутори на основу Светског економског форума, 2020-2022.

У табели 2. приказан је глобални НИР у земљама Западног Балкана за 2022. годину. На основу презентованих података за 2022. годину, а који је обухватио 131 земљу, Србија се налази на 55. месту, што је најбољи резултат у односу на све остале земље Западног Балкана. Након тога следе Црна Гора (65 место), Северна Македонија (69. место), Албанија (80. место) и Босна и Херцеговина (90. место). Посматрајући појединачно сваки стуб, јасно се види да је у домену технологије на првом месту Црна Гора (39. место), док Србија значајно заостаје (77. место). Међутим, и поред лошијег резултата у овом стубу, остале земље Западног Балкана су у подређеном положају. Евидентан је напредак Србије кад су питању стубови (ц) управљање и (д) утицај, где је евидентно да остале земље Западног Балкана заостају за Србијом, што јасно указује на неадекватан методолошки приступ у третирању ових стубова.

Када је реч о подстубовима, најјачи показатељи Србије односе се на квалитет живота (43), садржај (46) и регулативу (48). Међутим, могло би се учинити више да се побољшају перформансе привреде у приступу, предузећима и технологији будућности. Када је у питању резултат НРИ и БДП по глави становника на графикону 1. је приказана позиција Србије, при чему линија тренда показује очекивани резултат НРИ с обзиром на ниво прихода привреде. Као што се може видети, Србија је нешто изнад линије тренда, што сугерише да је њена спремност мреже мање-више у складу са оним што би се очекивало с обзиром на ниво прихода.



Графикон 1: НРИ резултат и БДП по глави становника
Извор: Network Readiness Index, 2022.

Треба напоменути да најбоље позиције имају САД (ранг 1), Сингапур (ранг 2) и Шведска (ранг 3), док Србија спада у групу земаља са вишим средњим приходима, при чему заостаје за Шведском као земљом која је најбоља у Европи. Сходно томе, Србија је рангирана на 8. месту у групи земаља са вишим средњим приходима. Што се тиче учинка стубова, има резултат виши од просека групе прихода у три од четири стуба: људи, управљање и утицај. На нивоу подстубова, надмашује земље са вишим средњим приходима у једанаест од дванаест подстубова: приступ, садржај, појединци, предузећа, владе, поверење, регулатива, инклузија, економија, квалитет живота и допринос СДГ-у.

У Србији постоји низак ниво информационо-комуникационог развоја домаћих предузећа у сегменту имплементације савремених ЕРП и ЦРМ система, што потврђује и оцена Светског економског форума о конкурентности Србије у сегменту софистицираност пословног процеса и, последично, иновативности у пословању. Један од значајнијих проблема, који утиче на низак ниво конкурентности српских предузећа, јесте недовољна имплементација ЦРМ система унутар пословних процеса предузећа. Наиме, ЦРМ представља процес развоја и управљања односима са потрошачима. Адекватна имплементација ЦРМ-а доприноси вишем нивоу задовољства потрошача, што је предуслов њихове веће лојалности и, последично, веће профитабилности услужних компанија (Домазет, 2018). Међутим, упутреба ЦРМ концепта захтева употребу релативно софистицираних информатичких технологија, што укључује и иновативне моделе модерне информатичке архитектуре, базе података, управљање подацима уз савремене софтвере, статистичке и информатичке алате (Домазет, 2007).

Сходно томе, потребно је и репозиционирање компаније из овог сектора, да би Србија добила место регионалног лидера у привлачењу страних директних инвестиција, посебно у области ИКТ, за шта је потребна и већа помоћ државе. Томе у прилог иде и развој научно-технолошких паркова, као и удруживање ИКТ компанија у кластере у циљу повећања тржишне моћи. Када су у питању инвестиције у сектор ИКТ, српске компаније инвестирају око 0,5% укупних прихода, што је значајно испод износа који улажу међународне компаније, посебно уколико узмемо у обзир висину приихода домаћих компанија у апсолутном смислу. Ситуација је слична и када је у питању број запослених – српске компаније запошљавају четири пута мање ИТ експерата у поређењу са ИТ компанијама које послују у развијеним тржишним економијама. У погледу регионалног распореда ИКТ компанија, највећи број њих лоциран је у Београду, Новом Саду и Нишу.

Стране директне инвестиције су веома важне за земље у развоју, будући да се од њих очекује да ће поред запошљавања, земљи омогућити приступ новим технологијама и знању. Стога је за Србију један од главних циљева привлачење што више страних директних инвестиција, при чему се резултат такве политике огледа кроз 4,4 милијарде евра страних директних инвестиција у току 2022. године, упркос свим глобалним економским изазовима. Стране директне инвестиције у сектору информационих технологија су добродошле али би их требало паметно искористити, на добробит читавог друштва а не да корист имају само компаније које улажу у мањи број запослених. Стране директне инвестиције у облику докапитализације домаћих фирми су добродошле, јер би тако страна компанија улагала новац у заједнички развој и унапређивање постојећих капацитета и производа српских предузећа.

Захваљујући повољној пословној клими српски ИТ сектор бележи раст из године у годину, што га чини најздравијом индустријском граном у Србији. Свесна значаја који ИТ има на домаћу привреду, Влада Републике Србије спроводи низ мера за подршку овом сектору, укључујући пореске подстицаје, субвенције и регулаторне реформе. У последњих неколико година извоз ИКТ се константно повећавао. Приходи од извоза

ИКТ услуга у 2020. години достигли су 1,44 милијарде евра што је и поред пандемије коронавирусом било више од прихода из 2019. године. Током 2021. године извоз је износио 1,85 милијарди евра, што је био раст од 28 одсто у односу на 2020. годину, док је вредност овог сектора надмашила извоз у области пољопривреде. Извоз ИКТ сектора у 2022. години износио је 2,692 милијарде евра, што је раст од преко 45 одсто у односу на 2021. годину. С обзиром да је исте године Србија увезла ИКТ услуге у вредности од 732 милиона евра, евидентан је суфицит у размени ИКТ услуга од скоро две милијарде евра, односно суфицит је порастао за 48,8 одсто у односу на 2021. годину.

4. ЗАКЉУЧНА РАЗМАТРАЊА

Национално тржиште представља један од највећих потенцијала за ИТ компаније које послују у Србији. Узимајући у обзир да је Србија још увек транзиторна економија, не чуди податак да домаће компаније у великој мери у свом пословању користе застарелу технологију. Уз то, даљим унапређењем пословања развија се свест о употреби нових, савременијих ИТ решења у даљем пословању. На домаћем ИТ тржишту уочљив је тренд стварања научно-технолошких паркова и кластера, као посебних облика сарадње између домаћих ИТ компанија. Осим кроз развој научно-технолошких паркова, српске ИТ компаније своју видљивост и атрактивност на међународном тржишту повећавају кроз промоцију и пласман сопствених оригиналних решења у овој области. Са друге стране, будућа модернизација државног пословања представља други велики потенцијал и подстицај за српске ИТ компаније. ИКТ сектор у Србији, иако недовољно развијен за интензиван развој дигиталне економије, поседује значајан потенцијал. Узимајући у обзир да домаћа привреда има потребу за савременим ИКТ решењима, али и то да ИКТ сектор представља мотор развоја привреда развијених земаља, значајнија улога државе у домену помоћи домаћем ИКТ сектору у наредном периоду је нужна. С тим у вези, боља сарадња између ИКТ сектора, сектора образовања и приватног сектора омогућила би стварање синергетског ефекта од кога би корист имало комплетно друштво. У складу са тим, наша земља је на глобалном нивоу препозната као изузетно атрактивна алтернативна локација за развој софистицираних софтвера, а домаће ИТ компаније као ентитети који поседују потребна знања, искуства и ресурсе за пружање високо квалитетних услуга.

У наредном периоду акценат развоја би требао бити на едукацији ИТ стручњака, модернизацији образовног система, као и запошљавању дипломаца у ИТ компанијама које послују у Србији. Извори раста могу бити или брзи раст продуктивности или увоз радне снаге, при чему се продуктивност може постићи употребом савремених технологија, улагањем у опрему и коришћењем вештачке интелигенције. У Србији је 2017. година била прекретница када је у питању трансформација привреде ка економији заснованој на иновацијама и новим технологијама, што се одразило и на резултате када је у питању раст бруто домаћег производа, плата и пензија, али и раст страних директних инвестиција. Главне препоруке у погледу редоследа акција за подршку развоју домаћег ИКТ сектора: (а) прилагодити образовни систем потребама ИТ индустрије, (б) осавременити наставни програм и повећати уписне квоте за ИТ студије, (ц) увести пореске олакшице које подстичу улагања у ИТ сектор, (д) подршка домаћим извозницима софтвера, (е) субвенције за почетнике у ИТ сектору до 25.000 евра и (ф) субвенције за крајње кориснике за набавку опреме и софтвера.

И поред значаја који стране директне инвестиције имају на производњу, веома је важно да у Србији јача и привлачење страних улагања у услуге и информационо-комуникационе технологије, јер без развијеног сектора ИКТ, готово је немогуће укључивање Србије у глобалне токове економије. Индустрија информационо-комуникационих технологија у Србији има потенцијале који могу да у домаћој привреди створе предуслов за бржи развој свих њених сегмената. С друге стране, информационо-комуникационе технологије Србије поседују конкурентност на страном тржишту и извозом могу да допринесу уравнотежењу спољно-трговинског биланса.

На крају, узимајући у обзир недовољно коришћење савремених ИКТ технологија у предузећима која послују у Србији, као и јасно опредељење државе у погледу интензивне имплементације система електронске управе и дигитлизације пословања, можемо констатовати да национално тржиште и даље представља један од највећих потенцијала раста за домаће ИТ компаније.

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ERP SYSTEMS FOR SMALL AND MEDIUM-SIZED ENTERPRISES FROM THE SAP AND MICROSOFT PERSPECTIVE

Abstract: Enterprise Resource Planning (ERP) systems have been the backbone of companies' e-business since the 1990s. They were originally designed for large companies which are doing business globally, but over time they have become indispensable software solutions for SMEs. Today, there are numerous ERP vendors in the ERP system market. Among the most well-known with a significant market share are the ERP systems of the companies SAP and Microsoft. The paper will present the products of the mentioned companies, their benefits and limitations and comparative analysis of their ERP systems for SMEs, SAP Business by Design and Microsoft Dynamics 365.

Keywords: ERP system, cloud technology, SME, SAP Business ByDesign, Microsoft Dynamics 365

1. INTRODUCTION

Modern companies have complex organizational structures, resources that must be managed and controlled, processes that must be integrated internally and with external partners, and a vast amount of data and information that needs to be available at all times. Managing all the above-mentioned needs requires the use of ERP systems.

In the 1970s, production-related information systems (MRP - Materials Requirements Planning) led to the development of complete software solutions. These systems supported the planning and management of exclusively production-related resources. In the 1980s, MRPII (Manufacturing Requirements Planning) information systems were developed, which enable the planning of all resources needed for production, not only material in the form of raw materials and semi-finished products, but also financial and human resources. Due to the integration of all functions in the company and the support of all internal business processes, the early 1990s were marked by the intensive implementation of integrated information systems (ERP - Enterprise Resource Planning). In the 2000s, the core of ERP 1.0 was expanded with software applications such as Supply Chain Management (SCM), Customer Relationship Management (CRM), etc. where the development of this generation of ERP heavily relied on Service Oriented Architecture (SOA). Since 2010, cloud technology has enabled ERP systems to move from local (on-premise) to the cloud, where they are now offered as Software as a Service (SaaS) (Figure 1). ERP systems are migrating to the cloud for a variety of reasons. Namely, ERP 1.0 systems were not designed to be used and adopted by users. Over three quarters of business leaders said that their ERP systems do not meet their needs, let alone future plans. The same research found that 59% of global companies were burdened by ERP's complexity, which caused challenges in their IT systems, business processes, company policies, and data management (Oracle, 2016). Due to its ROI of 2.1x, 91% lower energy consumption, and 55% lower costs, cloud ERP has been gaining traction over on-premise ERP (Oracle, 2016).

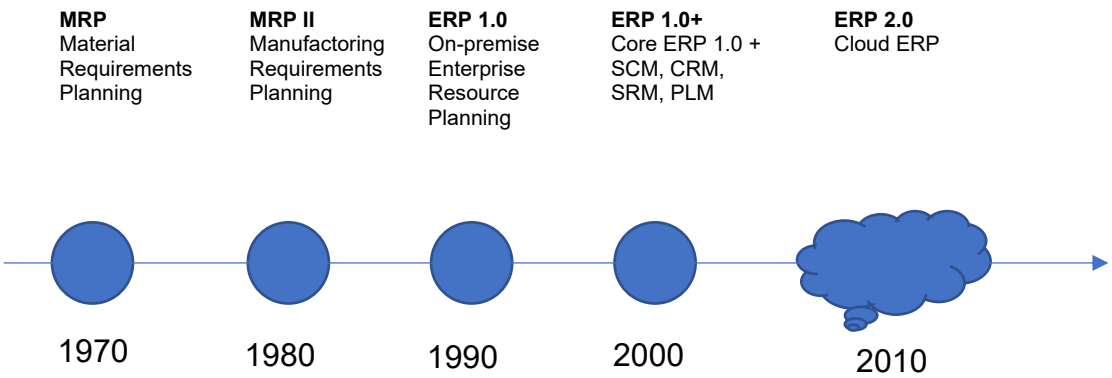

Figure 1: Evolution of the ERP system
Source: Oracle, 2016

The use of cloud computing and business processes based on cloud technology is becoming commonplace in business practice around the world. In cloud ERP, clients subscribe to software services through service providers to access a web-based enterprise resource planning (ERP) system typically hosted in data centres. Due to its ROI of 2.1x, 91% lower energy consumption, and 55% lower costs, cloud ERP has been gaining traction over on-premise ERP (Oracle, 2016). A growing number of companies are moving away from legacy ERP systems because they need real-time data insights to stay competitive in the market, and today they have a wide range of options when choosing ERP systems (Haddara, Gøthesen, & Langseth, 2021).

In the existing scientific literature, many studies focus on the benefits and limitations of cloud ERP solutions for large businesses (Haddara, Gøthesen, & Langseth, 2021). The authors of this paper wanted to present the advantages and limitations of cloud ERP systems through examples of products from renowned companies SAP and Microsoft, which according to Panorama (2022) fall into the lower tier II of ERP systems designed for small and medium-sized enterprises. We chose these companies based on the research Panorama Consulting Group conducts every year in accordance with an established methodology on the top 10 suppliers of ERP systems, which include, among others, SAP and Microsoft with their small and medium-sized enterprise products, SAP Business by Design and Microsoft Dynamics 365 Finance and Operations, respectively (Panorama, 2023). Accordingly, this paper's research question is: RQ What are the benefits and challenges of implementing SAP Business by Design and Microsoft Dynamics 365 Finance and Operations ERP systems in small and medium-sized enterprises. The paper will achieve its goal by answering the research question, which is to identify the advantages and challenges of these popular ERP systems and perform their comparative analysis.

1.1. Categorization of ERP systems

Every ERP system is characterized by the integration of data and processes within the organization, regardless of the category to which it belongs. For example, customer information (name, address, preferred payment method, etc.) is only stored once in the ERP system in the sales sector when a customer is registered. When the customer orders products in the future, the ERP system will provide this data. Additionally, all customer orders are available in the customer's order history, which is also useful in other sectors, such as marketing (for advertising and market analysis), financial accounting (for payment history and credibility), or sales (for analysis of sales and potential sales). On the other hand, all processes in the ERP system are integrated. When a product is delivered to a customer, the inventory level in the inventory management system is reduced, as is the value of the product in stock in the financial accounting system. When the customer pays for the product, the balance on the company's account is increased and the customer's account is discharged (Adelsberger, Khatami, & Khatami, 2017).

According to Panorama (2022), ERP systems are categorized into *tiers* that are based on factors such as the size of the organization, the revenue of the ERP system supplier, the number of users targeted, and some other factors such as the functional complexity of the ERP system itself.

Systems in Tier I are designed for organizations with annual revenues exceeding $750 million. Most companies of this size are complex, whether in terms of their operational processes or the structure of their entities. These systems address different types of industries and cover scalability requirements. Examples of ERP systems that belong to this category are SAP S/4 HANA, Oracle ERP Cloud, Infor CloudSuite.

Systems in the Upper Tier II serve small and medium-sized enterprises with annual revenues between $250 million and 750 million. Organizations of this size can span many different types of industries and business units. Examples of ERP systems that belong to this category are Microsoft Dynamics 365 Finance, IFS, Sage X3, Eoicor E10, etc.

Systems in the Lower Tier II serve small and medium-sized enterprises with annual revenues ranging from $10 to $250 million. These organizations usually represent one type of industry and have only one entity. Examples of ERP Systems that belong to this category are NetSuite, abas, IQMS, Plex Systems, Microsoft Dynamics Business Central, etc.

The Tier III category includes hundreds of ERP system providers that serve mostly small business. However, some of them represent systems with a specific functional niche that is complementary to a larger ERP system. Examples of ERP systems that belong to this category are SAP ERP 100, Sage ERP 300, Aptean, ECI, etc. (Panorama, 2022).

2. RESEARCH BACKGROUND

In their systematic review of the literature, Elmonem et al. (2017) identified numerous benefits of the cloud ERP system. The benefits are lower investments because the ERP system is accessed using the Internet and does not require investments in equipment on which the ERP system would be installed, lower operating costs, fast implementation, scalability, and focusing on the core company competencies, use of advanced technology, rapid system updates and upgrades, improved access, mobility and usability of ERP, easier integration with other cloud services, improved availability and disaster recovery system, cost transparency, sales automation, use of security standards and trial version of ERP. On the other hand, Elmonem et al. (2017) also identified numerous challenges accompanying the implementation of cloud ERP systems such as subscription expenses, security risks, performance risks, limitations in terms of customization and integration, strategic risks, data confidentiality risks, loss of IT competences, limitations in terms of functionality, sensitivity of certain information and data, control over cloud ERP, hidden costs in the contract, loss of technical knowledge, etc.

Navaneethakrishnan (2013) cites the overall lower costs of a complete cloud ERP system implementation project as a major advantage compared to on-premise ERP systems. The paper compares certain characteristics of on-premise and cloud ERP systems. One of the key features of cloud ERP system is that it allows organizations to change the ERP provider at any time.

Hadidi et al. (2020) also made a comparative analysis of cloud and on-premise ERP systems. There are several main conclusions, including shorter implementation times compared to on-premise ERP systems, greater flexibility, i.e. shorter implementation times for additional modules in cloud ERP systems, and of course the ability to access the system from anywhere on Earth.

Razzaq et al. (2020) conclude that the main obstacle for SMEs to implement on-premise ERP systems was that they could not afford them for financial reasons. Cloud ERP systems from SAP, Oracle, and Microsoft appeared in the era of cloud computing, which led to a licensing model that was financially acceptable for small and medium-sized companies. The licensing model has affected a significant increase in the use of cloud ERP systems in small and medium-sized enterprises worldwide.

Elbahri et al. (2019) conducted a comparative analysis of SAP, Oracle and Microsoft being the biggest cloud ERP systems vendors, to create guidelines and recommendations for one of the mentioned systems. In their research, they found that SAP has the shortest implementation period, Microsoft and SAP are almost the same in price for organizations of the same size, but SAP brings the greatest business benefits when it comes to cloud ERP.

3. RESEARCH DESIGN

Empirical research in the form of a qualitative component took place by conducting a multiple case study (Yin, 2009; Runeson & Höst, 2009) on purposefully selected organizations in the Republic of Serbia according to Creswell's recommendations (as cited in Onwuegbuzie & Collins, 2007), that were found to possess abundant information. This information is of great importance for the purpose of the research and for answering the research question presented in the introduction. Case study companies were selected based on the following criteria: whether the company uses SAP Business ByDesign or Microsoft Dynamics 365 ERP, as well as its size, given that the research is aimed at small and medium-sized businesses. Specifically, the paper describes a case study conducted in two companies, one using SAP Business ByDesign and one using Microsoft Dynamics 365 Finance and Operations. The research instrument is a semi-structured interview developed according to Ristić (2016) and Runeson and Höst, (2009). The final interview schema is given in Appendix A. The interviews were conducted in March 2023. Interviews were conducted with ERP consultants with many years of experience, who participated in the ERP implementation projects at their companies.

4. RESEARCH RESULTS

4.1. SAP Business ByDesign and Microsoft Dynamics 365 Finance and Operations

SAP Business ByDesign is a SaaS cloud solution for rapidly growing companies hiring between 50 and 1500 employees. It enables companies to apply proven best practices through 36 built-in business processes. Besides the standard logistics processes that form the core of the ERP system and which have MRP with MES integration, there are the following: CRM, SCM, Financials, Human Resources and Project Management. Depending on the company's

needs, SAP Business ByDesign can be configured very quickly. All parts of the product have a consistent HTML5 user interface (Panorama, 2023).

Microsoft Dynamics 365 Finance and Operations is also a SaaS cloud solution aimed at small and medium-sized enterprises that has Finance, Human Resources, SCM and Commerce applications. Similar to SAP, it provides access via the web, mobile devices and desktop computers, as well as tablet devices. It has strong integration with other Microsoft products like Outlook, Excel, Word, etc. In addition, it includes the entire Microsoft app ecosystem, and is especially dominant in the application of Power BI (Panorama, 2023).

4.2. Comparative analysis of SAP Business ByDesign and Microsoft Dynamics 365 Finance and Operations cloud ERP systems

Table 1 presents a comparative analysis of data obtained through qualitative research.

Table 1: Results of the qualitative component of the research

Question from the questionnaire	SAP Business ByDesign	Microsoft Dynamics 365 Finance and Operations
Type of company (e.g. production, trade):	Production	Production
Number of employees in the company:	130	950
Which ERP system do you use in your company?	SAP Business ByDesign	Microsoft Dynamics 365 Finance and Operations
Is the ERP system based on cloud technology?	Yes	Yes
If the answer to the previous question is YES, is it a private or public cloud?	Public cloud SAP Business ByDesign	Public cloud Microsoft SaaS
In your organization, how long did it take to deploy the ERP system?	9 months	9 months
How much of your employees' daily work is performed directly through ERP?	It depends on the sector: 90% in accounting and finance, cca 40% in production, cca 80% in procurement, logistics.	The biggest percentage amounts to 70% in the administrative part of the supply chain, as well as in production administration. In other departments, primarily customer support departments, this share is significantly smaller, e.g. in procurement, quality, project management, industrial engineering - it varies between 25 and 35%. It should be borne in mind that a certain share is lost due to the existence of different interfaces between ERP and separate applications (Store function within procurement, CASQ-it within quality control, ExFlow function within finance, etc.)
Are the ERP system's functionalities, in which employees perform their work, fully in sync with the related physical processes?	The affirmative answer to this question refers to what employees record in ERP as regular daily activities.	Not fully harmonized, primarily due to the limited implementation time of this system, as well as the implementation costs, the ERP was provided as a template created on the basis of user requirements that were standardized not only for the factory where the case study was carried out, but for the entire group. Therefore, it was necessary to adapt certain processes to the ERP functionalities. There is certainly some flexibility in modifying ERP functionality, but with an appropriate business case.

How much of employee-generated reports come directly from the ERP system?	The largest number of reports come directly from ERP. Periodical reports, which are specific, may be created manually through Excel, but most are exported from ERP and processed further in Excel.	Approximately 40% of reports come directly from ERP. These are standardized reports that are used mostly at the group level. As many processes were adapted to the functionality of the ERP system during implementation, the same is true of reports. In general, it has not proven to be functional and cost-effective to create new standardized reports, taking into account the powerful features of tools like PowerBI, which, by combining different tables and potentially different sources of data with D365 as a data source, provide far more advanced reporting capabilities.
Aside from the ERP reporting functionality, what other tools do employees use for reporting?	MS Excel is an auxiliary tool used for reporting.	About 50% of the company's reports are generated by PowerBI, with Excel used occasionally in some cases. Over the last three years, this has changed dramatically, whereas Excel was the primary tool for creating reports (e.g. Excel query + custom offline tables)
When doing their daily work, do employees need to use other auxiliary tools such as MS Excel? If so, please specify that tool.	We use MS Excel as an auxiliary tool in our daily work.	They frequently use MS Excel, approximately 10% u SCM, and between 15 and 20% in finance and procurement.
How satisfied are employees with the speed of the company's ERP system?	Generally, they are satisfied, although they sometimes complain about a slower system response, but that is a matter of personal perception - since it is a Cloud solution.	Users are generally satisfied with the speed of the ERP system, especially compared to the previously used system. There is no doubt that the actual performance available to the company's employees is not only limited by the Microsoft solution, but also by the company's decision to hire more or fewer resources (direct impact on SaaS costs). So, resources are allocated differently depending on certain functionalities. As far as speed is concerned, the ERP system is adequate and meets our requirements.
How often do employees experience problems with the ERP system, which prevent them from performing their operational tasks?	There were no such cases.	It happens on average once a week that a problem arises that blocks operational work for several users. The frequent problems caused by code changes are a direct consequence of adjusting functionality, establishing new ones, and optimising existing ones, as well as the fact that the platform is shared for the entire group – often all factories are affected. Most of these problems were solved by the quick intervention of technical support.

In terms of ERP functionality, do employees have access to adequate technical support? How would you describe it and rate it?	Instructions were provided by the consultants and were created during the implementation. There is also a comprehensive English-language help integrated into the ERP solution. It is rated with a high score of 9.	Multiple levels and categories of technical support are available. As well as external consultants and analysts, the local IT team coordinates all ERP-related difficulties and requirements. ERP has never been down for more than two hours in the worst ERP system outages seen so far. The partial work stoppages, in terms of certain functionalities, processes (e.g. receiving goods), lasted up to one working day. Certainly, the technical support is always available, detailed, everything is documented and continuously improved. Overall, it is rated with a high score.
Finally, list the most significant advantages and limitations of your company's ERP system.	Identified advantages are: uniqueness of data entry (data/document is entered in one place), current visibility of posted documents in reports, possibility to cancel documents, ability to obtain multiple complex reports with a single click and no manual processing is required. No limitations have been identified regarding the ERP System used.	An important advantage was absolute independence from the company's infrastructure. All ERP functions can be accessed via a laptop with internet access; speed of work and solutions within ERP; technical possibilities of connecting through interfaces with other applications; integration with other services and applications, suitability for control in terms of audits, access control; relatively low rollout costs; short implementation period. Identified limitations are: ERP costs per user are high, a reliable, high-quality Internet connection is necessary; certain technical solutions are more complex due to the cloud platform (e.g. industrial label printers should be configured on 3 servers which are local print server, regional print server and bottomline label print server – this introduces 3 environments where potential problems can occur, as well as 3 environments that affect print solution performance degradation).

Source: Authors, 2023

5. FINAL CONSIDERATIONS AND LIMITATIONS OF THE RESEARCH

Cloud ERP systems have become dominant over their predecessors, on-premise ERP systems, in the past five years, as already mentioned in the introductory discussion. Various reasons have been identified by the research conducted in manufacturing companies belonging to the category of medium-sized businesses, which slowly but surely have led to the dominance of cloud ERP systems. In the first place, the client's company makes a capital investment when buying an on-premise ERP system (Elmonem et al., 2017). Small and medium-sized companies are especially affected by this, since they need to allocate significant financial resources in a short time to procure and tax their ERP system, for annual ERP maintenance, for the hardware on which the ERP will be hosted, for the license for the DBMS, for security tools to protect the ERP system, for tools to enable ERP recovery in the event of a crash, etc. In the cloud ERP, all of the above is handled exclusively by the ERP provider, where license costs are reduced to a monthly level and represent an operational cost for clients. For small and medium-sized businesses, the reasons above represent a key argument in favour of cloud ERP. Another very important fact is that the implementation of on-premise ERP systems often takes one to two or more years, while that of cloud ERP systems usually takes three to six months (Oracle, 2016). Based on actual case studies, both organizations took nine months to implement cloud ERP systems. Even with such a long implementation period, small and medium-sized businesses should implement a cloud ERP system because they can experience all the benefits of an ERP system relatively quickly. A major benefit of using the ERP system is the ability to generate different reports for different user profiles (from operational to top managers) based on the data that is fed into it, that have been pre-defined. The use of auxiliary tools, such as Power BI and MS Excel, can be beneficial in situations where it is not worthwhile to create new reports in the ERP system. With SAP Business ByDesign, users did not experience any problems performing their daily tasks, while with Microsoft Dynamics 365 Finance and Operations, such situations occurred because of frequent changes to the ERP system's functionalities and its optimization. As a

result of adequate technical support, these issues were quickly resolved. According to users, both ERP systems are satisfactory when it comes to the speed of work, that is, their responsiveness. Another advantage is that cloud ERP system is also independent of the organization's infrastructure, in other words, it can be accessed with only a client computer (laptop, desktop, tablet) and an internet connection.

One shortcoming of all ERP systems, including cloud ERP systems, is the inability to execute all internal business processes to a high level (over 90%). Based on the research, this percentage varies from 25% to 90% depending on the process. For certain activities that cannot be performed in a formal information system, organizations turn to MS Excel as an auxiliary solution. It is the issue of trust in ERP system providers, i.e. sensitivity, security and availability of data and information 24/7/365 that pose the biggest challenges to cloud ERP systems.

Research strategies based on case studies have certain limitations that are inherited by comparative empirical research, such as inductive reasoning (from the individual to the general), the inability to draw conclusions about causality, and potential atypicality of organizations and/or respondents in relation to the population, which is mitigated by the use of multiple case studies in this research. Furthermore, two medium-sized organizations were included in the sample of organizations, while small-sized organizations (up to 50 employees) were omitted from the intentional sample.

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DIGITAL BUSINESS TRANSFORMATION: EXPECTATIONS AND REALITY[1]

Abstract: Businesses implement digitalization for many reasons - to save costs and resources, to attract the best employees, as well as to gain competitive advantages. Therefore, it is interesting to study the decision-making process about digitalization: reasons, goals, its impact on changing the activities of an industrial enterprise, and on business as a whole. This study makes an attempt to assess several parameters of digital transformation based on industrial enterprises in one of the Russian cities. There were assessed parameters such as goals of digital transformation, barriers to its implementation, current and necessary scale of digitalization, digitalization results, and changes in the company's activities as a result of digitalization. There were interviewed 103 experts - top managers and IT specialists of industrial enterprises in Omsk, Russia. Methods of information processing are descriptive statistics, analysis of averages, factor analysis. Information was processed in the SPSS 22.0 package. The results show that digitalization is considered by experts as a positive factor in enterprise development. It has a significant impact on the current activities of enterprises, helps to work and make decisions faster and attract the best employees from the labor market. But at the same time all enterprises face problems and barriers in the process of digitalization solutions implementation, and, what is more, some of the problems can be generated by digitalization itself.
Keywords: digitalization, business, transformation, Russia

1. INTRODUCTION

Digitalization of industrial enterprises has long been a trend of modern management. It is even considered as a matter of survival for modern-day organizations (Chan, 2020). Organizations need to integrate digital technologies and their capabilities to transform processes, engage talent and drive new business models to compete and strive in the digital world (Schwertner, 2017). Today many organizational processes are being automated, people are being replaced by artificial intelligence, and workplaces are being digitalized. The benefits of the introduction of digital technologies are obvious, but at the same time, there are certain problems and barriers associated with digitalization: it is necessary to retrain personnel, revise organizational processes, and re-equip the organization, etc. (Vogelsang et al., 2019; Raj et al., 2020; Jones et al., 2021). Vogelsang et al. identified five different categories of digitalization. They include missing skills (IT knowledge, information about and decision on technologies, process knowledge), technical barriers (dependency on other technologies, security (data exchange), current infrastructure), individual barriers (fear of data loss of control, fear of transparency /acceptance, fear of job loss), organizational and cultural barriers (keeping traditional roles/principles, no

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clear vision/ strategy, resistance to cultural change / mistake culture, risk aversion, lack of financial resources and time), and environmental barriers (lack of standards and laws) (Vogelsang et al., 2019).
Therefore, for every enterprise that wants to use digital technologies, it is natural to think about the ratio of the costs of digitalization and the potential results from it. One of these indicators is labor productivity.
Let's consider the reasons for the growth of labor productivity during digital transformation. First, it is an increase in business efficiency, that is, a change in the return on resources in financial terms. This direction is considered as a comprehensive result of the introduction of digitalization. Second, it is a reduction in the amount of time for decision-making. This allows companies to react faster and in the conditions of the VUCA-world and the BANI-world is very important. Third, it is getting rid of routine operations. These operations do not require highly intellectual activity and, in fact, do not require human mental activity to perform them. At the same time, such operations are often accompanied by high monotony and lead to increased fatigue, which negatively affects job satisfaction. That is, it is in the interests of the management of organizations to reduce the number of such operations. And in this case digitalization is a good technology to eliminate them. Fourth, digitalization is a trend, it is an obligatory attribute of a modern enterprise and a modern workplace, which definitely contributes to the formation of a positive HR brand and allows attracting more qualified specialists compared to enterprises that have not implemented digitalization yet. Therefore, in this case, digitalization leads to a greater attractiveness of the organization in the labor market. Fifth, digitalization saves time resources (we make decisions faster), material resources (we use the best options for using equipment, technologies, materials), and human resources (fewer workers are required for the same amount of work). Sixth, digitalization is a factor of competitiveness of organizations in the modern world. In the conditions of competition in various markets, digitalization allows us to keep up with competitors both in terms of quality and quantity of products produced, and in terms of quality and quantity of resources spent. That is, digitalization in this case allows organizations to survive in competitive markets. Seventh, digitalization leads to a decrease in the number of errors, defects, and accidents at work. Industrial production is often accompanied by various mistakes, including those leading to the death of people. The introduction of digital technologies leads to increased control over occupational safety, acting as accident prevention.
It is intuitively clear that replacing people with digital technologies should lead to an increase in labor productivity, otherwise such a replacement does not make sense, but the problems arising from digitalization can lead to a decrease in the productivity of an industrial enterprise.
In order to understand to what extent business expectations from digital transformation were met and what effects were obtained from it, we conducted an applied study.

2. RESEARCH

2.1. Methodology

In order to conduct an empirical study we chose the Omsk region, the industry of which is represented by military, aerospace and agricultural engineering, petrochemical, light and food industries, and the production of building materials. The objects of the study were top managers and IT specialists of Omsk industrial enterprises. There were interviewed 103 experts, 92 expert questionnaires were accepted for processing. The method of collecting information was a questionnaire survey according to the author's methodology. Descriptive statistics, analysis of averages, and factor analysis were used to process the collected information. The processing was carried out in the SPSS 22.0 package. The measured parameters and their indicators are shown in Table 1.

Table 1: Measured parameters and indicators

Parameters	Indicators
The goal of digital transformation	To increase business efficiency (Yes/No) To work/make decisions faster (Yes/No) To get rid of routine operations (Yes/No) To attract the best employees (Yes/No) To save resources (Yes/No) To keep up with the competition (Yes/No) To reduce errors/defects/accidents (Yes/No)
Barriers to implementation of the solution	Lack of necessary software (Yes/No) Lack of necessary domestic software (Yes/No) Unwillingness and/or inability of employees to work in a new way (Yes/No) Lack of funds necessary for digitalization (Yes/No) Proposed digitalization solutions did not fully meet the needs of the organization (Yes/No) Digitalization has not solved the old problems and has created new ones (Yes/No) Long process of digitalization (Yes/No)

	Lack of digitalization standards (Yes/No) Diversity of digital products and their incompatibility (Yes/No) Complexity of bureaucratic procedures (Yes/No)
Assessment of the current scale of digitalization	From 1 to 10
Assessment of the necessary scale of digitalization	From 1 to 10
Digitalization results	Change in personnel labor costs (Growth/Unchanged/Decline) Change in the quality of work (Growth/Unchanged/Decline) Change in the amount of work (Growth/Unchanged/Decline) Change in the speed of work (Growth/Unchanged/Decline) Change in occupational safety (Growth/Unchanged/Decline) Change in the consumption of material and financial resources (Growth/Unchanged/Decline) Change in customer satisfaction (Growth/Unchanged/Decline) Change in the rhythm of production (Growth/Unchanged/Decline)
Assessment of changes in the company's activities as a result of digitalization	From 1 to 5

Source: authors

2.2. Results

2.2.1. Expectations from digitalization

In order to analyze business expectations regarding digitalization, we analyzed the goals of digitalization. They are presented in Table 2.

Table 2: Distribution of answers to the question about the goals of digitalization (the amount is more than 100%, since it was possible to choose several answers)

Digitalization goals	Share, %
To attract the best employees	16
To keep up with the competition	24
To get rid of routine operations	60
To save resources	60
To reduce errors/defects/accidents	64
To increase business efficiency	68
To work/make decisions faster	80

Source: authors

As can be seen from Table 2, among the reasons for digitalization, the main one for most experts (80% of responses) is the reduction of decision-making time and acceleration of work processes. The modern world and the markets of goods and labor require rapid response, flexibility, adaptability. And this distribution of responses indicates that digitalization is considered as a factor affecting the flexibility of enterprises, allowing them to adapt to changing conditions in a timely manner. Assessing their experience of participating in digitalization projects, 90% of experts noted that these projects led to an increase in the speed of work. In our opinion, such high ratings are also due to the visibility of the results of digitalization projects – it is easy to notice the reduction in time. At the same time, experts who indicated this reason by an average of 2.18 points estimate the current scale of digitalization of the enterprise in which they work higher (6.68 points versus 4.5 points on a 10-point scale, where 10 is the maximum digitalization of an industrial enterprise. The results are statistically significant according to the Fisher criterion ($F=24{,}004$, $p=0.000$)).Apparently, the focus on the speed of work contributes to the digitalization of industrial enterprises. Also, according to the analysis of the expert survey, it was revealed that the focus on increasing the speed of work during digitalization changes the current activity of the enterprise more strongly (on average by 3.79 points against 3.0 points on a 5-point scale. The results are statistically significant according to the Fisher criterion ($F=25.825$, $p=0.000$)).

The second place in terms of the consequences of digitalization is occupied by improving business efficiency. This consequence is complex in its content and includes many indicators. In our opinion, this direction generalizes all the consequences of digitalization. At the same time, according to experts, this direction of the impact of digitalization is most associated with resource savings (according to the results of factor analysis, this indicator was included in one factor with increased efficiency. The percentage of the total variance explained by this factor was 20.4%). If customer satisfaction is considered as an indicator of efficiency, then half of the experts indicated that as a result of digitalization, customer satisfaction will increase. Experts also rated the improvement of the quality of the organization's work as a result of digitalization very highly (90% of experts). 60% of experts noted that the last digitalization project in which they

participated contributed to the growth of production. That is, specific indicators of the effectiveness of the implementation of digitalization projects confirm the high estimates of this consequence for industrial enterprises. Industrial enterprises focused on increasing business efficiency during digitalization estimate the scale of their current digitalization and the necessary digitalization higher than other enterprises (the results are statistically significant according to the Fisher criterion), which indicates that the focus on improving business efficiency is the strongest driver of digitalization development.

64% of experts answered that enterprises are engaged in digitalization to reduce the number of errors, defects, and accidents. This direction is very relevant for industrial enterprises and it is logical that experts highly appreciated the possibilities of digitalization to solve problems in this area. But at the same time, when answering questions about real projects in which experts participated, only 21.4% noted that labor safety will increase after the implementation of the project. The majority of experts 71.4% said that the safety of work after the implementation of the digitalization project will not change. The rhythm of production was estimated by experts slightly higher – 35% of experts expect that the rhythm of production will increase. That is, at the level of declarations, experts note the importance of using digitalization to improve occupational safety, but when making decisions when choosing the implementation of specific digitalization projects, the choice is made in favor of other advantages and opportunities of digitalization.This fact is very alarming, since we are talking about industrial enterprises for which occupational safety, reduction of defects are very important indicators of activity.

According to 60% of expert assessments, the fourth most important consequence of digitalization is the reduction of routine operations and resource savings. On the one hand, this fact indicates the importance of optimizing activities, but, on the other hand, it indicates the insufficiency of the motive for reducing costs (only fourth place). The incentive to reduce routine operations is lower monetary costs during digitalization compared to the cost of maintaining employees.As it is known, the Omsk region has a relatively low cost of labor, so this incentive, as a rule, does not exist – the costs of enterprises for labor are low and there is no material interest in replacing people with technology. In addition, the orientation of the region to preserve jobs leads to the fact that enterprises, as a rule, do not dismiss employees.This thesis is confirmed by the results of an expert survey: for most categories of personnel, there is a preservation of the number of employees after the introduction of digital technologies. Only 20.8% of experts said that the number of support staff has decreased, while the reduction in number of other categories of personnel is lower. There is no reduction in the number of IT specialists at all. But at the same time, experts in 55% of cases noted a reduction in personnel costs as a result of the implementation of digitalization projects, and in 50% of cases there is a decrease in the use of material and financial resources. That is, there is still a saving of resources, but it cannot be traced through a decrease in the number of personnel. Most likely, industrial enterprises transfer the released employees to solve other tasks. This circumstance, of course, is an incentive for the introduction of digitalization projects for employees, since they may not be afraid of dismissal after digitalization.

24% of experts noted that industrial enterprises are engaged in digitalization in order to keep up with competitors. And only 16% noted that digitalization is a factor in attracting the best employees. In our opinion, this situation is explained by approximately the same level of digitalization of industrial enterprises of the Omsk region on the one hand, and, on the other hand, by the presence of more important organizational tasks for which enterprises are implementing digitalization.

Since several reasons for digitalization could be indicated in the expert survey, we then analyzed the interrelationships of various reasons. Factor analysis (rotation by Varimax method) carried out in order to identify the relationships between the causes of digitalization revealed three groups of factors (Table 3).The first factor (broad impact on labor productivity) included the following reasons for digitalization: getting rid of routine operations, reducing the number of errors, attracting the best employees, saving resources, keeping up with competitors (33.78% of the total variance explained). The second factor is focused on efficiency associated with resource savings (20.4% of the total variance explained). And the third factor includes such reasons for digitalization as increasing the speed of decision-making and keeping up with competitors (16.22% of the total variance explained). Thus, we have identified the relationship between the causes of digitalization of industrial enterprises.

Table 3: Digitalization factors

Digitalization goal	Broad digitalization goals	Saving resources	Speed
To get rid of routine operations	0.811		
To reduce errors/defects/accidents	0.791		
To attract the best employees	0.440	0.394	0.358
To increase business efficiency		0.857	
To save resources	0.433	0.774	
To work/make decisions faster			0.866
To keep up with the competition	0.515		0.589

Source: authors

Experts' assessment of the current and necessary scale of digitalization has shown that the current scale of digitalization of industrial enterprises is statistically significantly influenced by business efficiency orientations, speed of decision-making, getting rid of routine operations, attracting the best employees, saving resources, keeping up with competitors, reducing defects. In turn, higher estimates of the required scale of digitalization are influenced by business efficiency orientations and keeping up with competitors.
In addition, the change in the current activity of an industrial enterprise is more strongly influenced by the orientation to the speed of decision-making and attracting the best employees.

2.2.2. Barriers to digitalization

We also analyzed the barriers and difficulties of digitalization of industrial enterprises. The frequency of prevalence of individual barriers is shown in Table 4.

Table 4: The frequency of digitalization problems in industrial enterprises in the Omsk region, %

№	Digitalization problems	Frequency, %
1	Lack of necessary software	21.7
2	Lack of necessary domestic software	39.1
3	Unwillingness and/or inability of employees to work in a new way	52.2
4	Lack of funds necessary for digitalization	52.2
5	Proposed digitalization solutions did not fully meet the needs of the organization	39.1
6	Digitalization has not solved the old problems and has created new ones	13.0
7	Long process of digitalization	34.8
8	Lack of digitalization standards	26.1
9	Diversity of digital products and their incompatibility	17.4
10	Complexity of bureaucratic procedures	39.1

Source: authors

Table 4 shows that in the first place in terms of the frequency of problems are the unwillingness /inability of employees to work in a new way and the lack of funds necessary for digitalization - every second industrial enterprise faces these problems. Moreover, every fourth enterprise has both problems at the same time. Of course, the lack of funds from the very beginning limits the possibilities of enterprises in digitalization. At the same time, when introducing any product, it is necessary to pre-train personnel to work in new conditions, otherwise there will be no effect from the introduction of new technologies, in this case digitalization. But staff training is an additional financial and organizational investment. It turns out that digitalization requires both direct financial investments related to the purchase of equipment, programs, technologies, and indirect ones required to ensure the introduction of digital technologies.
Three problems are in second place in terms of prevalence: the lack of necessary domestic software, digitalization solutions did not fully meet the needs of the organization and the complexity of bureaucratic procedures – 4 out of 10 enterprises indicate such problems. The listed problems also cannot be solved promptly, which will also significantly slow down the introduction of digital technologies.
Least of all enterprises face the problem that digitalization has not solved old problems, but at the same time has contributed to the emergence of new ones – 13% of enterprises. Of course, the fact that enterprises note that digitalization generates new problems without solving the old ones is a very negative situation that can lead to a significant slowdown in the introduction of digital technologies. But it is definitely pleasing that the percentage of such enterprises is not very large.
On average, each enterprise indicated 3.35 problems, while the maximum number of these problems was 7 out of 10 possible (9% of enterprises).

3. CONCLUSION

As a result of the analysis of the experience of digitalization at industrial enterprises of the Omsk region, it was revealed that digitalization is considered by experts as a positive factor in the development of the enterprise. Experts noted the high importance of digitalization for solving the problems of enterprises in the external market. Digitalization, according to experts, leads to faster work and attracting the best employees. Digital transformation has also had a significant impact on the current activities of industrial enterprises. At the same time, all enterprises face problems in the process of digitalization, and some of the problems are generated by digitalization itself.

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СТАНДАРДИЗАЦИЈА КОМЕРЦИЈАЛНОГ ПРОЦЕСА У ЦИЉУ ФОРМИРАЊА МРЕЖНЕ ОРГАНИЗАЦИЈЕ У МАЛОПРОДАЈИ

Апстракт: Један од основних мотива удруживања организација које послују у оквиру исте делатности представља удруживање преговарачке моћи у процесу набавке. Приликом формирања мреже малопродајних предузећа, потребно је прво стандардизовати њихове основне процесе, али и друге елементе малопродајне организације, како би централне функције могле да их подрже на исти начин. Као први корак реализације консултантског пројекта за потребе алијансе националних трговинских организација спроведено је мапирање процеса у циљу креирања скупа података за компаративну анализу и стандардизацију, засновану на примерима најбоље праксе, у чланицама и на нивоу централе. Резултат су стандардизована радна места и процеси унутар свих чланица, креирани типски модели организационих структура чланица и централне функције мреже и расподељене одговорности основног комерцијалног процеса у зависности од тога ком типу алијансе формирана мрежа припада.

Кључне речи: мрежна организација, трговинска алијанса, стандардизација, менаџмент категорија, комерцијални процес

STANDARDIZATION OF THE COMMERCIAL PROCESS IN ORDER TO FORM A NETWORK ORGANIZATION IN RETAIL

Abstract: One of the main motives for organizations that operate within the same activity to join forces is the joining of negotiating power in the procurement process. When forming a network of retail companies, it is first necessary to standardize their basic processes, as well as other elements of the retail organization, so that the central functions can support them in the same way. As the first step in the implementation of the consulting project for the alliance of national retail organizations, process mapping was carried out in order to create a set of data for comparative analysis and standardization, based on examples of best practice, within the alliance members and at the central organization level. The results are standardized positions and processes within all members of network, created typical models of organizational structures of network members and central functions of the network and distributed responsibilities of the basic commercial process depending on the type of alliance the formed network belongs to.

Key words: network organization, retail alliance, standardization, category management, commercial process

1. УВОД

Годинама уназад предузећа се удружују, интегришу, на основу концентрације капитала, заједничког наступа на тржишту, координације и усклађеног обављања одређених заједничких функција и остваривања других заједничких интереса, чији је крајњи циљ остваривање што већег профита. Интеграција се постиже различитим облицима повезивања, од обичне пословне сарадње до стварања разних форми удружења, као што су мрежне организације (Поповић, Јашко, и Прокић, 2010), које се формирају ради постизања заједничког циља који ни једна организација не би могла ефикасно да постигне самостално (Tao & Zhang, 2020). Један од најчешћих облика удруживања организација у мрежу је стратешка алијанса, која за један од основних циљева има унапређење конкурентске позиције чланица у односу на конкуренте који се налазе изван мреже (Прокић, 2013).

У литератури се може пронаћи неколико различитих критеријума за класификацију алијанси. Моклер (1999) разликује алијансе према томе да ли су засноване на уговору или власништву. Други аутори предлажу класификацију алијанси према томе да ли су партнерства скопљена између компанија које припадају различитим индустријама, и самим тим не представљају директну конкуренцију једна другој, или између компанија из исте индустрије, које су једна другој конкуренти (Dussauge & Garrette, 1999). Кооперација организација које послују у истој делатности представља хоризонталну стратешку алијансу (Поповић и сар., 2010), односно конкурентску колаборацију (Hamel, Doz, & Prahalad, 1989; Прокић, 2013). Према неким ауторима (Dussauge & Garrette, 1999) организације које су конкуренти могу одабрати да формирају један од три типа алијанси: комплементарне алијансе, алијансе заједничког снабдевања и квази-концентрационе алијансе. Организације које се удружују у алијансе заједничког снабдевања су сличне по природи у погледу компетенција које са собом уносе у алијансу, чији је заједнички циљ остваривање користи од економије обима остварене кроз заједничку набавку. Овај рад се односи, пре свега на овај тип алијанси, а чије формирање није засновано на повезивању власништва, већ уговорном удруживању.

Последњих година се може приметити пораст броја трговинских алијанси (енг. *retail alliances*) у Европи, као једног од хоризонталних типова алијанси трговаца на мало или ланаца трговина, чија је основна сврха удруживање преговарачке моћи у процесима набавке добара (Allain, Avignon, & Chambolle, 2020; Colen, Bouamra-Mechemache, Daskalova, & Nes, 2020; Corstjens, 2022). Мотив удруживања трговаца на мало ради јачања преговарачке моћи је први описао Џон Галбрајт (1952), као концепт преговарачке моћи купаца (енг. *countervailing buyer power*) која доводи до равнотеже односа удружених купаца са великим добављачима током преговора и реализације склопљених послова (Corstjens, 2022). Овакве алијансе су добиле назив групе за куповину (енг. *buying groups*) (Allain и сар., 2020). Удруживање у групе за куповину представља значајан напредак за мања трговинска предузећа која на овај начин могу да побољшају своју конкурентску позицију у односу на веће трговинске ланце, али и за веће трговинске ланце у погледу јачања преговарачке моћи са кључним добављачима. Остварени бенефити трговинских предузећа би могли да се пренесу и на крајње купце (Colen и сар., 2020) тако што би се одређени попусти претворили у ниже потрошачке цене које плаћају купци добара, на шта је Галбрајт највише указивао у својим раним радовима у овој области (Corstjens, 2022; Galbraith, 1952, 1954).

Према извештају Европске комисије (Colen и сар., 2020) предузећа која се баве трговином на мало се могу удружити у три типа трговинских алијанси у малопродаји хране и пољопривредних производа, тачније у групу независних трговаца, националну трговинску алијансу и европску трговинску алијансу, у зависности од врсте чланица алијансе, територијалне распрострањености и активности које ће као алијанса спроводити.

Сходно постављеним теоријским оквирима удруживања малопродајних предузећа и на основу сазнања о практичном функционисању алијанси малопродаја, извршили смо класификацију која укључује три типа алијанси предузећа која се баве трговином на мало: алијанса за преговарање, алијанса за заједничку набавку и алијанса за заједничко снабдевање.

Табела 1: Класификација алијанси трговинских предузећа

	Алијанса за преговарање	**Алијанса за заједничку набавку**	**Алијанса за заједничко снабдевање**
Чланови	▪ Велики, средњи и мали трговински ланци	▪ Мали и средњи трговински ланци	▪ Средњи трговински ланци
Уговорна страна	▪ Чланица	▪ Алијанса	▪ Алијанса
Сврха (мотив) удруживања	▪ Кровни уговори за редовну набавку	▪ Кровни уговори за редовну набавку ▪ Заједничка набавка	▪ Кровни уговори за редовну набавку и пружање комерцијалних услуга (улиставање, примарно и секундарно позиционирање, оглашавање) ▪ Заједничка набавка

Услуге чланицама*	▪ Подршка процесу преговарања (правна, информациона, комуникациона) ▪ Истраживање тржишта	▪ Информатичка и административна подршка ▪ Услуге контроле квалитета	▪ Заједничке маркетинг активности ▪ Координација ланца снабдевања ▪ Заједничко управљање односима са купцима *(CRM)*

*Сваки тип алијансе на вишем степену развоја укључује услуге чланицама које су пружане у претходној фази развоја.

Основну разлику међу представљеним типовима алијанси представља сврха, односно мотив уласка чланица у мрежу. Алијансе за преговарање се формирају са основним мотивом јачања преговарачке позиције трговинских ланаца у процесу набавке (Allain и сар., 2020; Colen и сар., 2020; Corstjens, 2022), како би се на тај начин обезбедили што бољи услови набавке који важе за све чланице мреже. Алијанса потписује кровни уговор за редовно снабдевање са добављачем у којем су наведени општи услови набавке за све чланице, док уговарање и реализацију сваке појединачне набавке спроводи свака чланица за себе, независно од осталих чланица мреже. Алијанса за преговарање је врста уговорне алијансе код које се институционално право преговарања услова у име свих чланица (уговорно) преноси на одређени ентитет који не мора постојати као издвојена структура у мрежи, већ то може бити и једна од чланица, па чак и одређено физичко лице.

Наредни ниво формирања трговинске алијансе представља алијанса за заједничку набавку код које централна функција мреже, поред уговарања услова за редовно снабдевање, и управља реализацијом заједничке набавке за све чланице. Оваква структура мреже подразумева постојање централне институције, засебног ентитета у оквиру мреже, са развијеном организационом и информатичком структуром преко које се пружа оперативна и административна подршка чланицама у процесу набавке добара.

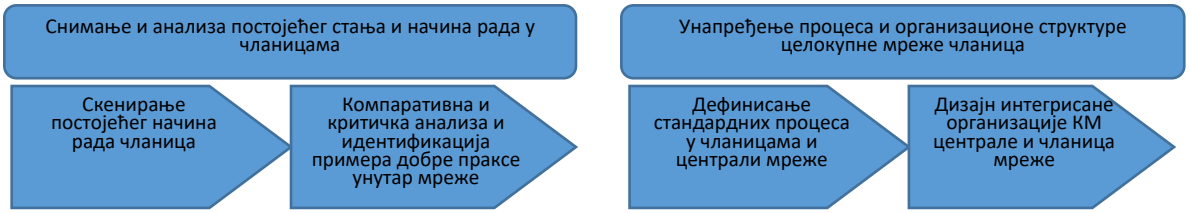
Код алијанси за заједничко снабдевање кровни уговори представљају ефикасан механизам преговарања о повољнијим фиксним условима који се односе на редовно снабдевање и пружање одређених комерцијалних услуга (Colen и сар., 2020) добављачима које мрежа може да наплати или као директни пружалац услуге или као компензацију за додатни рабат добављача. Комерцијалне услуге које алијансе за заједничко снабдевање пружају добављачима се односе на улиставање добављача и артикала, позиционирање производа на примарним и секундардним позицијама у малопродајним објектима и маркетинг активности везане за продају производа. Услуге су добављачима знатно привлачније уколико су једним уговором дефинисане за велики број трговинских објеката на неком подручју, што чланице мреже користе како би услуге наплатиле више, јер представљају део велике мреже малопродаја која поштује уговором дефинисане услове пружања услуга. Алијанса за заједничко снабдевање би требало да у свом центру има развијену структуру централних функција мреже која би преузела улогу координације одређеним процесима на релацијама мрежа-добављач, мрежа-чланица и у специјалним случајевима мрежа-купац, односно свим процесима који се могу сврстати у домен групе послова који се једним именом зову менаџмент категорија. Оваква организација мреже подсећа на тип мрежне организације који се назива хаб ланца снабдевања (Поповић, Јашко, и Прокић, 2010) код ког централна организација координира мрежом односа снабдевача и купаца тако што управља основним процесима у ланцу снабдевања, што у трговини припада пословима менаџмента категорија.

Представљена типологија алијанси малопродајних ланаца подразумева три степена њиховог развоја, с тим што код одређених ланаца неће увек постојати мотив да пређу на виши ниво интеграције у мрежу из одређених разлога. Велики трговински ланци ће тешко пристати да се у потпуности интегришу у алијансу за снабдевање, где би централне функције доносиле најважније одлуке у погледу набавке робе и преговарања услова за комерцијалне уговоре. Са друге стране, мали појединачни трговци и трговински ланци би имали одређених проблема у поштовању уговорених комерцијалних услова са добављачима, с обзиром на то да је већина њих на ниском нивоу формализације и стандардизације пословања, која је неопходна уколико би чланице желеле да се интегришу у алијансу за заједничко снабдевање. Управо из тог разлоге је предмет овог рада стандардизација, као претпоставка настанка и развоја алијанси у малопродајном сектору, чији је садржај усмерен на стандардизацију тока процеса, организационе структуре, али и других елемената организације малопродајних организација.

2. ПРИСТУП ФОРМИРАЊУ МРЕЖЕ ОРГАНИЗАЦИЈА НАЦИОНАЛНОГ ТРГОВИНСКОГ ЛАНЦА

У оквиру савремених алијанси малопродајних организација за заједничко снабдевање основни процес је именован појмом комерцијални процес, у оквиру којег се обављају активности од уговарања набавке до одређивања начина и услова под којима ће одређени производи бити понуђени купцима. Данас је међу професионалцима у сектору малопродаје широко прихваћен појам категори менаџмента (енг. *category management*) као синоним за комерцијални процес, који у основном тумачењу додатно наглашава активности управљања током и односом између добављача и крајњих купаца одређених категорија производа. Циљ

категори менаџмента је унапређење задовољења потреба, уз истовремено унапређење перформанси односа малопродавца и добављача (Dupre & Gruen, 2004).
Формирање мреже малопродајних организација засновано на стандардизацији комерцијалног процеса на нивоу чланица мреже представља приступ одоздо на горе (Комазец, Тодоровић, и Кривокапић, 2013), који подразумева креирање стандардног тока процеса, радних места на нивоу чланица и преношење дела тих послова на ниво централе мреже. Полази се од претпоставке да се у чланицама одвија идентичан скуп активности, који обезбеђује проток робе од добављача до самих купаца, с тим што су ток, информациона инфраструктура и радна места различити, што изискује спровођење процеса стандардизације, као претпоставке ефикасности комерцијалног процеса на нивоу мреже и сваке њене чланице.
У оквиру овог рада је представљен процес дизајна транзиције алијансе за преговарање у алијансу за заједничку набавку, са пројекцијама развоја које укључују прерастање у алијансу за заједничко снабдевање. Поступак стандардизације свих елемената комерцијалног процеса је спроведен у неколико фаза, у оквиру консултантског пројекта за потребе алијансе националних трговинских организација, а његов крајњи циљ је било унапређење ефикасности (конкурентности) алијансе и њених чланица на основу оптималне организационе структуре, процеса и менаџмента категорија на нивоу свих елемената мреже и њеног централног дела. Пројекат је спроведен у две фазе, са по два корака. Након тога је уследио дизајн процеса транзиције организације комерцијалног процеса чланица и централе са постојећег на унапређени ниво, што излази изван оквира дефинисаног садржаја овог рада.



Слика 1: Фазе реализације пројекта Стандардизација процеса менаџмента категорија на нивоу мреже
Извор: аутори на основу Јашко, Тодоровић и Јовановић, 2023.

Први корак пројекта је подразумевао низ састанака са запосленима и менаџментом чланица у сфери комерцијалних послова, како би се идентификовали основни процеси и активности које се обављају у свакој од чланица, с обзиром да је ниво формализације у овој фази развоја чланица врло неуједначен. Као резултат тих активности, креирана је листа потпроцеса, преглед извршилаца појединих активности, сагледана је структура и функционалност информационих система који се користе у различитим чланицама и процес доношења одлука. То је представљало основу за други корак, спровођење компаративне и критичке анализе, без претензија да било који од сагледаних модела организације проглашавамо бољим, већ са намером да се идентификују добре праксе и услови да се кроз процес промена оне имплементирају на нивоу осталих чланица мреже.

3. СТАНДАРДИЗАЦИЈА ОРГАНИЗАЦИОНЕ СТРУКТУРЕ КОМЕРЦИЈАЛНИХ ПОСЛОВА ЧЛАНИЦА

Трећи корак процеса подразумева дефинисање стандардних процеса у чланицама и централи мреже која у овом тренутку функционише као алијанса за преговарање. Различитост начина на који је у садашњости организован комерцијални процес у чланицама и ситуациони фактори који су на то утицали, условили су да се као „најбоље“ решење за чланице не дизајнира један, већ три модела нове организације комерцијалних послова, у којима смо разлике истакли кроз степен учешћа линијских менаџера у одлучивању о кључним питањима комерцијалног процеса. Тако су настали модели централизованог, хибридног и децентрализованог одлучивања. Сва три модела одговарају функционалној структури, а радна места смо дефинисали тако да се њихов опис посла у великој мери види у каталогу послова који је представљен у табели 2.
У централизованом моделу готово све одлуке од значаја за управљање категоријама доноси комерцијални директор, док у децентрализованом моделу одлуке доносе менаџери категорије, а комерцијални директор се укључује кроз процес одобравања или праћења остварења планова. Хибридни модел подразумева висок степен децентрализације, али не и радна места која доносе коначне одлуке о односима са добављачима (редовне и акцијске цене, продаја услуга добављачима), сем комерцијалног директора. Аутономија нижих позиција се односи на управљање оперативним токовима снабдевања (набавке, залихе, спровођење акција) и административну подршку.
Предложене моделе карактеришу релативно значајне разлике у димензијама организационе структуре, пре свега у погледу поделе рада, децентрализације и формализације (Јашко, Чуданов, Јевтић, и Кривокапић, 2017), али са стандардним током комерцијалног процеса. Разлике у дизајнираним моделима се огледају у врстама

радних места, расподели послова и степену аутономије у одлучивању о кључним елементима управљања процесом и категоријама (Слика 2 и Табела 2).

Слика 2: Три модела организационе структуре (са лева на десно: централизовани, хибридни и децентрализовани) у домену комерцијалних послова у чланицама мреже
Извор: аутори на основу Јашко, Тодоровић и Јовановић, 2023.

Централизовани модел примењују чланице са мањим бројем малопродајних објеката, већим утицајем комерцијалног директора на одлуке (често су директори истовремено и власници) и нижим степеном специјализације извршилаца, тако да референти набавке обављају све оперативне послове, укључујући и административне.

У децентрализованом моделу, менаџери категорије у пуној мери одговарају за конкурентност категорија које воде, док остала радна места омогућују да се њихова пажња и рад концентрише на крајеве процеса, добављаче и купце. Добро управљање односима са добављачима, омогућује да се купцима понуде најбоље цене, најпожељнији производи у категоријама које воде и да се на тај начин остваре најбоље перформансе категорија, попут разлике у цени, раста учешћа категорија у укупном обрту (конкурентност категорија) и коефицијента обрта категорија.

Хибридни модел примењују чланице чији комерцијални директори још увек имају завршну реч у процесима преговарања са добављачима, одређивању асортимана, цена и дефинисању критеријума за улиставање и делистирање добављача и артикала, тако да нема услова за увођење радног места менаџера категорије, али је извршена децентрализација доброг дела одлука у сфери управљања продајним акцијама, требовањима, залихама и начином позиционирања категорија у малопродајним објектима.

Табела 2: Подела рада унутар чланице у зависности од изабраног модела организационе структуре

ПОСЛОВИ И ОДГОВОРНОСТИ У ДОМЕНУ МЕНАЏМЕНТА КАТЕГОРИЈА	ЦЕНТРАЛИЗОВАНО ОДЛУЧИВАЊЕ	ХИБРИДНИ МОДЕЛ ОДЛУЧИВАЊА	ДЕЦЕНТРАЛИЗОВАНО ОДЛУЧИВАЊЕ
Доношење кључних одлука у домену избора добављача, ценовне стратегије, профитабилности	Комерцијални директор	Комерцијални директор	Директор менаџмента категорија
Учешће у доношењу стратешких одлука које се тичу објеката, формата и асортимана			
Стратешке одлуке у домену оперативног маркетинга			
Стратешке одлуке у домену позиционирања			
Стратешке одлуке у домену политике цена			
Годишње преговарање комерцијалних услова (рабата, услуга) са кључним добављачима			
Контрола и потписивање уговора			
Дефинисање циљева, мера учинка и начина извештавања запослених на комерцијалним пословима			
Годишње преговарање комерцијалних услова (рабата, услуга)			Менаџер категорије
Одобравање улиставања и делистирања добављача и артикала		Менаџер набавке	
Израда планова акција и верификација одабира артикала по конкретним акцијама			
Праћење политике профитабилности (марже) и цена			
Дефинисање препорука у вези са улиставањем и делистирањем артикала и добављача	Референт набавке		
Решавање прекомерних залиха МПО и магацина и евентуални отпис/поврат робе			
Управљање асортиманом по категоријама и објектима			
Праћење, продаја и фактурисање секундарних позиција			
Управљање акцијама - дефинисање артикала, преговарање рабата и одређивање цена			
Преговарање редовних цена и услова продаје			
Анализа редовне и акцијске продаје и извештавање о резултатима			
Анализа тржишта и конкуренције			
Требовање робе и израда поруџбеница за централни магацин			Администратор залиха
Контрола и корекција требовања МПО			
Контрола испорука, стављање робе на стање, контрола рабата и и количина на фактури			
Праћење рокова у магацину и нивоа залиха			
Отварање/гашење података о добављачима и артикалима у систему		Администратор артикала	Администратор артикала
Додела артикла асортиманима и форматима МПО у систему			
Унос акција у систем, нивелација цена и обавештавање МПО о акцијама и ценама			
Унос дириговане требовања (расписа) по МПО у систем			
Одређивање учешћа и позиција категорија	Комерцијални директор	Менаџер редовног и секундарног позиционирања, редовних и промо цена	Менаџер редовног и секундарног позиционирања
Одређивање секундарних позиција у оквиру радње			
Додељивање асортимана објекту и дефинисање асортимана унутар категорија	Референт маркетинга, редовног и секундарног позиционирања, редовних и промо цена		
Цртање тлоцрта објекта			
Праћење поставке секундарних позиција и вођење евиденције			
Праћење поставке редовних позиција			
Праћење тока акције током реализације			Менаџер промотивне продаје и цена
Извештавање о реализацији акције			
Праћење редновни и акцијских конкурентских цена			
Припрема материјала за израду лифлета и контрола лифлета		Маркетинг менаџер	Маркетинг менаџер
Праћење квалитативне перцепције			
Одабир артикала за друштвене мреже			

Извор: аутори на основу Јашко, Тодоровић и Јовановић, 2023.

Обим посла код већих чланица мреже оправдава виши степен специјализације (више различитих, специјализованих радних места), виши ниво децентрализације одлучивања (одговорност за склапање уговора од стране менаџера категорија), више извршилаца и коришћење инструмената координације засноване на стандардизацији процеса (процедура, система и одлука) (Mintzberg, 1979), уместо међусобног усаглашавања.

4. СТАНДАРДИЗАЦИЈА ЕЛЕМЕНАТА МАЛОПРОДАЈНЕ ОРГАНИЗАЦИЈЕ У ФУНКЦИЈИ СТАНДАРДИЗАЦИЈЕ КОМЕРЦИЈАЛНОГ ПРОЦЕСА

Као претпоставка стандардизације тока комерцијалног процеса у чланицама потребна је стандардизација што већег броја елемената који учествују у његовом циклусу, од којих су најзначајнији:

- Шифарник и баркодови артикала;
- Формати малопродајних објеката;
- Асортиман по форматима објеката;
- Асортиман по категоријама;
- Планограми по категоријама;
- Информациони систем (ИС);
- Планови и типови акција;
- Форме за одобравање и унос акција у ИС;
- Промотивни материјали (лифлети, каталози, плакати и сл.);
- Ценовник комерцијалних услуга (улиставање, секундардне и примарне позиције, оглашавање и сл.);
- Крититеријуми за улиставање добављача и артикала.

Сваки од ових елемената има своју употребну вредност, а она се најбоље види у оквиру алијанси, јер њихова примена увећава ефекте захваљујући величини алијансе, као и штете ако се стандарди не успоставе и не примењују. Стандардизација формата (Jain & Jain, 2019) омогућује развој и примену стандарда везаних за излагање робе, планограме, секундарне позиције, опсег артикала, ценовну политику итд., што само указује

колико су интерни стандарди важни за степен интеграције мреже и могућност преноса послова у њену централу, односно са чланица на саму алијансу, чиме она остварује користи везане за организационе ефекте, а не само за позицију на тржишту (преговарачка моћ и економија обима). Са друге стране, стандардизација формата, по себи, представља одређену малопродајну услугу (Yokoyama, Azuma, & Kim, 2022) и унапређује конкурентску позицију алијансе, на основу потрошачког искуства (Shi & Yan, 2017). Стандардизација формата у нашим условима врло често није могућа или је без значаја у чланицама алијанси са мањим бројем малопродајних објеката и органским растом у дужем временском периоду. То је често кључна одлика и конкурентска предност великих малопродајних ланаца снабдевања, који улазе на тржиште са прецизно дефинисаним форматима и свим другим стандардима везаним за њихово функционисање (стандардни асортиман, политика цена, планови акција, интегрисани информациони систем, сопствена робна марка и сл.).

5. ПРЕРАСТАЊЕ АЛИЈАНСЕ ЗА ПРЕГОВАРАЊЕ У АЛИЈАНСУ ЗА ЗАЈЕДНИЧКО СНАБДЕВАЊЕ НА ОСНОВУ АЛОКАЦИЈА ПОСЛОВА КОМЕРЦИЈАЛНОГ ПРОЦЕСА У ЦЕНТРАЛИ МРЕЖЕ

Основну препреку за алокацију већег броја оперативних комерцијалних активности на нивоу централе мреже су представљале разлике у организационој структури и токовима процеса по чланицама, а посебно у аутономији менаџера категорија у доношењу одлука везаних за набавку. Идентификоване разлике се могу сажети у оцени да неке од чланица мреже још нису изашле из предузетничког модела пословања (власници су дубоко укључени у управљање набавком), док су неке у зрелој фази развоја менаџмента. Стандардизацијом процеса и организационе структуре су препреке преношењу доброг дела послова менаџера категорија на ниво централе отклоњене. Тиме мрежа из фазе алијансе за преговарање може прећи у алијансу за заједничку набавку.

Таква структура омогућава централизовано обављање већег броја операција везаних за набавке (енг. *downstream*) у оквиру централе, док би се у чланицама претежно обављале активности везане за горњи ток (енг. *upstream*) ланца снабдевања. Временом, стандардизацијом у другим сферама малопродајне мреже (управљање асортиманом, секундарним и примарним позицијама, формати објеката, заједничка приватна робна марка (Ibarra Consuegra, 2006), централа мреже би могла да преузима већи опсег послова (управљање асортиманом, примарно и секундарно позиционирање, маркетинг), а чланицама би остало да управљају снабдевањем својих малопродајних објеката и обављају административне послове везане за комерцијални процес.

Основне користи од предложене алокације послова се могу сажети у неколико мера перформанси комерцијалног процеса код свих чланица мреже: смањење административних и трансакционих трошкова кроз дугорочне уговорне аранжмане, мањи број извршилаца на комерцијалним пословима, мањи број добављача, веће набавке и оптимизован процес држања залиха. Поред тога, оваква организација води и снижавању набавних цена, посвећенијем односу добављача према чланицама мреже, већим приходима од секундарних позиција и снижавању трошкова маркетинга. Као стратешки ефекат се може издвојити повећање способности и мотивације чланица за даљи раст, што додатно и дугорочно умножава ефекте остварене оптимизације организације комерцијалног процеса.

Алокацијом послова на централном нивоу алијансе тежи се остваривању економије обима не само у сфери количине набавки и испорука, већ и у броју понављања операција менаџера категорија који раде у централи. Самим тим, број извршилаца тих послова у чланицама може бити мањи, као и њихове компетенције, јер су пре свега везане за обезбеђење протока робе и управљање залихама, док се комуникација са спољним учесницима процеса (добављачи и крајњи купци) препушта менаџерима категорија. Свака чланица би требало да тежи успостављању што равније (енг. *flat*) структуре са радним местима чији послови се надовезују на послове радних места са нивоа централе алијансе, а у складу са представљена три модела организационе структуре.

6. ЗАКЉУЧАК

Концепт стварања алијанси малопродајних трговинских организација је резултат потребе мањих трговинских организација за побољшање преговарачке позиције у преговорима са добављачима, као и унапређења конкурентске позиције у односу на ентитете изван алијанси. Са развојем нових праваца у пословању, као што је менаџмент категорија, алијансе добијају још већу употребну вредност на основу заједничког или повереног обављања операција из спектра комерцијалних послова. Како бисмо објаснили користи и процес развоја функција алијанси у малопродаји, увели смо класификацију на алијансе за заједничко преговарање, алијансе за заједничку набавку и алијансе за заједничко снабдевање.

Као основна претпоставка да се развој алијансе настави од преговарачке ка функцији снабдевања идентификована је стандардизација процеса, организационе структуре и других елемената комерцијалних послова. У оквиру представљене студије случаја представљена су три типа организационе структуре, чија је основна разлика у степену децентрализације одлучивања о кључним елементима комерцијалног процеса. У оквиру стандардног комерцијалног процеса разлике у организационој структури уводе мање или више

специјализована радна места. Након формирања централне организације на нивоу алијансе, чланицама је остављено да се фокусирају на горњи ток ланца снабдевања (енг. *upstream*), односно пружање услуге крајњим потрошачима, док се процес набавке и координације токова робе (енг. *downstream*) одвија на основу деловања запослених у централи алијансе, чија је организациона структура представљена кроз типове раних места, где су описи послова врло слични описима који се одвијају на нивоу чланица, од стране менаџера категорија.

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УТИЦАЈ ДИГИТАЛНЕ ТРАНСФОРМАЦИЈЕ НА РИЗИК БЕЗБЕДНОСТИ ИНФОРМАЦИЈА У ИНФОРМАЦИОНИМ СИСТЕМИМА

Апстракт: Информациони системи, у данашње време, доживљавају есконенцијалну експанзију, а један од главних разлога је и дигитална трансформација. Сврха рада била је да се истражи утицај дигиталне трансформације на ризик безбедности информација у информационим системима. Постављена су два истраживачка питања. Прво, који су фактори који највише утичу на ризик безбедности информација и друго, важност фактора са аспекта њиховог посматрања. Метода коришћена за спровођење прегледа литературе базирана је на наративном прегледу и извршена је текстуална наративна анализа. Утврђено је да је главни фактор који утиче на ризик безбедности информацијама, према свим укљученим радовима, човек. Важност фактора са аспекта посматрања је зависила од предмета истраживања укљученог рада, али се провлачи нит тежње ка што већој глобализацији (централизацији података) и стварању „заједничке базе“ на светском нивоу. Ограничавајући фактор представља посматрани период од 2021. до 2023. године. Исти је узет ради актуелности информација, а сходно наглим променама услед криза на светском нивоу, убрзане дигиталне трансформације као последице тога и што присутнијег рада од куће који је у ранијим годинама био минорно заступљен. Будућа истраживања би се могла базирати на корелацији вештачке интелигнеције и ризика безбедности информацијама.

Кључне речи: ризик безбедности информација, информациони ситем, дигитална трансформација

IMPACT OF DIGITAL TRANSFORMATION ON INFORMATION SECURITY RISK IN INFORMATION SYSTEMS

Abstract: Information systems, nowadays, are experiencing exponential expansion, and one of the main reasons is digital transformation. The purpose of the paper was to investigate the impact of digital transformation on the risk of information security in information systems. Two research questions were asked. First, what are the factors that have the greatest influence on the risk of information security and secondly, the importance of factors from the aspect of their observation. The method used to conduct the literature review was based on a narrative review and a textual narrative analysis was performed. It was determined that the main factor influencing the risk of information security, according to all included works, is man. The importance of the factor from the aspect of observation depended on the research subject of the included work, but the thread of striving towards greater globalization (centralization of data) and the creation of a "common base" at the global level runs through. The limiting factor is the observed period from 2021 to 2023. It was taken for the sake of current information, and in accordance with sudden changes due to crises at the global level, accelerated digital transformation as a consequence of that and the ever-present work from home, which in earlier

years was minor. Future research could be based on the correlation of artificial intelligence and information security risks.

Keywords: information security risk, information system, digital transformation

1. УВОД

Дигитална трансформација све више узима маха, а самим тим долази до пораста брзине протока информација, као и количине самих података који постају доступни у системима, а који се до сада нису налазили у електронској форми. Дигитална трансформација, поред свих својих предности, исказује и своју негативну страну, а она је везана за ризик. За ризик који се огледа у неовлашћеном приступу, употреби, ометању, откривању, преправкама или уништавању информација или система, а понекад и информација и система.

Ризик безбедности информација, у савременом пословању, најчешће се огледа кроз сајбер безбедност. Просто је незамисливо да организација користи информациони систем који неће имати додирних тачака са спољним мрежама. Како наводе Hijji и Alam (2022), сајбер безбедност игра суштинску улогу у рачунарству и информационој технологији. Разлог томе проналазе у директном утицају на критична средства и информације организације. Такође, осврћући се на пандемију Ковид-19, говоре и о порасту броја организација које су омогућиле рад од куће и тиме продубиле проблем сајбер безбедности. Предузећа убрзавају дигиталну трансформацију и тиме сајбер безбедност постаје њихова главна брига (Khan и сарадници, 2022).

Глобализација и интегрисање информационих система на светском нивоу представљају још један фактор који захтева дигиталну трансформацију, откривајући организације, које су до сада биле „испод радара“, за потенцијалне претње у области безбедности информација. Поред организација, на мети се налазе и државе, или више држава које имају заједничке споразуме, те је потребно обратити пажњу и на ризик безбедности информација на националном нивоу и на нивоу међународне сарадње.

Сходно поменутом, формирана су два истраживачка питања. Питање 1: Који су фактори који највише утичу на ризик безбедности информација? Питање 2: Важност фактора са аспекта њиховог посматрања. Одговор на идентификована истраживачка питања и могућност даљег спровођења истраживања представљен је у наредним одељцима рада.

2. ИСТРАЖИВАЧКА МЕТОДОЛОГИЈА И ПРОЦЕС СПРОВОЂЕЊА ИСТРАЖИВАЊА

За спровођење истраживања, идентификацијом два истраживачка питања (фактори који највише утичу на ризик безбедности информација и важност фактора са аспекта њиховог посматрања), коришћена је истраживачка методологија за систематски преглед литературе. Xiao и Watson (2019) предлажу осам корака:

- формулисање истраживачког проблема,
- развој и валидација процеса прегледа,
- тражење литературе,
- преглед за укључивање студије у рад,
- оцењивање квалитета,
- издвајање података,
- анализирање и синтетизовање података,
- извештавање о налазима.

Како је спроведен преглед литературе, одређени делови корака нису примењени попут спровођења истраживања унапред и уназад.

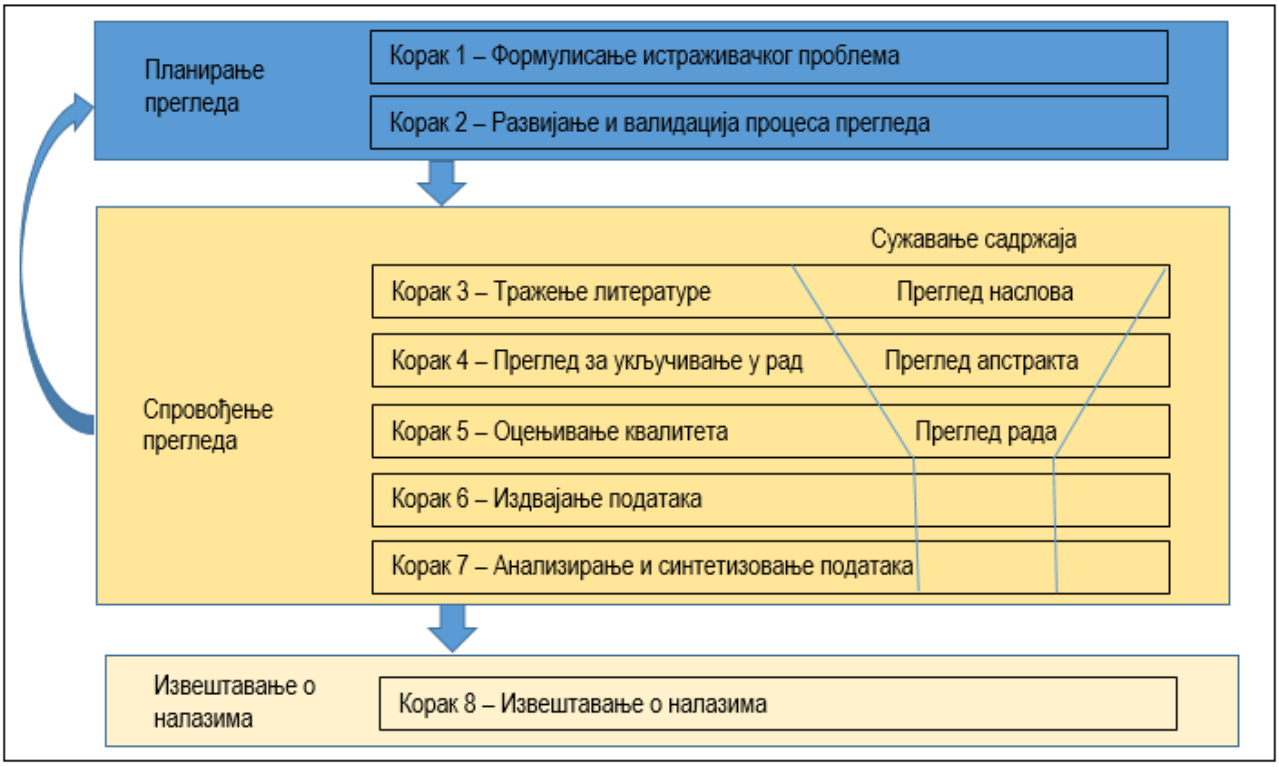

График 1: Процес систематског прегледа литературе
Извор: Креирано на основу Xiao и Watson (Xiao & Watson, 2019)

Приликом формулисања истраживачког питања циљ је био пронаћи актуелну област која је у спрези са дигиталном трансформацијом. Истраживањем дошло се до закључка да је један од главних светских проблема сајбер безбедност, те да глобални напад у тој области може изазвати велике проблеме у другим, зависним областима. Те зависне области су у суштини све области, јер баш убрзањем дигиталне трансформације у претходне три године све организације су убачене у електронски систем, вољно или невољно. Како је сврха постојања организација различита, али област сајбер безбедности фундаментално иста, формулисано је питање фактора који утичу на ризик безбедности информација. Покушано је увидети и спрегу између аспеката посматрања и фактора. Због актуелности теме и релевантности података истраживање је вршено на временском узорку 2021-2023.

У почетку је формулисано питање фактора који утичу на ризик безбедности информација, али то није било засебно довољно (посматрати факторе као издвојену јединку), те смо аспект посматрања увели као додатно питање.

Приликом тражења литературе и прегледа за укључивање у рад коришћен је канал за претраживање литературе – електронска база података *Web Of Science*. Претрага унапред и уназад није спровођена, укључен је само један рад мимо пронађених (претрагом унапред). Период посматрања је ограничен на године 2021, 2022, 2023. За вршење претраге коришћена је фраза *„Information security risk in digital transformation“*. Радови који нису били везани за безбедност нису посматрани. Претрага је вршена 25.1.2023. године и узети су у обзир само објављени радови. Након претраге нису увођена додатна ограничења.

Приликом претраге према унетој фрази на електронској бази података *Web Of Science* дошло се до шездесет и девет (69) радова за период од претходне три године, рачунајући и текућу 2023. Из прегледа су одмах искључени радови који су били у „раном приступу“ (*early access*). Таквих радова је било укупно два (2), те је након тога преостало шездесет и седам (67) радова. Прегледом наслова искључени су радови који, по процени аутора, нису пружали информације значајне за истраживање. Након тога приступило се ишчитавању апстраката преосталих радова. Резултат након овог прегледа јесте једанаест (11) потенцијалних радова који су значајни за преглед литературе. Одређени радови су били већ доступни у електронској бази, до осталих се покушало доћи претрагом по интернету. Након спровођења овог процеса елиминисана су три рада која нису пронађена у пуној форми (целокупан текст). У овом тренутку укупан број одговарајућих радова износио је осам (8).

Читањем радова вршена је оцена квалитета. Рад је требало да пружи информацију значајну за спровођење прегледа литературе, тј. информацију значајну за барем једно од два истраживачка питања. Од осам пронађених радова, који су задовољавали критеријум након читања апстракта да буду укључени у преглед литературе, искључен је један (1) из прегледа јер није пружао информације од значаја за спровођење истраживања и извођење закључака. Од преосталих седам радова дупликата није било и сви су радови били на енглеском језику. Овом броју прикључен је још један рад претрагом унапред, те је укупан број радова осам (8).

Анализирање и синтетизовање података извршено је у седмом кораку, а извештавање о резултатима налази се у наставку рада у посебној тачки.

3. РЕЗУЛТАТИ ПРЕГЛЕДА ЛИТЕРАТУРЕ

Наративни преглед је метода коришћена за издвајање података. Она омогућава блажи критеријум за укључивање рада у преглед литературе. Извршена је и текстуална наративна синтеза, тј. посматрани су фактори и аспекти посматрања заједно, у својој спрези.

Осми корак обухвата извештавање о налазима прегледа литературе. Сходно истраживачким питањима направљена су два одељка. Раздвојеност у два засебна одељка не треба да рашчлани и отуђи два истраживачка питања. Напротив, потребно их је посматрати у спрези и односу једно према другом. Наведено је урађено због прегледности и систематичности.

3.1. Који су фактори који највише утичу на ризик безбедности информација

На самом почетку треба истаћи да радови укључени у литератури у великој мери сагласни када је реч о главном фактору који има утицај на ризик безбедности информација. Реч је о људском фактору. Остали фактори су били заступљени у зависности од тематике рада.

Astakhova (2021) наводи да без обзира колико се брзо развијају технологије и средства заштите информација, информациони систем постаје рањив ако се његов корисник остави без надзора. У раду се даље наводи да удео интерних цурења информација чини више од половине свих цурења забележених у свету. До тога долази услед грешака или намерних радњи запослених (укључујући и менаџмент) и власнике инфромација.

Како наводе Hijji и Alam (2022), сајбер безбедност игра суштинску улогу у рачунарству и инфромационој технологији због свог директног утицаја на критична средства и информације организација. Они напомињу да је Ковид-19 утицао на пораст броја предузећа која омогућавају рад од куће. Овим чином убрзана је дигитална трансформација, али је и продубљен проблем сајбер безбедности. Према њима сајбер безбедност представља важну улогу у заштити државних података, предузећа, интелектуалне својине и приватне информације од сајбер криминала. Предлаже се пет фаза за спровођење методологије истраживања: преглед литературе и емпиријска истраживања, развијање нивоа и пракси *CAT (Cybersecurity awareness and training)* оквира, развој *CAT* оквира, студије случаја и евалуација повратне информације након студије случаја. Такође, предлажу три критеријума за оцењивање нивоа способности, а то су почетни, који укључује само свест о сајбер безбедности, средњи, који укључује обуку за програм сајбер безбедности и напредни који представља свеобухватне прегледе и практичне и коначне процене свести о сајбер безбедности и праграм обуке. Како је и овде људски фактор доминантан, аутори предлажу укључивање софтверских алата у комбинацији са *AI CAT* оквиром у жељи за импелментацијом мерења свести својих запослених о сајбер безбедности и способности обуке у реалном времену.

У прилог људском фактору као кључном за ризик безбедности информација говоре и наводи Creazza и сарадника (2022), да су људи кључан елемент у побољшању сајбер отпорности у области ланца снабдевања. Рад пружа увид који изазива размишљање о неусклађености између перципиране релевантности људског фактора као извора ризика (висок) и перципиране важности контра мера за ублажавање догађаја ризика који потичу из тог извора (ниско). Ово изазива организације да преиспитају свој приступ ублажавању ризика који долазе од запослених. Наводе да је потребно да организације преиспитају своју перцепцију у вези са појавом догађаја и перципираног нивоа ризика повезаног са тим догађајем.

Yerina и сарадници (2021) разврставају претње на: неовлашћен приступ информационим и телекомуникационим системима и мрежама, циљани сајбер напади на инсфраструктурне објекте који осигуравају живот друштва, нарушавање поверљивости информација које се чувају, преносе и обрађују у информационим и телекомуникационим системима (државне, пословне, банкарске тајне, лични подаци, објекти и интелектуалне својине). Њихова класификација врло је слична као код Hijji и Alam. У класичне сајбер злочине убрајају врсте лажних активности које имају за циљ незаконит приступ поверљивим корисничким информацијама и аутоматизованим базама података – пецање, картирање, хаковање, малвер и пиратерија *(fishing, carding, hacking, malware, piracy)*. Предмет сајбер криминала су лични подаци, банковни рачуни, кориснички подаци, лозинке, други лични подаци и појединаца и предузећа и јавног сектора. Рад обрађује и сајбер шпијунажу, сајбер диверзију и сајбер тероризам.

Људски фактор треба посматрати и са становишта свести. Syuntyurenko (2022) тврди да ескалација глобализације доводи до промена у развоју човечанства, тј. преоријентације технолошког напретка са стварања нових производних технологија на стварање технологија за циљано формирање свести за настанак нових људских потреба. Даље се образлаже да ови процеси манипулисања људском свешћу (свешћу заједница, друштвених група) потенцијално садрже континуитет друштвених ризика у будућем развоју човечанства. Људи су створили свет који је превише сложен за њихов сопствени интелект као појединца. Наводи да компликујући свет, информационе технологије смањују његову препознатљивост индивидуалном свешћу. Човек перципира информациони свет док живи у физичком, стога све више реагује не на стварни свет, већ на виртуелни, губећи критеријум истине. Такође, наводи да осим дигиталног јаза расту и ризици повезани са дигиталном зависношћу.

Остали фактори везани су за факторе начина заштите мрежа, коришћене технологије како у области хардвера, тако и у области софтвера, итд. Нису појединачно истражени из разлога што су пронађени радови били изузетно усредсређени на корисника (човека) као најзначајнију карику код безбедности информација.

3.2. Важност фактора са аспекта њиховог посматрања

Аспект посматрања, тј. област у којој се идентификује ризик безбедности информација, показао се као значајан. Са становишта рада мреже Di и сарадници (2022) наводе предности генетског алгоритма. Наиме, рад говори о ефикаснијем раду мрежне организационе структуре засноване на генетском алгоритму од традиционалне мрежне организационе структуре. Структура организације мреже заснована на генетском алгоритму може не само да унапреди ефикасност рада предузећа, већ и да унапреди безбедност информација. Они предлажу побољшани генетски алгоритам који отклања недостатке традиционалног генетског алгоритма. Побољшани генетски алгоритам има јачу способност претраживања и већу брзину конвергенције.

Један од значајних аспеката јесте и правни аспект. Yerina и сарадници (2021) и Koltays и сарадници (2021) наводе значај уговорних страна. Koltays и сарадници (2021) посматрају безбедност у дигиталној трансформацији са аспекта поверења уговорних страна. Премињују математичке моделе за процену веродостојности супротне стране. Слично томе Yerina и сарадници (2021) наводе изазове и претње у области сајбер безбедности са аспекта међународне сарадње и националне безбедности. Укључују у свој оквир посматрања и светски ниво, наводећи да је сајбер безбедност предмет разматрања Генералне скупштине УН, али и низа међународних организација попут Г7, ЕУ, НАТО, ОЕЦД, АПЕС, Светски економски форум, итд. Наводе да они раде заједно на областима стварања јединствене базе података о сајбер претњама и система за сталну размену информација, унапређења техничких стандарда и правила, итд. Наводи се и основ за међународну сарадњу и координацију земаља – *GCA (The Global Cybersecurity Agenda)*. Свака земља мора имати тим који је заслужан за брзо реаговање у случају напада – *CERT (Computer Emergency Response Team)*. Koltays и сарадници (2021) предлажу три групе приликом приступања проблему идентификацији вероватних прекршилаца и креирања модела прекршиоца: избегавање ризика, пренос ризика друге уговорне стране на друга предузећа, ублажавање ризика и прихватање ризика. Наводе да избегавање ризика обухвата *ISO 27001* који се фокусира на обезбеђивање да кршење безбедности информација не доведе до значајне финансијске штете за организацију и/или до значајних потешкоћа у њеним активностима. Такође, да има довољно добро обучених запослених који могу да спроведу процедуру за минимизирање могућих штетних последица у случају озбиљнијег инцидента *(ISO 2005)*. Пренос ризика друге уговорне стране образлажу да друга предузећа се баве усвајањем, утврђивањем и преносом процене ризика од поверења на друга предузећа. Све ово не смањује ризик од кривичних дела и злочина који представљају претњу безбедности и за појединачне организације и за целу државу. Аутори предлажу и модел који са разумном тачношћу даје процену ризика на основу улазних података. Начин на који се на светском нивоу анализира безбедност, а који помињу Yerina и сарадници (2021), јесте *GCI (Global Cybersecurity Index)* који служи за праћење статуса глобалног мрежног простора земаља чланица УН. Ово врши УН, а тело задужено за мерење/израчунавање индекса је *ITU (International Telecommunication Union)*. Индекс се утврђује годишње због процене укључености земаља у сајбер безбедност. Наводи се да се ослањају на законске, техничке, менаџерске институције, њихове образовне и истраживачке способности, доступност механизама сарадње и система за размену информација у мрежама. Сврха *GCI* је да омогући државама чланицама УН да идентификују потенцијалне начине за јачање заштите глобалног мрежног простора од сајбер претњи. Рад представља још један индекс, *NCSI (National Cyber Security Index)*. Он представља спремност земаља да спрече реализацију фундаменталних сајбер претњи, управљају сајбер инцидентима и сајбер кризама великих размера.

Слично изнад поменутом, Creazza и сарадници (2022) посматрају сајбер безбедност са аспекта ланца снабдевања (сличност се огледа у постојању више пружалаца услуга, уговорних страна). Издвајају значај пружаоца логистичких услуга као „оркестратора“ *CSCRM (Cyber Supply Chain Risk Management)* процеса. Сматрају да би организације требало да излазе из својих оквира, прелазећи своје границе, и тако створе заједничко знање о ризицима које би им помогло да ближе процене ниво ризика у својим ланцима снабдевања.

Даље, један од аспеката уско везаних за најзначајнији фактор (људски) јесте *ISC (Information Security Culture)*, тј. култура информационе безбедности. Astakhova (2021) тврди да свака организација има карактеристике унутрашњег и екстерног окружења, те да сходно томе проблеми самосталног избора на основу одређене стратегије развоја културе информационе безбедности су веома актуелни. Међутим, у теорији информационе безбедности овај проблем није проучаван и још није постао предмет посебних студија. Рад наводи да се организације налазе у окружењу које се константно мења, те да је потребно базирати се на ситуационом приступу ради адаптирања стратегије. Предлаже се дефанзивна стратегија и офанзивна (развојна) стратегија информационо-безбедносне културе. Одбрамбена стратегија је усмерена на минимизирање претњи по безбедност информација, циљна група су запослени као потенцијални прекршиоци, а спроводи се првенствено путем принудних мера. С друге стране, стратегија развоја има за циљ стварање система за смањење претњи потенцијалне позиције жртве (запосленог као жртве), повећано учешће у производним и управљачким процесима, као и кроз развој психолошког својства запослених. Предлаже се допуна *ISO/IEC 27000* стандарда о управљању безбедности информација и њихове одељке о безбедности информације који се односе на особље применом нацрта стандарда Култура инфомрационе безбедности. Овај нацрт стандарда, у раду, се састоји од седам делова у којима су формулисане дефиниције појмова људског фактора, људских ризика, културе, развојних

стратегија; фактора утицаја на културу информационе безбедности на индивидуалном и организационом нивоу; циљева, праваца, средстава и метода његовог формирања и развоја; организациони принципи и организационо-методолошки захтеви (захтеви за организацију и методологија за њено планирање, процену, контролу и унапређење); и захтеви за документовање ових процеса (за политику развоја културе информационе безбедности и друга локална документа за организовање ове теме) као дело имплементације како заштитних тако и развојних стратегија културе информационе безбедности.
На послетку Syuntyurenko (2022) посматра безбедност информација кроз холистички приступ, приступ човеку као бићу у читавој информатичкој збрци. Наводи да прекршиоци који почине дело кршења безбедности не само да су у могућности да копирају информације до којих су допрели, већ могу да ускладиште вирусе који уништавају апликативне програме који почињу да раден након одређеног времена, што отежава њихово откривање. То доводи до функционалног поремећаја информационих система, система заштите критичне инфраструктуре, контролних објеката, појаве друштвених тензија, итд. Наводи да се осим дигиталног јаза, појављује и пораст ризика повезаних са зависношћу. Савремене технологије стављају корисника у позицију дилера или корсиника лиценце, а као доказ томе наводи трансформацију интелектуалне својине у оруђе за злоупотребу монополског положаја власника технологије, пре свега информационих технологија.

4. ДИСКУСИЈА И ИЗВОЂЕЊЕ ЗАКЉУЧАКА

Прегледом литературе на тему утицаја дигиталне трансформације на ризик безбедности информација у информационом систему дошло се до следећих закључака. Како је прво истраживачко питање било из области фактора који утичу на ризик безбедности информација, може се рећи да је једногласно људски фактор најзначајнији и да представља највећи ризик. Поред људског фактора идентификовани су и фактори попут хардвера, софтвера, мреже, уговорних страна, итд. Ови фактори су зависили од аспекта посматрања, тј. области из које су радови написани. Аспекти посматрања су предочили да област ризика безбедности информација у дигиталној трансформацији има импликације како на микро нивоу, почевши чак од појединаца (индивидуални ниво), преко предузећа, па све до макро нивоа, држава, и на послетку до међународног, па чак и светског (глобалног) нивоа.
Утисак аутора овог рада на основу спроведеног прегледа литературе јесте да ризик безбедности није довољно разрађен, тј. да није успео да испрати дигиталну трансформацију. Тиме се створио јаз између области функционисања појединца, привреде и њихове заштите и сигурности на мрежама, али и у локалним окружењима. Подизањем свега дигиталног на интернет практично долази до могућности глобалног приступа подацима чак и онима са микро и индивидуалног нивоа. Ово даје простора за могућност насумичних али и координисаних сајбер напада који би могли да паралишу и појединца и организацију, али и државу и међународну заједницу. Светски догађаји говоре у прилог датој тврдњи, тако да треба бити обазрив у периоду који се налази пред нама.
Још једна чињеница у прилог кашњења области ризика безбедност информација за дигиталном трансформацијом јесте незавидан број радова у претходне три године који се баве овом тематиком. Сматрам да је несумњиво људски фактор најизраженији, а као потајни најзначајнији аспект назире се правни аспект јер све има правне и економске импликације. Рад има простора за даље истраживање и за примену конкретних емпиријских анализа у наредном периоду, а претходно написано може служити као темељна теоријска основа за даље истраживање.

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PERFORMANCE ANALYSIS OF TRADING COMPANIES IN SRBIA BASED ON DIBR - WASPAS METHODS

Abstract: Recently, when analyzing the performance of trading companies, various multi-criteria decision-making methods are increasingly used individually or integrated. In this way, because several criteria are used integrally at the same time, it is better to get a realistic idea of the achieved performance compared to classical methods. Based on that, this paper analyzes the performance of trading companies in Serbia based on the DIBR and WASPAS methods. The results of the WASPAS method show that DELHAIZE SERBIA DOO BELGRADE is in first place. Next: LIDL SERBIA KD NOVA PAZOVA, MERCATOR-S DOO NOVI SAD, NELT CO. DOO BELGRADE, MOL SERBIA DOO BELGRADE, PHOENIX PHARMA DOO BELGRADE, MERCATA VT DOO NOVI SAD, OMV SERBIA DOO BELGRADE, LUKOIL SERBIA DOO BELGRADE and KNEZ PETROL DOO ZEMUN. Foreign retail chains are better positioned than domestic ones. They apply new business methods (multichannel sales - store and electronic, private label, sale of organic products, etc.) and the degree of digitization of the entire business is greater. Overall, under the positive influence of numerous macro and micro factors (favorable economic climate, efficient management of human resources, assets, capital, sales and profit, digitization of the entire business, etc.), the performance of trading companies in Serbia has improved.

Keywords : performance, efficiency, factors, DIBR and WASPAS method, Serbian trade

1.INTRODUCTION

It is very challenging, current, important and complex research on the performance of trading companies based on multi-criteria decision-making methods in the function of realistic assessment and improvement in the future by applying relevant measures (Ersoy, 2017; Đalic et al., 2020; Kovač et al., 2021; Lalić , et al., 2021; Mikšić et al., 2021; Stankovič et al., 2020; Saaty, 2008; Trunkg, 2021). Based on that, the subject of research in this paper is the application of DIBR and WASPAS methods in the evaluation of the performance of trading companies in Serbia. The primary goal and purpose of this is to investigate the performance of trading companies in Serbia as complex and realistically as possible in order to improve them in the future by applying adequate measures. The main research hypothesis in this paper is based on the fact that continuous analysis of critical performance factors of trading companies, in the specific case of Serbia, based on multi-criteria decision-making methods, including DIBR and WASPAS, is a basic assumption for improvement in the future by applying adequate measures. Because at the same time several criteria are simultaneously integrated, which are nothing but critical performance factors of trading companies, which is not the case with classic methods. Empirical data for the research of the treated problem in this paper were collected from the Agency for Economic Registers of the Republic of Serbia. The data used are "produced" in accordance with the relevant international standards. With regard to the international comparison of the obtained results, there are no restrictions.

2.LITERATURE REVIEW

In contemporary literature, there is an increasing number of works devoted to the evaluation of the performance of trading companies based on various methods of multi-criteria decision-making (Ayçin et al., 2021: Popović et al., 2022; Ecer & Aycin, 2022; Mishra et al., 2022; Nguyen et al., 2022; Rani et al., 2022; Toslak et al., 2022; Shanmugasundar et al., 2022; Saticı, 2022; Keshavarz-Ghorabaee et al., 2021) . This is also the case with literature in Serbia (Lukic & Hadrovic, 2019, 2021, 2022; Lukic $ Kozarevic, 2021; Lukic, 2020; Lukic, 2021a,b,c,d,e; Lukic et al., 2020a,b; Lukic, 2022a,b,c,d,e,f,g,h, 2023). In this work, it serves as a theoretical, methodological and empirical basis for the most complex research into performance factors of trading companies in Serbia.

Research through the literature reveals that there are wide possibilities of applying multi-criteria decision-making methods in trade. In his work, Ersoy (2017) theoretically analyzes the application of various methods of multi-criteria decision-making in retail, pointing out their characteristics and significance. This paper can, in our opinion, serve as a good basis for choosing a method that will be applied in a specific case in retail and in other trade sectors. A special paper is dedicated to identifying factors that influence the effectiveness of websites in retail based on the application of the Fuzzy DEMATEL method (Gaur et al., 2020). By the way, the importance of applying different methods in the analysis of the efficiency of electronic commerce is multiple. In the literature, considerable attention has been devoted to the analysis of the efficiency and performance of global retail chains using the integrated fuzzy SWARA and fuzzy EATWOS methods (Görçün et al., 2022). A separate study analyzed the efficiency and marketing growth of retail food companies (Harangi-Rákos & Fenyves, 2021). The subject of research in the literature is the evaluation and selection of suppliers in the context of the green economy (Keshavarz-Ghorabaee et al., 2020). In the literature, special attention is paid to the analysis of logistics efficiency based on the multi-criteria decision-making method (LMAW) (Pamučar et al., 2021). In a separate study, the importance of improving the procurement process for retail companies was pointed out (Maxim, 2021), and multi-criteria decision-making methods play a significant role in this. By the way, the possibilities of applying multi-criteria decision-making methods in the analysis of logistics efficiency are wide. With their help, the efficiency of individual distribution channels can be seen. Similarly, by means of multi-criteria decision-making methods, the selection of employees in retail and in supplementary activities, such as for example tourism, can be carried out (Urosevic et al., 2017). All in all, there are wide possibilities of applying multi-criteria decision-making methods in order to improve the performance and efficiency of trading companies. As a result, works devoted to the analysis of financial performance and trade efficiency in Serbia have been published in Serbian literature based on various multi-criteria decision-making methods (Fuzzy AHP - TOPSIS, ELECTRE, MABAC, OCRA, WASPAS, ARAS, MARCOS, TRUST) (Lukic et al. , 2020; Lukic & Hadrovic Zekovic, 2021, 2022; Lukic, 2021a,b, 2022a,b,c,d, e,f,g,h; Lukic et al., 2021), as well as DEA approaches (Lukic, 2022g). Multi-criteria decision-making methods were applied in the performance analysis of trading companies in Serbia for the reason that they provide more realistic results compared to classical methods of financial analysis (for example, ratio analysis), given that several criteria treated as factors are simultaneously observed. When analyzing the performance of trading companies in Serbia using different methods of multi-criteria decision-making, the following criteria were most often used: number of companies, number of employees, assets, capital sales and net profit. This is because they are a good measure of performance and correspond to the nature of the trade. In a special study, significant attention was paid to the comparative analysis of the information performance of trade between the European Union and Serbia based on the MARCOS method (Lukic, 2022h).

3. RESEARCH METHODOLOGY

The main goal and purpose of researching the problem treated in this paper is to, on the basis of modern methods of multi-criteria decision-making - DIBR and WASPAS methods, more realistically assess the positioning of the largest trading companies on the Serbian market. This makes it possible to improve the positioning of the analyzed trading companies in the future by applying adequate measures. This also reflects the basic research hypothesis related to the problem treated in this paper.

The sample in this paper was formed on the basis of the ten largest trading companies in Serbia according to the realized business income in 2021. Relevant necessary data for researching the problem analyzed in this paper is published by the Agency for Economic Registers of the Republic of Serbia.

The research methodology of the treated problem in this work is based on the application of DIBR and WASPAS methods. We will briefly explain their characteristics.

The **DIBR** (Defining Interrelationships Between Ranked criteria) method is based on defining the relationship between ranked criteria, i.e. adjacent criteria. It consists of five steps (Pamucara et al., 2021b; Tešić et al., 2022a,b):

Step 1. Ranking of criteria according to importance.

On a defined set of *n* criteria $C = \{C_1, C_2, \dots, C_n\}$, the criteria are ranked according to their importance as$C_1 > C_2 > C_3 > \dots > C_n$.

Step 2. Comparison of criteria and definition of mutual relations.

By comparing the criteria, the values $\lambda_{12}, \lambda_{13}, \dots, \lambda_{1-n,n}$and were obtained λ_n. Thus, for example, when comparing criteria C_1 and $C_{2\text{, the value}}$, etc. was obtained . λ_{12}All compared values must satisfy the condition $\lambda_{n-1,n}, \lambda_{1n} \in [0,1]$. Based on the defined conditions and relationships, the following relationships between the criteria were derived:

$$\mathcal{W}_1 : \mathcal{W}_2 = (1 - \lambda_{12}) : \lambda_{12} \quad (1)$$

$$\mathcal{W}_2 : \mathcal{W}_3 = (1 - \lambda_{23}) : \lambda_{23} \quad (2)$$

...

$$\mathcal{W}_{n-1} : \mathcal{W}_n = (1 - \lambda_{n-1.n}) : \lambda_{n-1,n} \quad (3)$$

$$\mathcal{W}_1 : \mathcal{W}_n = \left(1 - \lambda_{1,n}\right) : \lambda_{1,n} \quad (4)$$

Ratios (1-4) and values $\lambda_{n-1,n}$can be viewed as ratios of criteria to which the decision-maker assigns a total importance in the interval of 100% for the two observed criteria.

Step 3. Defining equations for calculating weight criteria.

Based on the relationship from step 2, the expressions for determining the weighting coefficients of the criteria $\mathcal{W}_1, \mathcal{W}_2, \dots, \mathcal{W}_n$are derived:

$$\mathcal{W}_2 = \frac{\lambda_{12}}{(1 - \lambda_{12})} \mathcal{W}_1 \quad (5)$$

$$\mathcal{W}_3 = \frac{\lambda_{23}}{(1 - \lambda_{23})} \mathcal{W}_2 = \frac{\lambda_{12}\lambda_{23}}{(1 - \lambda_{12})(1 - \lambda_{23})} \mathcal{W}_2 \quad (6)$$

$$\mathcal{W}_n = \frac{\lambda_{n-1,n}}{\left(1 - \lambda_{n-1,n}\right)} \mathcal{W}_{n-1} = \frac{\lambda_{12}\lambda_{23}. \dots . \lambda_{n-1,n}}{(1 - \lambda_{12})(1 - \lambda_{n-1.n}). \dots . \left(1 - \lambda_{n-1,n}\right)} \mathcal{W}_1 = \frac{\prod_{i=1}^{n-1} \lambda_{i,i+1}}{\prod_{i=1}^{n-1} \left(1 - \lambda_{i,i+1}\right)} \mathcal{W}_1 \quad (7)$$

Step 4. Calculation of the weight coefficient of the most influential criterion.

Based on equations (5) - (7) and conditions $\sum_{j=1}^{n} \mathcal{W}_j = 1$, the following mathematical relationship is defined

$$\mathcal{W}_1 \left(1 + \frac{\lambda_{12}}{(1 - \lambda_{12})} + \frac{\lambda_{12}\lambda_{23}}{(1 - \lambda_{12})(1 - \lambda_{23})} + \dots + \frac{\prod_{i=1}^{n-1} \lambda_{i,i+1}}{\prod_{i=1}^{n-1} \left(1 - \lambda_{i,i+1}\right)}\right) = 1 \quad (8)$$

From expression (8), the final expression for defining the weight coefficient of the most influential criterion is derived:

$$\mathcal{W}_1 = \frac{1}{1 + \frac{\lambda_{12}}{(1 - \lambda_{12})}, \frac{\lambda_{12}\lambda_{23}}{(1 - \lambda_{12})(1 - \lambda_{23})} + \dots + \frac{\prod_{i=1}^{n-1} \lambda_{i,i+1}}{\prod_{i=1}^{n-1} \lambda_{i,i+1}}} \quad (9)$$

Based on the obtained value $\mathcal{W}_1$and the use of expressions (5) - (7), the weight coefficients of the other criteria $\mathcal{W}_2, \mathcal{W}_3, \dots, \mathcal{W}_n$are obtained.

Step 5. Defining the degree of satisfaction of the subjective relationships between the criteria.

Based on expression (4), the value of the weighting coefficient of the criterion $\mathcal{W}_n$is defined

$$\mathcal{W}_n = \frac{\lambda_{1n}}{(1 - \lambda_{1n})} \mathcal{W}_1 \quad (10)$$

If the valuesλ_{1n} $\lambda'_{1,n}$are approximately equal, it can be concluded that the decision makers' preference is satisfied. If they differ, it is necessary to first check the ratio for λ_{1n}. If the decision-maker considers that the relationship is λ_{1n}well defined, the relationships between the criteria should be redefined and the weighting coefficients of the criteria should be calculated. If this is not the case, it is necessary to redefine the relationship for λ_{1n}It is necessary that the deviation of the value $\lambda_{1n}$and λ'_{1n}be a maximum of 10%. If this is not the case, it is necessary to redefine the relations between the criteria in order to satisfy this condition.

WASPAS (Weighted Aggregates Sum Product Assessment) method was proposed by Zavadskas et al. (2012). It respects the unique combination of two well-known approaches of multi-criteria decision making (MCDM - Multi-Criteria Decision Making) : the method of weighted sums (WS - Weighted Sum) and the method of weighted products (WP - Weighted Product). The WASPAS method is used to solve various complex problems in multi-criteria decision-making (for example, production decision-making) (Chakraborty & Zavadskas, 2014; Zavadskas et al., 2013a,b). An advanced

fuzzy WASPAS method was developed for solving complex problems under uncertainty. The procedure of the WASPAS method consists of the following steps (Urosevic et al., 2017):

Step 1 . Determining the optimal performance rating for each criterion.

The optimal performance rating is calculated as follows:

$$x_{0j} = \begin{cases} \max_i x_{ij}; & j \in \Omega_{max} \\ \min_i x_{ij}; & j \in \Omega_{min} \end{cases}, \quad (11)$$

where: x_{0j}denotes the optimal performance rating of the *i* -th criterion, Ω_{max}denotes the benefit criterion (the higher the value, the better), Ω_{min}denotes the set of cost criteria (the lower the value, the better), *m* denotes the number of alternatives (*i*= 0.1 ,..., *m*), and *n* denotes the number of criteria (*j*= 0,1,..., *n*).

Step 2 . Determination of the normalized decision matrix.

The normalized performance rating is calculated as follows:

$$r_{ij} = \begin{cases} \frac{x_{ij}}{x_{0j}}; & j \in \Omega_{max} \\ \frac{x_{0j}}{x_{ij}}; & j \in \Omega_{min} \end{cases}, \quad (12)$$

where: r_{ij}denotes the normalized performance rating of the *i*- th alternative in relation to the *j* - th criterion.

Step 3 . Calculation of the relative importance of the *i*- th alternative based on the WS method.

The relative importance of the *i*- th alternative, based on the WS method, is calculated as follows:

$$Q_i^{(1)} = \sum_{j=1}^{n} w_j r_{ij}, \quad (13)$$

where: $Q_i^{(1)}$indicates the relative importance of the *i*- th alternative in relation to the *j* - th criterion, based on the WS method.

Step 4 . Calculation of the relative importance of the *i*- th alternative, based on the based WP method.

The relative importance of the alternative, based on the WP method, is calculated as follows:

$$Q_i^{(2)} = \prod_{j=1}^{n} r_{ij}^{w_j}, \quad (14)$$

where: $Q_i^{(2)}$denotes the relative importance of the *i*- th alternative in relation to the *j* - th criterion, based on the WP method.

Step 5 . Calculating the overall relative importance for each alternative.

The total relative importance (common generalized criterion of weight aggregations of additive and multiplicative methods) (Zavadskas, 2012) is calculated as follows:

$$Q_i = \lambda Q_i^{(1)} + (1-\lambda) Q_i^{(2)} = \lambda \sum_{j=1}^{n} w_j r_{ij} + (1-\lambda) \prod_{j=1}^{n} r_{ij}^{w_j} \quad (15)$$

where: λ is the coefficient and $\lambda \in [0, 1]$.

When decision-makers have no preference for the coefficient, the value is 0.5, and equation (5) is expressed as:

$$Q_i = 0.5 Q_i^{(1)} + 0.5 Q_i^{(2)} = 0.5 \sum_{j=1}^{n} w_j r_{ij} + 0.5 \prod_{j=1}^{n} r_{ij}^{w_j} \quad (16)$$

4. RESULTS AND DISCUSSION

Table 1 shows the criteria, alternatives and relevant initial data related to the research of the treated problem in this paper. In the specific case, the selected criteria fully correspond to the nature of business of trading companies and, in addition, are a good measure of performance. The alternatives are the ten best trading companies according to the realized business income in Serbia in 2021.

Table 1: Criteria (C), alternatives (A) and initial data

		Business income	Net result	Business assets	Capital	Number of employees
		C1	**C2**	**C3**	**C4**	**C5**
A1	NELT CO. DOO BELGRADE	80291	488	27246	13814	2094
A2	MERCATA VT DOO NOVI SAD	71694	945	12132	1061	1005
A3	PHOENIX PHARMA DOO BELGRADE	59160	688	28816	7039	526
A4	KNEZ PETROL DOO ZEMUN	51491	483	10637	2969	1171
A5	OMV SERBIA DOO BELGRADE	42520	1193	18259	10064	47
A6	DELHAIZE SERBIA DOO BELGRADE	118913	2973	83479	42756	11637
A7	MERCATOR-S DOO NOVI SAD	81407	-1629	53135	0	8352
A8	LIDL SERBIA KD NOVA PAZOVA	71643	4133	62074	32938	2935
A9	MOL SERBIA DOO BELGRADE	58157	1158	19347	12232	98
A10	LUKOIL SERBIA AD BELGRADE	37563	1799	8969	4823	148

Note: Amounts are expressed in millions of dinars. The number of employees is expressed in whole numbers.
Source: Agency for Economic Registers of the Republic of Serbia

Table 2 shows the descriptive statistics of the initial data for the analyzed trading companies in Serbia.

Table 2: Descriptive statistics

Statistics						
		Business income	Net result	Business assets	Capital	Number of employees
N	Valid	10	10	10	10	10
	Missing	0	0	0	0	0
Mean		67283.9000	1223.1000	32409.4000	12769.6000	2801.3000
Std. Error of Mean		7429.63861	488.22512	8001.90191	4480.62816	1257.83578
Median		65401.5000	1051.5000	23296.5000	8551.5000	1088.0000
Std. Deviation		23494.58020	1543.90338	25304.23565	14168.99034	3977.62598
Skewness		1.030	.227	1.127	1.456	1.720
Std. Error of Skewness		.687	.687	.687	.687	.687
Kurtosis		1.681	1.347	.200	1.258	1.981
Std. Error of Kurtosis		1.334	1.334	1.334	1.334	1.334
Minimum		37563.00	-1629.00	8969.00	.00	47.00
Maximum		118913.00	4133.00	83479.00	42756.00	11637.00

Note: Author's calculation

Descriptive statistics show that, for example, the net result of the largest trading companies in Serbia ranged from -1629.00 (MERCATOR-S) to 4133.00 (LIDL Serbia). The situation is the same with respect to the range and with other statistical variables.
Table 3 shows the correlation matrix of the initial data of the analyzed trading companies in Serbia.

Table 3: Correlations

Correlations						
		1	2	3	4	5
1 Business income	Pearson Correlation	1	.160	.830**	.643*	.873**
	Sig. (2-tailed)		.659	.003	.045	.001
	N	10	10	10	10	10
2 Net result	Pearson Correlation	.160	1	.375	.792**	.040
	Sig. (2-tailed)	.659		.286	.006	.913
	N	10	10	10	10	10
3 Business assets	Pearson Correlation	.830**	.375	1	.794**	.873**
	Sig. (2-tailed)	.003	.286		.006	.001
	N	10	10	10	10	10
4 Capital	Pearson Correlation	.643*	.792**	.794**	1	.544
	Sig. (2-tailed)	.045	.006	.006		.104
	N	10	10	10	10	10
5 Number of employees	Pearson Correlation	.873**	.040	.873**	.544	1
	Sig. (2-tailed)	.001	.913	.001	.104	
	N	10	10	10	10	10
**. Correlation is significant at the 0.01 level (2-tailed).						
*. Correlation is significant at the 0.05 level (2-tailed).						

Note: Author's calculation

In the specific case, there is a strong correlation between the number of employees and business income and business assets at the level of statistical significance. There is a significant correlation between capital and business income, net result and business assets. There is also a significant correlation between the net result and the number of employees. All of this indicates that, among other things, effective management of the observed statistical variables can significantly influence the achievement of the target performance of trading companies in Serbia.
Table 4 shows a ratio analysis of the performance of trading companies in Serbia for 2021.

Table 4: Ratio analysis of the performance of trading companies in Serbia

	Net result/ Business income	Business income/Business assets	Business assets/Capital	Net result/Business assets	Net result/Capital	Net result per employee in thousands
NELT CO. DOO BELGRADE	0.61%	2.946891	1.972347	1.79%	3.53%	233.0468
MERCATA VT DOO NOVI SAD	1.32%	5.909496	11.4345	7.79%	89.07%	940.2985
PHOENIX PHARMA DOO BELGRADE	1.16%	2.053026	4.093763	2.39%	9.77%	1307.985
KNEZ PETROL DOO ZEMUN	0.94%	4.840745	3.582688	4.54%	16.27%	412.468
OMV SERBIA DOO BELGRADE	2.81%	2.328715	1.814289	6.53%	11.85%	25382.98

DELHAIZE SERBIA DOO BELGRADE	2.50%	1.424466	1.952451	3.56%	6.95%	255.4782
MERCATOR-S DOO NOVI SAD	-2.00%	1.532079	0	-3.07%	0	-195.043
LIDL SERBIA KD NOVA PAZOVA	5.77%	1.154155	1.884571	6.66%	12.55%	1408.177
MOL SERBIA DOO BELGRADE	1.99%	3.005996	1.581671	5.99%	9.47%	11816.33
LUKOIL SERBIA AD BELGRADE	4.79%	4.188092	1.859631	20.06%	37.30%	12155.41

Note: Author's calculation

In the specific case, the trading company Delhaize Serbia in 2021 achieved a return on sales of 2.50%, a return on assets of 3.56% and a return on capital of 6.95%. In the same year, the trading company LIDL Serbia achieved a return on sales of 5.77%, a return on assets of 6.66% and a return on capital of 12.55%. So, trading company LIDL Serbia performed more successfully than trading company Delhaize Serbia. Generally speaking, foreign retail chains achieve better performance than domestic ones. One of the reasons for this is that they apply newer business methods and a greater degree of digitization of the entire business.

The weight coefficients of the criteria were determined using the DIBR method. They are shown in Table 5 and Figure 1. (In this paper, all calculations and results are the author's.)

Table 5: Weight coefficients of criteria

Weights of Criteria		
C1	**w1**	**0.2563**
C2	**w2**	**0.2462**
C3	**w3**	**0.1857**
C4	**w4**	**0.1715**
C5	**w5**	**0.1403**
		1

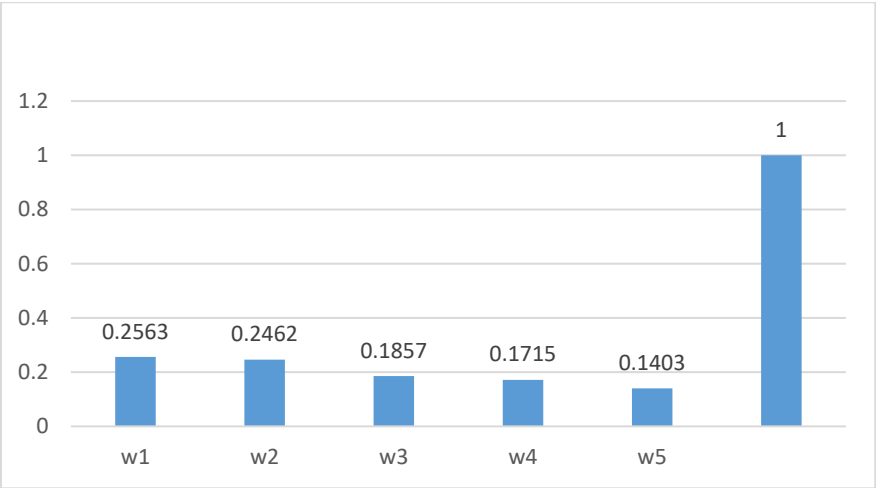

Figure 1: Weight coefficients of criteria
Source: Author's picture

Therefore, in the specific case, the most important criterion is C1 - business income. This means, in other words, that trading companies in Serbia can achieve the target profit if they manage sales effectively. This is achieved, among other things, by applying the concept of managing customers and product categories. Tables 6 – 10 and Figure 2 show the calculations and results of the WASPAS method. (All calculations and results are the author's.)

Table 6: Initial matrix

Initial Matrix					
weights of criteria	0.2563	0.2462	0.1857	0.1715	0.1403
kind of criteria	1	1	1	1	1
	C1	C2	C3	C4	C5
A1	80291	488	27246	13814	2094
A2	71694	945	12132	1061	1005
A3	59160	688	28816	7039	526
A4	51491	483	10637	2969	1171
A5	42520	1193	18259	10064	47
A6	118913	2973	83479	42756	11637
A7	81407	-1629	53135	0	8352
A8	71643	4133	62074	32938	2935
A9	58157	1158	19347	12232	98
A10	37563	1799	8969	4823	148
MAX	118913	4133	83479	42756	11637
MIN	37563	-1629	8969	0	47

Table 7: Normalized matrix

Normalized Matrix					
weights of criteria	0.106	0	0.2114	0	0.6826
kind of criteria	1	1	1	1	1
	C1	C2	C3	C4	C5
A1	0.6752	0.1181	0.3264	0.3231	0.1799
A2	0.6029	0.2286	0.1453	0.0248	0.0864
A3	0.4975	0.1665	0.3452	0.1646	0.0452
A4	0.4330	0.1169	0.1274	0.0694	0.1006
A5	0.3576	0.2887	0.2187	0.2354	0.0040
A6	1.0000	0.7193	1.0000	1.0000	1.0000
A7	0.6846	0.0000	0.6365	0.0000	0.7177
A8	0.6025	1.0000	0.7436	0.7704	0.2522
A9	0.4891	0.2802	0.2318	0.2861	0.0084
A10	0.3159	0.4353	0.1074	0.1128	0.0127

Table 8: Weighted Normalized matrix

Weighted Normalized Matrix						
	C1	C2	C3	C4	C5	Qi1
A1	0.1731	0.0291	0.0606	0.0554	0.0252	0.3434
A2	0.1545	0.0563	0.0270	0.0043	0.0121	0.2542
A3	0.1275	0.0410	0.0641	0.0282	0.0063	0.2672
A4	0.1110	0.0288	0.0237	0.0119	0.0141	0.1894
A5	0.0916	0.0711	0.0406	0.0404	0.0006	0.2443
A6	0.2563	0.1771	0.1857	0.1715	0.1403	0.9309
A7	0.1755	0.0000	0.1182	0.0000	0.1007	0.3944
A8	0.1544	0.2462	0.1381	0.1321	0.0354	0.7062
A9	0.1253	0.0690	0.0430	0.0491	0.0012	0.2876
A10	0.0810	0.1072	0.0200	0.0193	0.0018	0.2292

Table 9: Exponentially Weighedt matrix

Exponentially Weighted Matrix						
	C1	C2	C3	C4	C5	Qi2
A1	0.9042	0.5910	0.8123	0.8239	0.7861	0.2811
A2	0.8784	0.6954	0.6990	0.5305	0.7092	0.1606
A3	0.8362	0.6431	0.8208	0.7339	0.6476	0.2098
A4	0.8069	0.5895	0.6821	0.6329	0.7246	0.1488
A5	0.7683	0.7365	0.7541	0.7803	0.4615	0.1536
A6	1.0000	0.9221	1.0000	1.0000	1.0000	0.9221
A7	0.9074	0.0000	0.9195	0.0000	0.9545	0.0000
A8	0.8782	1.0000	0.9465	0.9562	0.8243	0.6552
A9	0.8325	0.7311	0.7622	0.8068	0.5116	0.1915
A10	0.7443	0.8148	0.6608	0.6878	0.5421	0.1494

Table 10: Ranking

	Ranking				λ	0.5		
	Alternatives	Qi1	Qi2	Qi	Qi			Ranking
NELT CO. DOO BELGRADE	A1	0.3434	0.3434	0.3434	0.3434			4
MERCATA VT DOO NOVI SAD	A2	0.2542	0.2542	0.2542	0.2542			7
PHOENIX PHARMA DOO BELGRADE	A3	0.2672	0.2672	0.2672	0.2672			6
KNEZ PETROL DOO ZEMUN	A4	0.1894	0.1894	0.1894	0.1894			10
OMV SERBIA DOO BELGRADE	A5	0.2443	0.2443	0.2443	0.2443			8
DELHAIZE SERBIA DOO BELGRADE	A6	0.9309	0.9309	0.9309	0.9309			1
MERCATOR-S DOO NOVI SAD	A7	0.3944	0.3944	0.3944	0.3944			3
LIDL SERBIA KD NOVA PAZOVA	A8	0.7062	0.7062	0.7062	0.7062			2
MOL SERBIA DOO BELGRADE	A9	0.2876	0.2876	0.2876	0.2876			5
LUKOIL SERBIA AD BELGRADE	A10	0.2292	0.2292	0.2292	0.2292			9

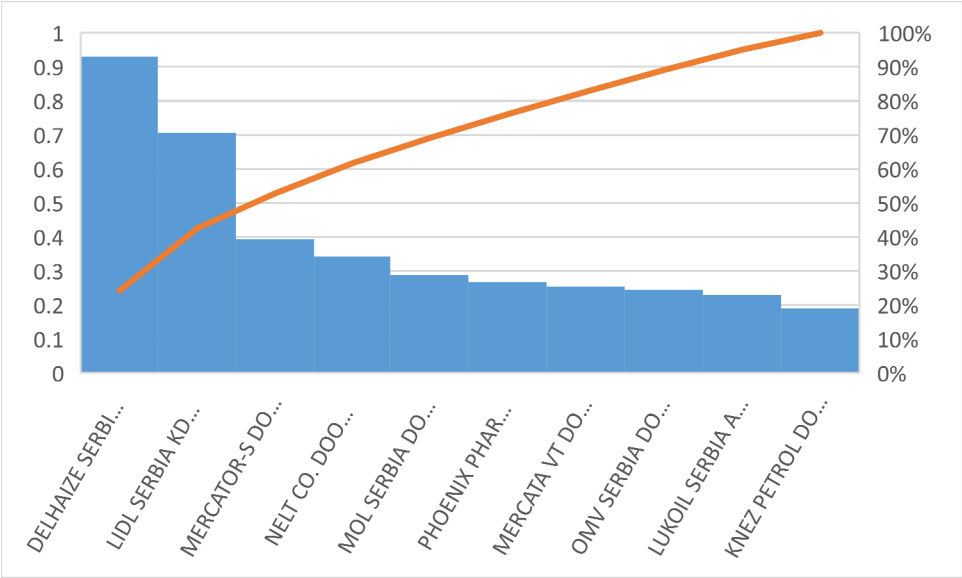

Figure 2: Ranking of trading companies in Serbia
Source: Author's picture

Therefore, the results of the WASPAS method show that DELHAIZE SERBIA DOO BELGRADE is in first place. Next: LIDL SERBIA KD NOVA PAZOVA, MERCATOR-S DOO NOVI SAD, NELT CO. DOO BELGRADE, MOL SERBIA DOO BELGRADE, PHOENIX PHARMA DOO BELGRADE, MERCATA VT DOO NOVI SAD, OMV SERBIA DOO BELGRADE, LUKOIL SERBIA DOO BELGRADE and KNEZ PETROL DOO ZEMUN. Foreign retail chains are better positioned than domestic ones. They apply new business methods (multichannel sales - store and electronic, private label, sale of organic products, etc.) and the degree of digitization of the entire business is greater. In order to improve their positioning, trading companies in Serbia, in addition to adapting to general economic conditions, should apply modern concepts of cost, sales and profit management, the concept of customer management, the concept of managing product categories, the concept of sustainable development, etc. Likewise, to effectively manage human resources, assets, capital. All this contributes to the achievement of the target profit.

5.CONCLUSION

In Serbia, there is a significant difference between trading companies regarding the analyzed statistical variables (Financial and non-financial resources) treated as performance factors. So, for example, business income ranges from 37563.00 (LUKOIL Serbia) to 118913.00 (DELHIZE Sebia), net result ranges from 1629.00 (MERCATOR-S) to 4133.00 (LIDL Serbia), business assets range from 8969.00 (LUKOIL Serbia) to 83479.00 (DELHAIZE Serbia), the capital ranges from 0 (MERCATOR-S) to 42756.00 (DELHAIZE Serbia) and the number of employees ranges from 47.00 (OMV Serbia) to 11637.00 (DELHAIZE Serbia). Foreign retail chains have greater financial and non-financial resources at their disposal. In the specific case, there is a strong correlation between the number of employees and business income and business assets at the level of statistical significance. There is a significant correlation between capital and business income, net result and business assets. There is also a significant correlation between the net result and the number of employees. In addition to other things, the mentioned differences in available financial and non-financial resources affect in their own way the market and financial positioning of trading companies in Serbia. Multicriteria analysis (specifically the results of applying the DIBR-WASPAS method) in this paper showed that foreign retail chains are ranked better than domestic ones (DELHAIZE SERBIA DOO BELGRADE, LIDL SERBIA KD NOVA PAZOVA, MERCATOR-S DOO NOVI SAD, NELT CO. DOO BELGRADE, MOL SERBIA DOO BELGRADE, PHOENIX PHARMA DOO BELGRADE, MERCATA VT DOO NOVI SAD, OMV SERBIA DOO BELGRADE, LUKOIL SERBIA DOO BELGRADE and KNEZ PETROL DOO ZEMUN). They apply new business methods (multichannel sales - store and electronic, sale of organic products, private brand, concept of sustainable development (economic, social and environmental dimensions), higher level of digitalization of the entire business, etc. In Serbia, the application of multi-criteria decision-making methods (Fuzzy AHP - TOPSIS, ELECTRE, MABAC, OCRA, WASPAS, ARAS, MARCOS, TRUST, etc.) in evaluating the performance of trading companies in Serbia is insufficient. The application of these methods provides a more realistic evaluation of the performance of trading companies in relation to ratio analysis. For these reasons, it is recommended that they be applied as much as possible, individually or integrated, in addition to ratio analysis in the performance evaluation of trading companies in Serbia.

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АНАЛИЗА ИЗВЕШТАВАЊА О НЕКРЕТНИНАМА ПРЕМА ЗАХТЕВИМА ПРОФЕСИОНАЛНЕ РЕГУЛАТИВЕ У ФУНКЦИЈИ УНАПРЕЂЕЊА ПЕРФОРМАНСИ ФИНАНСИЈСКОГ ИЗВЕШТАВАЊА

Апстракт: Циљ рада јесте да се укаже на квалитет обелодањивања обавезних информација о некретнинама према захтевима Међународног рачуноводственог стандарда 16 и Међународног рачуноводственог стандарда 40. Професионална регулатива дефинише бројна обавезна обелодањивања, док форма истих није прописана. У првом делу рада указано је на моделе обелодањивања као примере добре праксе. Квалитет финансијског извештавања према наведеним захтевима професионалне регулативе истражен је на бази узорка 216 финансијских извештаја предузећа регистрованих на територији АП Војводине у периоду 2020-2021. година. Резултати дескриптивне анализе обима обелодањивања указују да предузећа у већој мери обелодањују информације о некретнинама саобразно МРС 16 у односу на захтеве МРС 40. У циљу унапређења квалитета финансијског извештавања креатори финансијских извештаји морају на адекватан начин у потпуности да испоштују захтеве за пружањем информација крајњим корисницима.

Кључне речи: Квалитет финансијског извештавања, професионална регулатива, некретнине.

ANALYSIS OF REPORTING ON PROPERTIES ACCORDING TO THE PROFESSIONAL REGULATIONS IN ORDER TO IMPROVE THE PERFORMANCE OF FINANCIAL REPORTING

Abstract: The aim of the paper is to indicate the quality of disclosure of mandatory information on property according to the requirements of the International Accounting Standard 16 and the International Accounting Standard 40. Professional regulations define a number of mandatory disclosures; however, their form is not proposed. In the first part of the paper, disclosure models were pointed out as examples of good practice. The quality of financial reporting according to stated requirements of the professional regulation was examined on the basis of a sample of 216 financial statements of companies registered on the territory of AP Vojvodina in the period 2020-2021. The results of the descriptive analysis of the scope of disclosure indicate that companies disclose information on properties to a greater extent in accordance with IAS 16 in relation to the requirements of IAS 40. In order to improve the quality of financial reporting, the creators of financial statements must fully comply with the requirements for providing information to end users in an adequate manner.

Key words: Quality of financial reporting, professional regulation, properties.

1. УВОД

Финансијски извештаји пружају основне информације о томе како је предузеће пословало у претходном обрачунском приоду. Креирају се и користе за саопштавање финансијских података како интерном органу управљања тако и широј јавности. Финансијски извештаји садрже информације о имовини у власништву предзећа, дугу предузећа, приходима, расходима и информације о финансирању. Финансијски извештаји нумерички изражавају вредност сваке ставке коју садрже и презентују. Једини извештај из комплетног сета који садржи текстуалне описе ставки из финансијских извештаја су Напомене уз финансијек извештаје. Напомене уз финансијске извештаје садрже детаљне информације о рачуноводственим политикама које су користиле рачуновође током креирања финансијских извештаја, као и објашњења важних фактора који утичу на ставке из осталих образаца финансијског извештаја. Напомене уз финансијске извештаје се користе да акционарима и другим заинтересованим странама пруже детаљне информације о рачуноводственим политикама и спољним факторима који утичу на финансијско позиционирање предузећа, као и детаљне информације о појединим позицијама имовине, капитала, обавеза, прихода и расхода. Финансијски извештаји могу бити од помоћи при доношењу одлука на основу адекватно презентованих података. Правилно вођена и представљена финансијска евиденција омогућава унутрашњим и спољним странама да стекну потпуну слику о финансијском стању и успеху предузећа. Састављање финансијских извештаја, а самим тим и напомена уз финансијске извештаје, зависи и од обавезне примене релевантне рачуноводствене регулативе. Професионална регулатива дефинише бројна обавезна обелодањивања, док форма истих није прописана.

Некретнине представљају значајну позицију у структури имовине већине предузећа. Рачуноводство и објављивање информација о некретнинама, постројењима и опреми имају значајан утицај на квалитет финансијских извештаја предузећа. Откривање непотпуних информација о наведеној имовини може негативно утицати на квалитет и поузданост информација за доношење одлука. У циљу обезбеђивања нових инвеститора, потенцијалних кредитора и остваривања добрих пословних односа, предузећа које поседују некретнине, постројења, опрему морају на адекватан начин да обелодане све потребне информације о вредности и вредновању наведене имовине у напоменама уз финансијске извештаје.

Уколико предузећа састављају финансијске извештаје према Међународним рачуноводственим стандардима и Међународним стандардима финансијског извештавања, та предузећа имају већи обим обавезних обелодањивања некретнина у складу са МРС 16 и 40. Код класификације некретнина неопходно је правити дистинкцију између некретнина које користи власник у пословању привредног друштва и некретнина које су намењене најму и стицању прихода по том основу. Уз претходно наведено, ради креирања квалитетног система финансијског извештавања, кључна претпоставка је да билансне позиције буду вредноване према адекватној и важећој рачуноводственој регулативи (Мијић, 2018).

Напомене уз финансијске извештаје нису прописане форме, те стога рачуновође морају да обрате пажњу како да креирају напомене уз финансијске извештаје како би испунили све захтеве у вези са обелодањивањем имовине. У циљу пружања квалитетних информација у финансијским извештајима, посебно квалитетних информација о наведеној имовини, предузећа морају да испуне све услове према пропису о обелодањивању. Погрешна класификација и/или вредновање према неадекватној рачуноводственој регулативи може довести до стварања материјалних грешака на нивоу финансијског извештаја, а тиме и до стварања значајног негативног утицаја на квалитет финансијског извештавања (Пештовић, 2023).

Сходно наведеном, основни циљ овог рада јесте да се анализира у којој мери предузећа регистрована на територији АП Војводине врше обелодањивања информација о некретнинама у својим финансијским извештајима у складу са захтевима Међународног рачуноводственог стандарда 16 – Некретнине, постројења и опрема и Међународног рачуноводственог стандарда 40 – Инвестиционе некретнине. Квалитет финансијског извештавања према наведеним захтевима мериће се на бази узорка од 215 финансијских извештаја регистрованих предузећа у периоду 2020-2021. година. Резултати дескриптивне анализе обима обелодањивања треба да укажу на ниво квалитета финансијског извештавања о некретнинама, као и на критична подручја у вези необјављивња информација од значаја за кориснике финансијских извештаја, те могућностима унапређења квалитета финансијског извештавања.

2. ПРЕГЛЕД ЛИТЕРАТУРЕ

Квалитет финансијског извештавања представља тему којом се бави велики број аутора у својим радовима. Квалитет финансијских извештаја може се анализирати са аспекта финансијских извештаја као целине или са аспекта анализе квалитета извештавања о појединим билансним позицијама. Анализа квалитета на нивоу обелодањивања информација о појединим билансним позицијама пружа детаљнију анализу, као и потпуније смернице за унапређење квалитета извештавања.

Квалитетни финансијски извештаји треба да истинито и објективно прикажу финансијску позицију, резултат пословања и промене финансијске позиције одређеног пословног ентитета. Информације садржане у финансијским извештајима, веома су важне за бројне кориснике тих извештаја и њихове економске одлуке базиране на тим информацијама, јер оне нису само основа за оцену онога што се десило, него и за процену

будућих кретања и трендова. Задовољни корисници финансијских извештаја, који на основу њих доносе пословне одлуке, представљају најбољу потврду квалитета финансијског извештавања, исказано је у раду аутора Ђукић и колега (2014). Аутори су приказали тренутно стање у погледу квалитета финансијског извештавања у Републици Србији и указали на недостатке рачуноводствене регулативе на националном нивоу као предуслова квалитетног финансијског извештавања. На крају, предложене су мере и активности за унапређење квалитета финансијског извештавања у тренутним економско-политичким условима у Републици Србији.

Циљ истраживања аутора Ирванди и Памунгкас (2020), је истражити детерминанте квалитета финансијског извештавања у прерађивачкој индустрији. Истраживање је базирано на подацима из финансијских извештаја производних компанија са Индонезијске берзе током периода 2015-2018. Узорак истраживања чини 287 јавних предузећа уз примену регресионе анализе за испитивање хипотеза. Резултати показују да ризик од неповерења инвеститора утиче негативно на квалитет финансијског извештавања, док постојање комитета за ревизију јача везу између ризика неповерења инвеститора и квалитета финансијског извештавања. Једна од тестираних хипотеза је показала да правна стручност ревизорског одбора у овој студији позитивно утиче на квалитет финансијских извештаја. Резултат ове студије наводи да у обављању дужности чланови одбора за ревизију који познају закон или правне аспекте треба да усмере руководство да се уздржи од политика које имају тенденцију да деградирају квалитет финансијских извештаја.

Истраживање квалитета финансијског извештаја као целине спроведено је на узорку предузећа у Пакистану у периоду од 2006-2017. године (Сохаил и Азиз, 2019). Исраживање се базира на примени панел регресионог модела. Резултати истраживања указују да постоји веза између квалитета финансијског извештавања и оствареног резултата. Резултати показују да компаније са квалитетнијим системом извештавања имају висок ниво перформанси.

Квалитет финансијских извештаја, а посебно квалитет обелодањивања биолошких средстава пољопривредних предузећа, анализиран је применом дескриптивне анализе и регресионог модела. Резултати истраживања указују на критична подручја неадекваног објављивања информација о биолошким средствима, као и на чињеницу да фактори као што су ликвидност, профитабилност и међународна активност имају значајан утицај на квалитет извештавања предузећа о биолошким средствима (Мировић и сар., 2020).

У сегметну квалитета извештавања о некретнинама, аутори Милшиновић, Обрадовић и Карапавловић (2022), истражују примену фер вредности у вредновању некретнина код хотелских предузећа у Републици Србији и Републици Хрватској. Модели засновани на фер вредности чешће се користе у хотелским предузећима у Републици Србији него у предузећима исте делатности у Републици Хрватској. У спроведеном истраживању такође је установљено да велики број хотелских компанија у посматраним земљама не објављује основу за накнадно мерење некретнина (укључујући и инвестиционе некретнине) у напоменама уз своје финансијске извештаје, што значи да је квалитет финансијског извештавања о тој имовини у хотелским предузећима треба побољшати.

Рад аутора Арсенијевић и Спасић (2022) се фокусира на узорак акционарских предузећа у Србији у периоду 2016-2020. године те утврђује да се концепт фер вредности претежно користи за накнадно мерење некретнина, постројења и опреме. Поред тога, аутори су анализирали утицај промена фер вредности одређених ставки дуготрајне имовине на укупни свеобухватни резултат.

Анализа употребе фер вредности као основе накнадног мерења код компанија са међународним утицајем (компанија које се котирају на међународним берзама или имају међународно пословање), спроведена је у раду аутора Таплин и др (2014). Резултати истраживања добијени применом регресионе анализе указују да компаније са међународним утицајем у већој мери примењују фер вредност за вредновање некретнина. Даље, резултати указују да на избор фер вредности имају утицај и фактори као што су уједначавање зараде, приходи из иностранства и величина компаније.

Истраживањем извештавања о некретнинама предузећа у сектору Услуге исхране и смештаја у 2019. години утврђено да информације презентоване у финансијским извештајима нису у потпуности у складу са Међународним рачуноводственим стандардом 16 – Некретнине, постројења и опрема. Претходно наведено указује да се састављачи финансијских извештаја посматраних предузећа приликом обелодањивања информација о некретнинама, постројењима и опреми не придржавају се доследно МРС 16, односно, не обелодањују све информације у оквиру напомена уз финансијске извештаје које овај стандард захтева. Највећи број посматраних предузећа приликом накнадног мерења посматраних позиција користи модел ревалоризације. Да би финансијски извештаји представљали добру основу приликом доношења пословних одлука, информације саопштене у њима морају бити у складу са важећом регулативом (Милашиновић и остали, 2021).

3. МЕТОДОЛОГИЈА ИСТРАЖИВАЊА И ОПИС УЗОРКА

Основни циљ рада јесте да се анализира у којој мери предузећа регистрована на територији АП Војводине врше обелодањивања информација о некретнинама у својим финансијским извештајима. Резултати истраживања указаће на ниво квалитета финансијског извештавања о некретнинама, као и на критична подручја у вези необјављивња информација од значаја за кориснике финансијских извештаја.

Истраживање се заснива на анализи обелодањивања информација у вези некретнина, постројења и опреме саобразно захтевима Међународног рачуноводственог стандарда 16 – Некретнине, постројења и опрема и на анализи обелодањивања информација у вези инвестиционих некретнина саобразно захтевима Међународног рачуноводственог стандарда 40 – Инвестиционе некретнине. Наведени стандарди дефинишу захтеве које предузећа треба да испуне у погледу обелодањивања додатних информација о некретнинама (опширније видети: Међународни рачуноводствени стандард 16 и Међународни рачуноводствени стандард 40). Обзиром да су у питању додатне информације предузећа обелодањива реализују у оквиру Напомена уз финансијске извештаје. Квалитет извешавања о некретнинама детаљније се анализира кроз следеће захтеве за обелодањивање:

1) МРС 16 – Некретнине, постројења и опрема:
- Основ мерења
- Метод амортизације
- Амортизационе стопе и/или век трајања
- Усклађивања бруто књиговодствене вредности и акумулирану амортизацију

2) МРС 40 – Инвестиционе некретнине:
- Основ мерења
- Метод одређивања фер вредности
- Информације о реализованој процени

У наредној табели презетновани су неки од примера добре праксе извештавања о некретнинама.

Табела 1: Методолошки оквир примера добре праксе извештавања о некретнинама

Захтев за обелодањивањем	Пример – методолошки оквир
Основ мерења МРС 16	Почетно признавање некретнина, постројења и опреме, који испуњавају услове признавања као средства, врши се по набавној вредности. У набавну вредност улази фактурна вредност добављача која је увећана за трошкове набавке и друге зависне трошкове набавке и умањења за евентуалне попусте и рабате. Након почетног признавања, некретнине, постројења и опрема се вреднују по набавној вредности умањеној за амортизацију.
Коришћен метод амортизације МРС 16	Некретнине, постројења и опрема се амортизују применом пропорционалне методе на бази следећих амортизационих стопа: Зграде 2 – 2,5% (према веку трајања од 40 до 50 година); Погонске машине 6,67 – 12,5% (према веку трајања од 8 до 15 година); Рачунари 20 – 33,33% (према веку трајања од 3 до 5 годиан).
Основ мерења МРС 40	Инвестиционе некретнине односе се на грађевинске објекте који се дају у закуп и након почетног признавања вреднују се по методу фер вредности.
Метод одређивања фер вредности МРС 40	Фер вредност инвестиционих некретнина одређује се применом фер вредности нивоа 3 уз ангажовање квалификованог проценитеља.

Извор: Израда аутора

Анализа квалитета извештавања саобразно наведеним захтевима МРС 16 и МРС40 заснива се на дескриптивној анализи броја предузећа која на адекватан начин испуњавају наведене захтеве. Истраживање је базирано на узорку од укупно 216 Финансијски извештаја у временском периоду 2020-2021. Узорак чине средња и велика предузећа која су регистрована на територији АП Војводине и која састављају и Напомене уз финансијке извештаје као образац сета финансијског извештаја. Финансијски извештаји као јавно доступни преузети су са сајта Агенције за привредне регистре (2023).
Структура узорка приказана је у следећој табели обзиром да немају сва предузећа из узорка и некретнине, постројења и опрему и инвестиционе некретнине. Од 108 предузећа у 2020. и 2021. години сва предузећа имају у власништву некретнине, постројења и опреме. У 2020. години 53,70% предузећа поред некретнина, постројења и опреме има и инвестиционе некретнине, док је тај број у наредној години нешто виши и износи 55,55%.

Табела 2: Број и структура предузећа у узорку према постојању некретнина

	2020	2020 %	2021	2021 %
Некретнине, постројења и опрема				
ДА	108	100%	108	100%
НЕ	0	0%	0	0%
Инвестиционе некретнине				
ДА	58	53,70%	60	55,55%
НЕ	50	46,30%	48	44,45%

Извор: Калкулација аутора

4. РЕЗУЛТАТИ ИСТРАЖИВАЊА

Квалитет извештавања о основу мерења некретнина, постројења и опреме у првом реду указује да сва предузећа из узорка обелодањују рачуноводствену политику мерења некретнина према захтевима МРС 16. Резултати приказани у наредној табели указују да предузећа у нешто већој мери вреднују некретнине, постројења и опрему по методу набавне вредности (46%). По методу фер вредности 43% предузећа врши мерење некретнина, постројења и опреме, док 11% предузећа користи и један и други метод у зависности од конкретне врсте некретнине.

Табела 3: Ниво обелодањивања основа мерења према МРС16

Основ мерења МРС 16	2020	2020 %	2021	2021 %
Фер вредност	46	43%	46	43%
Набавна вредност	50	46%	50	46%
Набавна и фер вредност	12	11%	12	11%
Укупно	**108**	**100%**	**108**	**100%**

Извор: Калкулација аутора

Резултати истраживања обелодањивања метода амортизације указују да 96% предузећа је обелоданило ове инфомрације у својим Напоменама уз финансијске извештаје. Наведена предузећа примењују пропорционални метод амортизације некретнина, постројења и опреме.

Табела 4: Ниво обелодањивања метода амортизације према МРС16

Метод амортизације	2020	2020 %	2021	2021 %
Не	4	4%	4	4%
Пропорционални метод амортизације	104	96%	104	96%
Укупно	**108**	**100%**	**108**	**100%**

Извор: Калкулација аутора

Сагледавајући информације да ли предузећа обелодањују амортизационе стопе и/или век трајања некретнина, постројења и опреме уочава се да већи број предузећа обелодањује амортизационе стопе (41%) у току целокупног посматраног периода. Информације само о веку трајања обелодањује 9% предузећа. Приметно је да чак 22% предзећа нису обелоданила ни амортизационе стопе ни век трајања као информације од значаја за обрачун амортизације.

Табела 5: Ниво обелодањивања амортизационих стопа и/или века трајања према МРС16

Амортизационе стопе и/или век трајања	2020	2020 %	2021	2021 %
Амортизационе стопе и век трајања	30	28%	30	28%
Амортизационе стопе	44	41%	44	41%
Век трајања	10	9%	10	9%
Не	24	22%	24	22%
Укупно	**108**	**100%**	**108**	**100%**

Извор: Калкулација аутора

У наредној табели презентовани су резултати обелодањивања информација у вези усклађивања бруто књиговодствене вредности и акумулиране амортизације на почетку и крају периода. Ове информације обелодањује чак 89% предузећа. Обелодањивање ових информација од значаја је за кориснике ради сагледавања које промене су утицале на повећање и смањење стања некретнина, постројења и опреме.

Табела 6: Ниво обелодањивања усклађивања бруто књиговодствене вредности и акумулиране амортизације према МРС16

Усклађивање бруто књиговодствене вредности и акумулирана амортизација	2020	2020 %	2021	2021 %
Да	96	89%	96	89%
Не	12	11%	12	11%
Укупно				

Извор: Калкулација аутора

Резултати истраживања обелодањивања основа мерења инвестиционих некретнина указују да 50% предузећа вредновање врши по методу фер вреднсоти. Од предузећа у узорку чак 30% предузећа није обелоданило основ мерења инвестиционих некретнина.

Табела 7: Ниво обелодањивања основа мерења према МРС40

Основ мерења	2020	2020 %	2021	2021 %
Фер вредност	54	50%	54	50%
Набавна вредност	22	20%	22	20%
Не	32	30%	32	30%
Укупно	108	100%	108	100%

Извор: Калкулација аутора

Посматрајући само предузећа која су навела да вредновање инвестиционих некретнина врше по методу фер вредности, даља посматрања указују да чак 59% предузећа није обелоданило методе одређивања фер вредности. Од посматраних предузећа 11% користи ниво 2 за одређивање фер вредности, док 30% користи ниво 3 метод одређивања фер вредности.

Табела 8: Ниво обелодањивања метода одређивања фер вредности према МРС40

Метод одређивња фер вредности	2020	2020 %	2021	2021 %
Ниво 2	6	11%	6	11%
Ниво 3	16	30%	16	30%
Не	32	59%	32	59%
Укупно	54	100%	54	100%

Извор: Калкулација аутора

Даље, посматрајући број предузећа који је обелоданио информације у вези процене, а уједно је обелоданио да се користи метод фер вредности као основа мерења инвестиционих некретнина, приметно је да свега 16,67% предузећа је обелоданило информације у вези реализоване процене. Од посматраних обелодањивања наведено обелодањивање информација у вези процена се у најмањој мери спроводи у пракси.

Табела 9: Ниво обелодањивања информација у вези процене према МРС40

Информације у вези процене	2020	2020 %	2021	2021 %
Да	9	16,67%	9	16,67%
Не	45	83,33%	45	83,33%
Укупно	54	100%	54	100%

5. ЗАКЉУЧАК

Основни циљ рада био је да се анализира у којој мери предузећа регистрована на територији АП Војводине врше обелодањивања информација о некретнинама у својим финансијским извештајима у периоду 2020-2021. Резултати спроведеног истраживања указали су да је квалитет финансијског извештавања о некретнинама саобразно Међународном рачуноводственом стандарду 16 – Некретнине постројења и опрема на нешто вишем нивоу од квалитета финансијског извештавања о инвестиционим некретнимама саобразно захтевима Међународног рачуноводственог стандарда 40 – Инвестиционе некретнине. Треба напоменути да у погледу тренда квалитета извештавања како о позицији некретнина, постројења и опреме, тако и о позицији инвестиционих некретнина, нема одступања у периоду између 2020. и 2021. године саобразно посматраним обележјима.

Неки од резултата спроведеног истраживања указали су да сва предузећа из узорка обелодањују рачуноводствену политику мерења некретнина према захтевима МРС 16. Резултати указују да предузећа у нешто већој мери вреднују некретнине, постројења и опрему по методу набавне вредности, у односу на метод фер вредности. Резултати истраживања обелодањивања метода амортизације указују да 96% предузећа је обелоданило ове информације у својим Напоменама уз финансијске извештаје. Сагледавајући информације да ли предузећа обелодањују амортизационе стопе и/или век трајања некретнина, постројења и опреме уочава се да већи број предузећа обелодањује амортизационе стопе у току целокупног посматраног периода, али чак 22% предзећа нису обелоданила ни амортизационе стопе ни век трајања као информације од значаја за обрачун амортизације. Приликом сагледавања обелодањивања информација у вези усклађивања бруто књиговодствене вредности и акумулиране амортизације на почетку и крају периода, ове информације обелодањује чак 89% предузећа. Обелодањивање ових информација од значаја је за кориснике ради стицања разумевања о природи трансакција које доводе до повећања и смањења стања на позицији некретнина, постројења и опреме.

Резултати истраживања квалитета извештавања о инвестиционим некретнинама према МРС 40 указују да 70% предузећа обелодањује рачуноводствену политику накнданог мерења (наспрам 100% предузећа која ову политку обелодањује за некретнине, постројења и опрему према МРС 16). Фер вредност као метод мерења је више присутан код инвестиционих некретнина, него код некретнина, постројења и опреме. Од посматраних предузећа која вреднују инвестиционе некретнине по фер вредности само 41% извештава о методу одређивања фер вредности, док свега 16,67% пружа информације о процени.

Сходно наведеном, може се исказати да се састављачи финансијских извештаја посматраних предузећа приликом обелодањивања информација о некретнинама, постројењима и опреми не придржавају доследно МРС 16 и МРС 40 односно, не обелодањују све информације у оквиру напомена уз финансијске извештаје које ови стандарди захтевају. С обзиром да су Финансијски извештаји витални део пословања предузећа, а могу бити и од помоћи при доношењу одлука интерних и екстерних органа на основу адекватно презентираних података, неопходно је успоставити праксу обелодањивања свих неопходних информација затражених од стране Међународне рачуноводствене регулативе. Препорука је ради потпуности пружања информација обелодањивања према захтевима професионалне регулативе реализовати у два узастопна периода (за текућу и претходну годину). На тај начин корисници извештаја стичу информације и евентуалним променама које су настале у предузећу са аспекта обавезности информисања.

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Рад је резултат истраживања на пројекту „Регулатива и оцена квалитета финансијског извештавања предузећа у АП Војводини и Републици Српској“ број решења 142-451-127/2023-01/1. Пројекат је финансиран од стране АП Војводине, Покрајинског секретаријата за високо образовање и научноистраживачку делатност и реализује се у оквиру позива за заједничке истраживачке пројекте научноистраживачких организација чији је оснивач АП Војводина у сарадњи са научноистраживачким организацијама Републике Српске.

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ASSESSING THE EFFECTIVENESS OF ANTI-RUSSIAN ECONOMIC SANCTIONS IN A DATA-RESTRICTED CONTEXT: A REVIEW OF METHODOLOGIES AND APPROACHES

Abstract: This paper provides a comprehensive overview of the methodologies used to assess the effectiveness of anti-Russian economic sanctions, with a focus on the challenges and opportunities associated with the use of these methodologies. Drawing on examples from global experience and Russia's experience between 2014 and 2021, the paper examines the methods for evaluation of the impact of sanctions on the economies of target countries, particularly Russia. While various negative effects of the sanctions have been identified, some positive effects have also been found. However, in 2022, the situation changed dramatically with the expansion of military actions and the imposition of unprecedentedly harsh economic sanctions, making it impossible to apply traditional methods of assessment. The limitations of using open data are outlined, including restricted access to national data, and the reasons why traditional methods may lead to false conclusions are discussed. Despite these limitations, it can be argued that the stock market may still provide an opportunity to evaluate the effectiveness of sanctions. A variety of techniques, such as event-driven analysis and heavy-tailedness returns analysis, can help to circumvent data limitations, and the availability of quoted prices will allow for further analysis of the sanctions. This paper highlights the methodological challenges and opportunities associated with assessing the effectiveness of anti-Russian economic sanctions and provides a valuable reference for researchers, policymakers, and practitioners interested in this topic.

Keywords: economic sanctions, Russia, financial markets

1. INTRODUCTION

Economic sanctions have been a part of human history since ancient times. Some of the earliest examples include the Megarian Decree, which imposed trade restrictions by Athens against Megara in around 432 B.C. and served as one of the causes of the Peloponnesian War (Hufbauer, Schott, Elliott, & Oegg, 2009, p. 9). In more recent history, the era of the Napoleonic Wars saw a continental blockade of England, which could also be considered as economic sanctions. However, the period following the Napoleonic Wars was marked by the emergence of trade liberalization ideas that culminated in the 20th century with the establishment of agreements and organizations such as the GATT and the WTO (Smeets, 2021, p. 282). Despite these developments, the 20th century also witnessed a rapid growth in the use of economic sanctions. According to Hufbauer, Schott, Elliott, & Oegg (2008), there were over 200 cases of economic sanctions from the end of World War I until the year 2000, with a true peak of sanctions called the "sanctions decade" marking the end of the century (Cortright & Lopez, 2000).

However, even in the context of this dramatic increase in the use of sanctions worldwide, the case of Russia stands out. While the first sanctions against Russia were imposed in 2014, an unprecedented increase in the scale of sanctions

began with the expansion of military action against Ukraine in February 2022. Over the past year, the total number of economic sanctions imposed on Russia has surpassed 500 (Bown, 2023).
With such a large number and variety of economic sanctions, the question of their effectiveness inevitably arises. Evaluating the effectiveness of anti-Russian sanctions, like any other sanctions, presents several challenges for researchers. Each new sanctions case or Russian response to them may render the application of previous methods ineffective. Therefore, it is important to reconsider methodologies for evaluating previous sanctions, focusing on the current limitations of the Russian case. The next paragraph of this paper will focus on approaches to assessing the effectiveness of sanctions. The third paragraph will list examples from the history of sanctions worldwide that may share similar features with the Russian case. The fourth paragraph of this paper will provide an overview of methodologies and their applicability in the case of evaluating anti-Russian sanctions from 2022. The fifth paragraph will list the main limitations in the assessment of anti-Russian sanctions. The conclusion will present general conclusions.

2. PREVIOUS RESEARCH OF SANCTIONS EFFECTIVENESS

When evaluating economic sanctions, an important question arises regarding their effectiveness. The effectiveness of sanctions has traditionally been assessed by whether they achieved their officially stated objectives. If effectiveness is measured by the success in coercing the target state to take the necessary political action, economic sanctions are generally considered to be ineffective. Hufbauer et al. (2009) note that only about one-third of the imposed sanctions achieved their stated objectives. Peksen & Drury (2010) provide an even harsher estimate based on a sample from 1972-2000, stating that 65% to 95% of sanctions failed to achieve their goals and, in some cases, reduced the level of democracy in the target country. If a substantial political goal, such as regime change, is considered, sanctions may only be effective when imposed against small or unstable countries (Hufbauer & Jung, 2021). It is also believed that only the toughest sanctions, such as those imposed by the UN and binding on all participating countries, can achieve their intended effect (Neuenkirch & Neumeier, 2015).
However, the approach of assessing effectiveness based on achieving stated objectives can lead to false conclusions about ineffectiveness because it does not take into account the damage inflicted on the target country's economy. Additionally, punishment itself may be the purpose of sanctions (Hufbauer & Jung, 2021). For these reasons, recent research has shifted towards assessing the impact of sanctions on the target countries' economies (van Bergejk, 2021, p. 18). Since Russia has not abandoned its policy under the pressure of sanctions since 2022, but there have been obvious changes in its economy, this paper will further use the approach of assessing the effectiveness of sanctions in terms of their impact. Given the variety of channels through which sanctions can impact target countries (Neuenkirch & Neumeier, 2015, p. 111-113), this approach can assess the contributions of sanctions in weakening individual markets, which will be discussed in the fourth section.
Another approach to assessing effectiveness, which can be considered a modification of the previous one, is to compare the costs incurred by the sender country with the amount of damage caused to the target country. Bělín & Hanousek (2021) assessed the 2014 sanctions and counter-sanctions imposed by the EU and the U.S. on one hand, and Russia on the other, using this approach. The costs incurred by the sender country may include the weakening of its own position (Bianchi & Sosa-Padilla, 2023), as well as the damage from the counter-sanctions received as a response. In the case of the target country, not only are the lost profits from the sanctions taken into account, but also the costs incurred to protect important economic sectors and redirect trade flows (Ahn & Ludema, 2020).

3. PREVIOUS SANCTIONS EXPERIENCE

To select a methodology for evaluating the effectiveness of current anti-Russian sanctions, it is helpful to refer to the extensive global and Russian experience of recent years, which have similarities to the current situation.

3.1. Iran

One of the most interesting cases for studying economic sanctions and identifying similarities with the Russian case is Iran. Economic sanctions against Iran were in operation from 2012 to 2015 and from 2018 to the present day. The period of temporary suspension of sanctions against Iran due to the signing of the nuclear deal provides an opportunity to study the rebound effect, which is a rapid recovery of economic relationships. However, the existence of the rebound effect, generally speaking, is not supported by broader data (van Bergejk, 2021, p. 19).
Iran is an oil-producing country and is forced to produce and export oil under the conditions of the oil embargo, which presents some parallels with the Russian case. The existence of a stock exchange in Iran allows for an assessment of the impact of financial sanctions on public companies through quotes (Ghasseminejad & Jahan-Parvar 2021). The surge in the Tehran Stock Exchange TSE Index in 2018 (Mazarei, 2018) proved to be a bailout for domestic investors amid the devaluation of the national currency. Russian investors can see this as a hope for their market (Shumkin, 2023).

3.2. South Africa

The second example in world history that may provide an analogy for the Russian case is the sanctions against the apartheid regime in South Africa. The country first came under UN sanctions during the 1960s, but the toughest sanctions came into effect in 1986. There was a complete ban on financial and economic relations for Western European and North American companies. The sanctions lasted until 1994 and ended with the change of the political regime. As a result of the sanctions, the trade turnover decreased by one third (Evenett, 2002). However, it cannot be said that the change in the political course was a direct consequence of the economic sanctions (Levy, 1999).
The economy of South Africa during the sanctions period has several similarities to the current Russian economy. The South African economy depended on the export of natural resources, which influenced the exchange rate of the national currency. Successful prices for South Africa's main export resource, gold, provided the country with a temporary surplus in its trade balance and appreciation of the rand, which hurt the main exporters. South Africa also demonstrated the first successful cases of sanctions-busting (Early, 2009) by changing trade routes and using intermediaries. Another parallel to the Russian story is the gradual withdrawal of Western companies from South Africa under external social pressure and the threat of boycott (Teoh, Welch & Wazzan, 1999).

3.3. Russia, 2014-2021

Russia itself has substantial experience with the operation of its economy under sanctions. Dovbnya (2020) highlights eight sanctions announcements between April 2014 and April 2018 that had a significant impact on publicly traded Russian companies. During this time, Russia experienced a number of shocks, such as a drop in the ruble, export and import restrictions, and was also forced to spend substantial resources to protect state-sensitive industries and state-owned banks (Ahn & Ludema, 2020).

3.4. Other Examples

All of the previous examples represent the functioning of economies under sanctions, but without the impact of prolonged hostilities. Meanwhile, there are works in the academic literature on separating the impact of armed conflicts and sanctions. For example, Lamotte (2012) looks at sanctions against Yugoslavia in 1991-2001, and finds that economic sanctions had a greater impact on international trade than armed conflicts.
Despite the fact that, on the one hand, protectionist measures are not usually classified as economic sanctions (Morgan, Bapat & Kobayashi, 2021, P.45), on the other hand, there is an opinion that U.S. trade wars with Mexico and China, initiated under President Donald Trump, carry sanctions rhetoric (Hufbauer & Jung, 2021, p. 29). Regardless of the classification of trade wars, it is possible to borrow their methodology for assessing the effectiveness of economic sanctions.
All of the listed cases of economic sanctions present opportunities to consider methods for evaluating them, which is the focus of the following paragraph.

4. FINANCIAL MARKETS AND ESTIMATION METHODS

4.1. International Trade

One of the primary targets of economic sanctions is a country's international trade. In addition to the obvious reduction in budget revenues, sanctions can lead to increased trade costs, exclusion from high-tech markets, loss of sales markets, and an expanded shadow economy (Neuenkirch & Neumeier, 2015). The trade balance, as well as exports and imports individually, are estimated using a gravity model of trade. For example, Afesorgbor (2019) compares the effectiveness of sanctions and the threat of sanctions using the gravity model. Evenett (2002) uses the gravity model, using South Africa as an example, to show that international trade does not return to pre-sanctions levels for seven years after the lifting of sanctions. Nguyen & Do (2021) estimate the decline in exports and imports in Russia after the imposition of sanctions using the difference-in-difference estimation and the gravity model based on a sample from 2011-2018.
Other methods for estimating the impact of sanctions on international trade exist that are not related to the gravity model. Fedorova, Musienko, Demin, Fedorov, & Afanasyev (2019) investigate the effect of news reports on foreign trade volume. Itskhoki & Mukhin (2022) analyze simultaneous sanctions on exports and imports, which have an opposing effect on the national currency, thus stabilizing the exchange rate.

4.2. The Exchange Rate

The exchange rate of the national currency during sanctions is a simple and common indicator of sanctions' effectiveness, which is always in the center of attention of the media and policymakers. For instance, Joe Biden's

comparison of the ruble to rubble (the White House, 2022) is still fresh in memory. Therefore, it is not surprising that researchers in the field of sanctions turn to the exchange rate. Bossman, Gubareva & Teplova (2023) compare how geopolitical risks affect the exchange rates of eight national currencies using nonparametric regression analysis. Dreger, Kholodilin, Ulbricht & Fidrmuc (2016) use cointegrated vector autoregression (VAR) models to determine the impact of other markets on the ruble exchange rate. The authors conclude that the falling price of oil had the most significant impact on the exchange rate in Russia after 2014. There are other works on economic sanctions associated with commodity prices and, in particular, oil prices.

4.3. The Oil Market

Vatansever (2020) provides an overview of Russian policies from 2014-2019 in response to smart sanctions against the oil sector. The study analyzes Russia's attempts to tweak the tax regime, change the organizational structure of the oil industry, and reinforce investment in capital expenditures, demonstrating the strengths and weaknesses of the Russian oil industry. Kuzmina, Parhomchuk, & Minakova (2020) analyze Russian oil companies' financial performance before full-scale sanctions were imposed, using databases of state statistical agencies such as the Ministry of Economic Development. Babina, Hilgenstock, Itskhoki, Mironov & Ribakova (2023) use the Russian customs dataset to assess the impact of two types of sanctions: the oil embargo and the price ceiling imposition. Dizaji & van Bergeijk (2013) apply the VAR approach followed by variance decomposition, demonstrating that sanctions on the Iranian oil sector have a significant impact on the most important macroeconomic variables only in the first two years after the imposition of sanctions.

4.4. The Banking System

The stability of the target country's banking system is a crucial aspect to assess the effects of economic sanctions. Hatipoglu & Peksen (2016) show through a logit regression analysis of 125 countries from 1970 to 2005 that economic sanctions increase the probability of a systemic banking crisis. Financial sanctions, in particular, have a more substantial impact on the banking system than trade sanctions. Mazarei (2019) examines the Iranian banking system to identify factors that could cause a financial crisis and explains why bank runs have not occurred so far. However, other negative impacts on the banking sector under sanctions include higher illiquidity, increased provisions for inefficient loan portfolios, and rising government capital (Pak & Kretzschmar, 2016). To benchmark the performance of sanctioned and non-sanctioned banks, Dizaji (2021) employs the Stochastic Frontier Analysis (SFA) to analyze Iranian banks from 2006-2018, finding a decrease in their cost efficiency.

4.5. The Stock Market

The stock market, if present in the target country, provides several possibilities to analyze the effectiveness of sanctions. First of all, it is possible to analyze asset prices themselves or their returns as indicators of negative news (Hoffmann & Neuenkirch, 2017). Event-driven analysis can be applied to investigate the short-term impact (up to two weeks) of negative news, such as the announcement of sanctions. Dovbnya (2020) applies this method to the 2014-2018 anti-Russian sanctions, and Ghasseminejad & Jahan-Parvar (2021) to the anti-Iranian ones. The variance of returns after sanctions is another indicator that can be estimated using stock market quotes. Ankudinov, Ibragimov & Lebedev (2017) find through hourly data from 2010-2016 an increase in the variance of returns after sanctions and the weighting of the tails of the post-sanctions return distribution. Factor models can be used to assess the stock market under sanctions. Nivorozhkin & Castagneto-Gissey (2018) use CAPM based on MSCI indices to estimate how the Russian stock market decoupled from the global market after 2014, finding that Russian assets can no longer provide investors with additional portfolio diversification.

4.6. Cross-Market Effects

The examples of research mentioned above show that it is possible to analyze the effect of sanctions on one financial market. However, financial markets are significantly interconnected, and critical changes in one market are inevitably reflected in other markets. For instance, if an economy heavily depends on the export of natural resources, the price of the main export commodity will unavoidably affect the exchange rate of the national currency, and it, in turn, will affect the rest of foreign trade.

There are methodologies available to assess contagion effect between markets and to determine which market is the first domino knuckle in a comprehensive crisis. The first such methodology is the family of generalized autoregressive conditional heteroskedasticity (GARCH) models, which are used to assess the impact of sanctions on various financial markets. For example, Sultonov (2020) uses the exponential GARCH on daily logarithmic returns to analyze the short-term relationships and volatility between the anti-Russian sanctions after 2014, the ruble exchange rate, the oil price, and the RTS stock index.

The second class of models that can be used to identify dependencies between markets under sanctions is wavelet coherence analysis (WCA). The method, which comes from physics, specifically from branches such as diffusion theory and signal processing, allows the study of the relationship between time series at different frequencies. Agyei (2023) uses a family of WCA models to analyze the effects of geopolitical risks on emerging market stocks, including Russia. Szczygielski, Charteris & Obojska (2022) use WCA to analyze the relationship between commodity markets, stock market volatility, and Google search trends at different frequencies. Samadi, Owjimehr & Halafi (2021) analyze the rial exchange rate, gold price, and oil price, TSE index from 2014 to 2020 using WCA, and compare the effects of sanctions to the contribution of the COVID-19 epidemic on financial variables. The authors also point out an advantage of the WCA method compared to GARCH: the method can indicate the significance of the correlation between variables at any point of observation (Samadi et al., 2021, p. 44).

5. RESTRICTIONS AFTER 2022

Despite the severity of the sanctions imposed between 2014 and 2021, Russia remained a participant in the global financial system. Researchers had the opportunity to rely on statistics from non-governmental organizations and international financial companies or rating agencies, as well as various stock indices from MSCI, Bloomberg, and IHS-Markit. Additionally, statistics on Russia's foreign trade and balance of payments were also readily available.

In 2022, the situation changed dramatically with the expansion of military actions and the imposition of unprecedentedly harsh economic sanctions. As a result, it became impossible to apply the old methods of assessment.

Access to national data on exports and imports was temporarily restricted by the head of the Federal Customs Service of the Russian Federation in April 2022 (Vedomosti, 2022), limiting the use of gravitational trade models.

On 10 March 2022, the Central Bank of Russia (CBR) introduced a temporary ban for non-resident businesses to receive cash in certain foreign currencies including US dollars and euros (Press Service of the Central Bank of Russia [CBR], 2022b). Another non-market restriction which affected the strengthening of the ruble exchange rate has been imposed before the previous one on 28 February 2022, when the CBR banned brokers "from selling securities at instructions of non-residents" (CBR, 2022c). Therefore, it is cautiously safe to say that the ruble exchange rate is no longer subject to market laws due to restrictions on the purchase and withdrawal of foreign currency.

The oil market has also experienced significant changes that may affect the credibility of studies analyzing the effectiveness of the Russian oil price cap. Vakulenko (2022) draws attention to changes in the trade routes of Russian oil and, as a consequence, changes in the pricing of its transportation. Despite this, the prices of Urals FOB Primorsk and FOB Novorossiysk, used in the analysis of the effectiveness of the anti-Russian sanctions, continue to be published by international agencies based on an outdated methodology. Therefore, the change in pricing of Russian oil and the reorientation of exports towards underground sales makes any analysis of Russian oil revenues, as well as analysis of volatility spillovers between commodity and financial markets, impossible.

On 6 March 2022, the CBR announced that Russian banks are no longer required to fully publish their financial statements, which are issued in accordance with Russian accounting standards, starting from February 2022 (CBR, 2022a). The CBR did not specify a date when this obligation would be reinstated. The absence of commercial banks' and some public joint-stock companies' quarterly profit and loss statements closes the door to the SFA based on bank reports (cf. in Dizaji, 2021) as well as other types of analysis of the Russian banking sector.

The Russian stock market represented by the Moscow Exchange has also been impacted by regulatory restrictions, resulting in international investors losing the ability to sell their shares in Russian public companies in open markets or directly to other investors. Several restrictions also applied to local investors. On 28 February 2022, the CBR decided not to start trading sessions in the Moscow Stock Exchange equity market (CBR, 2022d). Since then, the ban was renewed by the CBR on a daily basis. Only on 18 March 2022, the CBR took the first step towards lifting the ban on trading sessions in the equity market by announcing the resumption of federal government bond trading. This decision came into effect on 21 March 2022 (CBR, 2022e). Due to the sanctions, as well as the decision of private companies, international rating agencies left Russia, and the country was excluded from the calculation of global and emerging market indices. This made it impossible to use world indices as market returns in factor models.

Despite this limitation, it seems that the stock market may still provide the best opportunity to evaluate the effectiveness of sanctions. A variety of techniques, such as event-driven analysis (Dovbnya, 2020) and heavy-tailedness returns analysis, can help to circumvent data limitations. The availability of quoted prices, with the exception of a single month of trading that was closed in the spring of 2022, will allow for an analysis of the sanctions and determination of those that had no effect and which ones caused the most significant damage.

6. CONCLUSION

This paper provides a comprehensive overview of the methodologies used to assess the effectiveness of anti-Russian economic sanctions since 2022, with a focus on the challenges and opportunities associated with the use of these methodologies. The historical overview and analysis of previous sanctions experiences provided valuable insights into the effectiveness of different types of sanctions. The examination of various financial markets and estimation methods

demonstrated the potential for analyzing the impact of sanctions on different sectors of the economy. The limitations and opportunities associated with using these methods were also discussed.
The limitations of using open data were outlined, including restricted access to national data, and the reasons why traditional methods may lead to false conclusions were discussed. Despite these limitations, the stock market may still provide the best opportunity to evaluate the effectiveness of sanctions.
This paper serves as a valuable reference for researchers, policymakers, and practitioners interested in the topic of anti-Russian economic sanctions. The challenges and opportunities highlighted in this paper can inform future research and policy decisions related to sanctions and their effectiveness.

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ANALYSIS OF FINANCIAL INDICATORS DEVELOPMENT OF THE WORLD'S LARGEST ENVIRONMENTAL COMPANIES

Abstract: Ecological financing is part of sustainable financing and refers to investments that contribute to fulfilling environmental sustainability policy goals. The support of ecological financing is important because meeting environmental goals is an investment challenge. The contribution aims to analyze the development of the financial indicators of the largest global environmental companies. The Conditional Value-at-Risk (CVaR) measure of risk served as the theoretical basis. The analysis was carried out based on environmental companies' risk and return rates. The analysis was carried out on daily historical data of 19 companies for the period from 19.5.2017 to 30.12.2022. Based on the historical simulation, expected returns were calculated, and risk measure CVaR. Individual values were compared based on investment criteria measures and identified for a possible investment opportunity.

Keywords: Financial Indicators, Environmental Companies, Risk and Return rates

1. INTRODUCTION

In line with the increasing emphasis on environmental protection, investing in companies with an emphasis on direct environmental technologies or in companies with firm environmental commitments is becoming increasingly important. The goal of environmental investment is to support such business activities that have a positive impact on the natural environment (Cohen, Fenn, & Naimon 1995), (Feldman, Soyka, & Ameer 1997). Environmental investing focuses primarily on investment activities aligned with environmentally friendly business practices and the protection of natural resources and is primarily represented by Socially Responsible Investing (SRI) or environmental, social, and management criteria (ESG - environmental, social, and corporate governance). Socially Responsible Investing is an investment that is considered to be socially responsible because of the nature of the business that the company conducts. Environmental criteria consider the way a company protects the environment, including corporate policies. Social criteria examine how a company manages relationships with employees, suppliers, customers, and the communities in which it operates. Governance deals with corporate governance, executive compensation, audits, internal controls, and shareholder rights.
There is evidence in the literature that investors and analysts consider environmental factors when making investment decisions and recommendations (Heinkel, Kraus, & Zechner, 2001), (Mackey, Mackey, & Barney, 2007), (Siedschlag, & Yan, 2021). Investors use various analytical tools when they are making decisions about the allocation of their financial resources. The aim of the paper is to present the possibilities of using the CVaR risk measure in comparative analyses of individual environmental shares. The choice of appropriate software tools conditions the effectiveness of the results achieved. Currently, the R language (Pfaff, 2013) is often used for statistical and financial analyses. R environment provides many packages intended for financial analyses. In the presented paper, the R language was used to analyze the development of the financial indicators of the most significant environmental companies in the world. Analyzes were carried out on selected assets, while calculations of expected asset return and the Conditional value at risk (CVaR). The risk measure is often used in financial analyses (some common measurements of risk include standard deviation, value at risk (VaR), conditional value at risk (CVaR)).

The paper structure is the following. After introduction, second part deals with general information about environmental investment, and the methodological concept for presented analysis is mentioned at the end of the second part. Third part deals with the analysis of 19 environmental companies based on investment measures. Finally, the paper's conclusion summarizes the analysis results and formulates recommendations.

2. ENVIRONMENTAL INVESTING

Environmental (green, ecological) investments are those where most or all income and profits come from ecological business activities. Even if profit is not the only motive for environmental investment, environmental investment can correspond to or outperform the returns of more traditional assets. Environmental investments can also apply to companies with other business areas but focus on environmental initiatives. For example, some ecological companies are engaged in renewable energy research or developing ecological alternatives to non-ecological materials. In contrast, others may try to reduce pollution or other environmental impacts of their production processes (Eyraud, Clements, & Wane, 2013), (Azhgaliyeva, Kapsalyamova, & Low, 2019).
The basic areas of environmental investment include the following:

- Renewable energy (primarily water, wind and solar energy)
  o Hydropower plants - among the largest companies in this industry can be included e.g. PG&E, Idacorp, Brookfield Renewable Partners;
  o Wind energy – e.g. General Electric, NextEra Energy; Partners, Siemens Gamesa Renewable Energy, Vestas Wind Systems AS;
  o Solar energy – e.g. First Solar, JinkoSolar Holding, Enphase Energy, Sunrun, Invesco Solar ETF;
  o Geothermal energy – e.g. Ormat Technologies.
- Pollution controls (e.g. Fuel-Tech, VanEck Environmental Services ETF, Invesco MSCI Sustainable Future ETF
- Ecological transport (e.g. Tesla, Ballard Power Systems)
- Waste reduction (e.g. Republic Services, Waste Management)
- Alternative agriculture (e.g. United Natural Foods, Mowi ASA)
- Investments in water (e.g. American Water, Essential Utilities).

The basic types of environmental investment are:

- Green shares (purchase of shares in companies with firm environmental commitments).
- Green bonds (also climate bonds, which are loans that help banks, companies, and government bodies finance projects with a positive environmental impact).
- Green funds (investing in green exchange-traded funds (ETFs), which allow investors to spread their money across a diversified range of environmental projects instead of a single stock or bond).

Environmental investing, whether in ETFs or individual stocks, refers to investment activity focusing on companies whose businesses support or promote environmental protection efforts, alternative energy, clean air and water projects, and other environmentally responsible business decisions. For example, companies can be distributors of alternative energy or manufacturers of parts and equipment needed to produce energy, such as the photovoltaic cells needed to make solar panels. Each ETF has its criteria for determining asset acceptability requirements.

2.1. Historical yield simulation

The calculation of the return on assets is generally based on the construction of a discrete random variable X (represented by the vector **r**) using price changes. If the price change is defined as relative to some initial price, then such a change is called yield. Let P_t be the price at time $t = 1, 2,...T$, where T is the length of the monitored period. The rate of return between periods t and $t-1$ can be expressed as the relative rate of return r_t for the same time period (Pekár, Brezina, & Reiff, 2022a):

$$r_t = \frac{P_t - P_{t-1}}{P_{t-1}} \tag{1}$$

When formulating certain models, the measure of the cumulative yield of the asset is also used, at time t it can be expressed as

$$y_t = \frac{P_t - P_1}{P_1} \tag{2}$$

This method's disadvantage is that the investigated period can be characterized by atypicality, which can lead to non-representative data. Therefore, selecting historical data according to time relevance, current correlation, and volatility is advisable. Some critics consider this method not very reliable in terms of revenue distribution and logical inconsistency.

2.2. Expected asset return

Assuming the representation of the random variable X by discrete values (vector **r**), the expected rate of return can be calculated as a geometric mean. For the expected return $EG(\boldsymbol{r})$ ($\mathbf{r} = r_1, r_2,.., r_T$) of an individual asset owned for the T period, with the exact significance of individual observations, the following generally applies (Pekár, Brezina, & Reiff, 2022a):

$$EG(\boldsymbol{r}) = (\prod_{t=1}^{T}(1 + r_t))^{\frac{1}{T}} - 1 \quad (3)$$

where r_t is the return of the discrete random variable in the t-th state, $t = 1, 2,...T$. T is the total number of random states. The expected return of an asset as a geometric mean, based on the value of the cumulative return, can be expressed as

$$E = (1 + y_T)^{\frac{1}{T}} - 1 \quad (4)$$

2.3. Risk measure: Conditional Value at Risk

Conditional Value at Risk (CVaR), a very often used risk measure for financial analyses, can be defined as an expected loss exceeding the Value at Risk (VaR), so CVaR only considers higher loss values than the VaR value. The CVaR value is defined for a given confidence level α (Pekár, Brezina, & Reiff, 2022a):

$$CVaR_\alpha(X) = E(L(X)|L(X) \geq VaR_\alpha), \quad (5)$$

where X denotes the random variable representing the return, $L(X)$ denotes the loss function of the random variable X and is the value at risk. Assuming the existence of a discrete random variable X, represented by the vector $r = (r_1, r_2,... r_T)$, where T is the number of components, the CVaR risk measure can be defined as

$$CVaR_\alpha(X) = VaR_\alpha - \frac{1}{\alpha}E[|\boldsymbol{r} + VaR_\alpha|_-]$$

$$CVaR_\alpha(X) = VaR_\alpha + \frac{1}{\alpha}\sum_{t=1}^{T} max(-(r_t + VaR_\alpha), 0) \quad (6)$$

3. ANALYSIS OF SELECTED ENVIRONMENTAL ASSETS

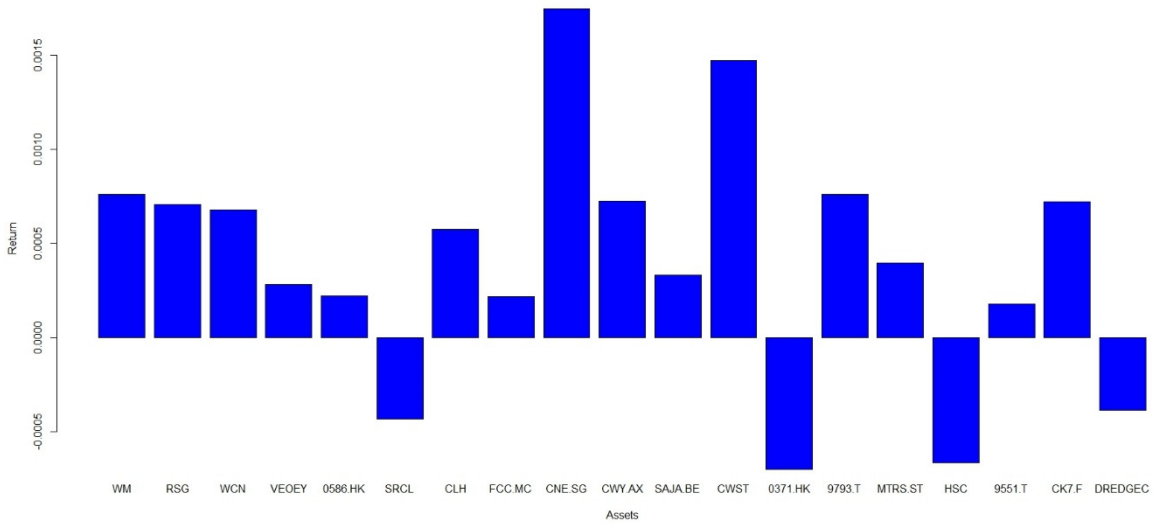
For analysis, 19 shares of the largest global environmental companies were selected. A list of the environmental companies is created by the company Value Today. It is a software analytics company that provides corporate information, companies' financial information, and world financial news. The Value Today concept is primarily based on providing information related to business analysis and characterizing how different companies in different sectors operate in different countries. The company provides data on global markets, sector performance, company market value, annual and quarterly company results, balance sheet and cash flow data, and key analytical indicators related to corporate companies. Based on Value Today data, the shares of the 19 largest global environmental companies were selected for analysis (of course, other entities list a different set of the largest environmental companies based on their own criteria): Waste Management (WM), Republic Services (RSG), Waste Connections (WNC), Veolia Environnement (VEOEY), China Conch Venture Holdings (0586.HK), Stericycle (SRCL), Clean Harbors (CLH), Fomento De Construcciones Y Contratas (FCC.MC), China Everbright International (CNE.SG), Cleanaway Waste Management (CWY.AX), Companhia De Saneamento Basico Do Estado De Sao Paulo – Sabesp (SAJA.BE), Casella Waste Systems (CWST), Beijing Enterprises Water Group (0371.HK), Daiseki (9793.T), Munters Group Ab (MTRS.ST), Harsco Corporation (HSC), Metawater (9551.T), China Everbright Greentech (CK7.F), Dredging Corporation Of India (DREDGEC).
The analysis was carried out on daily historical data for the period from 19.5.2017 to 30.12.2022. The calculation of the considered returns and CVaR risk rate was based on the development of stock prices published on the finance.yahoo.com website based on relations (1), (3), and (6). The results are presented in Table 1 for all stocks considered.

Table 1: Values of average daily returns and CVaR risk measures

	WM	RSG	WCN	VEOEY	0586.HK	SRCL	CLH	FCC.MC	CNE.SG	CWY.AX
Return	0.08%	0.07%	0.07%	0.03%	0.02%	-0.04%	0.06%	0.02%	0.17%	0.07%
CVaR	-3.40%	-3.44%	-3.44%	-5.09%	-5.28%	-5.91%	-6.19%	-4.56%	-7.70%	-4.57%
	SAJA.BE	**CWST**	**0371.HK**	**9793.T**	**MTRS.ST**	**HSC**	**9551.T**	**CK7.F**	**DREDGEC**	
Return	0.03%	0.15%	-0.07%	0.08%	0.04%	-0.07%	0.02%	0.07%	-0.04%	
CVaR	-7.02%	-5.30%	-4.92%	-5.38%	-6.19%	-10.58%	-3.75%	-6.57%	-6.61%	

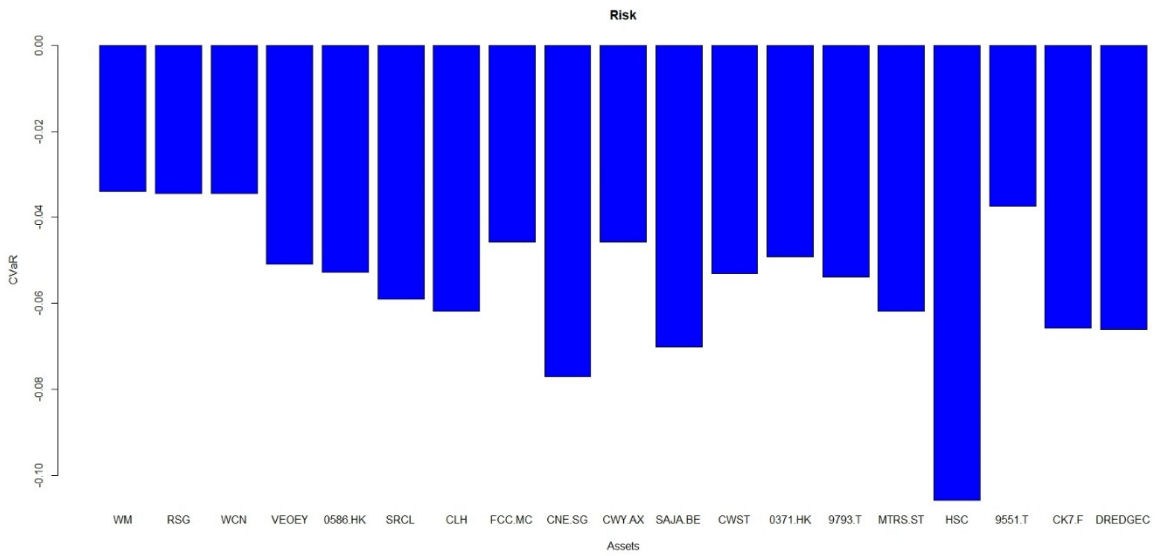
Source: Own processing.

Calculated values from Table 1 are graphically interpreted in Picture 1 and 2.



Picture 1: Values of average daily returns
Source: Own processing.

Based on Table 1 and Picture 1, it can be concluded that China Everbright International (CNE.SG) is the most profitable stock for the analyzed period, with a daily yield of 0.17%. On the other hand, from Table 1 and Picture 2, it is clear that using the CVaR risk measure, Waste Management (WM) appears to be the least risky stock with a risk of -3.40%, which represents the average of the worst 5% losses (CVaR risk rate) for the observed period. The lowest yield value is acquired by shares of Beijing Enterprises Water Group (0371.HK) with a value of -0.07%. Harsco Corporation (HSC), with a value of -10.58% appears to be the riskiest.



Picture 2: CVaR risk rate values
Source: Own processing.

From the analysis of selected shares of the largest global environmental companies presented in Table 1 and Figure 1, it can be observed that in the monitored period, most companies show a profit (15 companies, i.e., 78.95%). In comparison, only four companies show a loss, i.e., 21.05% (SRCL - Stericycle, 0371.HK - Beijing Enterprises Water Group, HSC - Harsco Corporation, DREDGEC - Dredging Corporation Of India).

4. CONCLUSION

Investing in environmental companies represents a relatively new investment tool that aligns with the increasing emphasis on environmental protection. The contribution presents the method of calculating the values of the rates of return and risk for the 19 largest global environmental companies, determined based on the selection of the company Value Today. The

CVaR risk measure, often used for financial analysis, and the yield values obtained as a geometric mean were used for the calculation. Experimental calculations (individual stocks with their development in the monitored period come from the website http://finance.yahoo.com, while 19 stocks were considered daily for the period from 19.5.2017 to 30.12.2022) present a real possibility of using the CVaR risk measure and yield values for evaluating the suitability of investing in selected environmental actions. From the calculations, when compared with classic investments e.g. (Pekár, Brezina, & Reiff, 2022a), (Pekár, Brezina, & Reiff, 2022b), (Pekár, Brezina, & Reiff, 2022c) it can be observed that investment in environmental companies shows similar values as an investment in standard industries in which comparable values of returns and risks are achieved, which provides scope for the development of companies by raising funds. Based on the historical simulation, expected returns were calculated, and risk measure CVaR. In the presented paper, individual values were compared based on investment criteria measures for all analyzed companies. Based on performed analysis most profitable is the waste management company from China, and on the other hand, less risky is the waste management company from the USA. The stated situation reflects the rapidly growing market in action, which can be observed by the highest yield. On the other hand, the least risky is the environmental company in the United States, where the analyzed segment has been operating for a long time. In future research, models of portfolio selection model will be constructed that will reflect correlation among the stocks and not just measures of individual stocks.

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СТРАТЕГИЈСКИ АСПЕКТИ УПРАВЉАЊА ЗАРАДАМА

Апстракт: Један од кључних сегмената квалитета финансијских извештаја јесте уверавање о присутности ефеката управљања оствареним зарадама. Управљање зарадама представља резултат примене различитих рачуноводствених техника, како би се под притиском унутрашњег или спољашњег окружења приказало жељено стање у финансијским извештајима. У овом раду биће разматрани резултати досадашњих истраживања о моделима детекције управљања зарадама и њиховим импликацијама на информационе основе за потребе доношења стратегијских одлука. Увидом у широк спектар развијених модела те указивањем на њихове специфичности, резултати истраживања би требало да пруже смернице будућим корисницима модела у процесу детекције манипулације оствареним зарадама. Такође, добијени резултати представљају квалитетну полазну основу будућим емпиријским истраживањима на подручју управљања оствареним зарадама.

Кључне речи: модели, управљање зарадом, стратегијско управљање

STRATEGIC ASPECTS OF EARNINGS MANAGEMENT

Abstract: One of the key segments of the quality of financial reports is the assurance of the presence of the effects of the management of realized earnings. Earnings management represents the results of the application of various accounting techniques, in order to present the desired state in the financial statements under the influence of the internal or external environment. This paper will discuss the results of previous research on earnings management detection models and their implications for information bases for strategic decision-making. By looking into a wide range of developed models and pointing out their specificities, the research results should provide guidelines to future users of the model in the process of detecting manipulation of generated earnings. Additionally, the obtained results represent a quality starting point for future empirical research in the area of earnings management.

Key words: models, earnings management, strategic management

1. КОНЦЕПТ УПРАВЉАЊА ЗАРАДАМА

У савременом пословању, свака компанија покушава да оствари постављене циљеве у оквиру својих пословних операција на тржишту. Јединствени циљ свих профитних друштава је добит, односно зарада, што је уједно и најпроматранија ставка од стране свих корисника финансијских извештаја, било да су они интерни или екстерни. Основна сврха финансијског извештавања јесте да пружи корисницима извештаја поуздане информације и подлогу за процену финансијске позиције компаније, односно основу за доношење одлука. Међутим, досадашња истраживања области квалитета финансијског извештавања су показала да су у пословној пракси присутни различити начини и технике утицаја на рачуноводствене информације у корист менаџмента и власника компанија, а на штету осталих заинтересованих страна. Овакав феномен је у литератури познат као управљање зарадама.

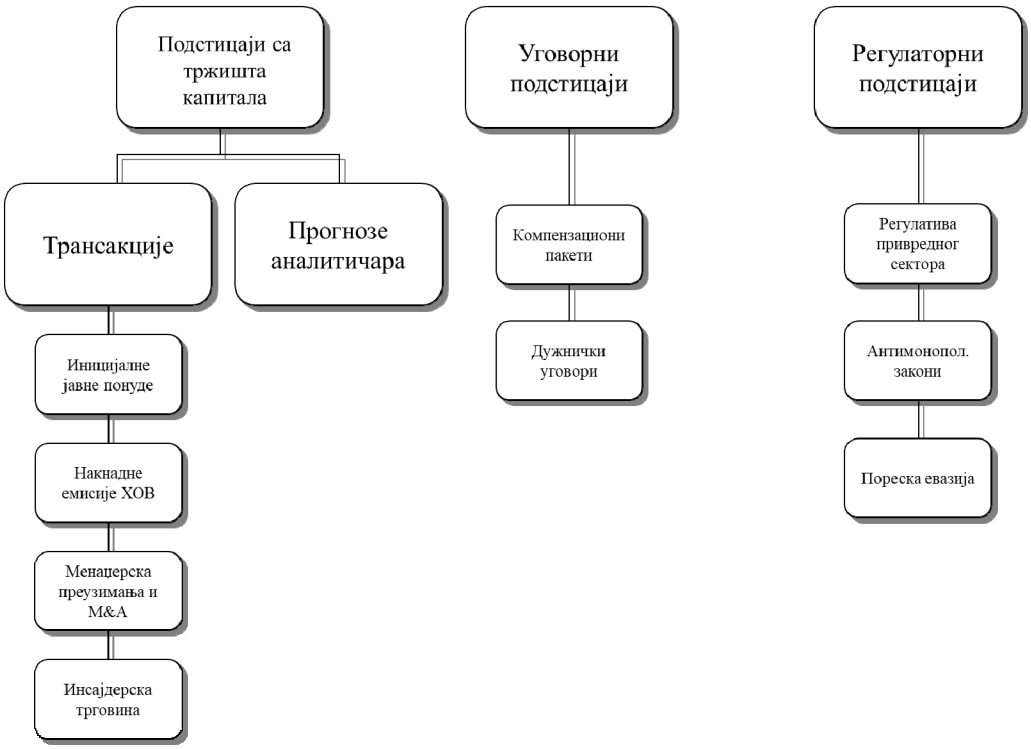
Управљање зарадама представља процес предузимања намерних корака унутар ограничења општеприхваћених рачуноводствених принципа како би се постигао жељени ниво зарада (Ronen и Yaari, 2008). Управљање зарадама се дефинише као активност примењивања различитих техника помоћу којих се утиче на истинитост и транспарентност рачуноводствених информација које су обелодањене, са намером да се корисници финансијских извештаја доведу у заблуду о финансијским резултатима компаније, односно да се утиче на исходе уговорних односа који зависе од финансијских резултата приказаних у извештајима. Управљање зарадом представља избор специфичног рачуноводственог третмана одређених трансакција, односно доношење економских одлука које могу да утичу на токове готовине, инвестиције или производњу компаније. Овакве радње имају за циљ приказивање искривљених вредности позиција добити, односно зараде, приказаних у финансијским извештајима, са крајњом намером да се утиче на заинтересоване стране које доносе одлуке на основу рачуноводствених позиција (El Diri, 2018). Управљање зарадама је скуп сложених активности који се јавља у компанијама без обзира на делатност, начин пословања или величину (Strakova, 2020).

Извор креативних манипулација менаџмента је најчешће у мотивима, користима и циљевима који се разликују од власника до власника компанија. Са једне стране, менаџери самостално управљају пословањем, како у оперативном смислу, тако и погледу одлучивања о употреби инструмената манипулације зарадама, при чему притисци из окружења, као и интерни фактори утичу на њихове потребе да остану унутар законских рачуноводствених оквира и праксе или ван њих.

2. МЕРЕЊЕ И ДЕТЕКЦИЈА УПРАВЉАЊА ЗАРАДАМА

Управљање зарадама се сматра кључним индикатором квалитета финансијског извештавања (Ghaleb и Kamardin, 2018). Досадашња истраживања су показала да је тешко и изазовно открити или измерити манипулације зарадама. Кроз доношење низа стратегијских и оперативних одлука, менаџмент бира између могућих алтернатива које ће максимизирати очекивану добит компаније (Valaskova, Bartosova и Kubala, 2019). Да би се детектовале активности управљања зарадама, позиције на којима се исказује добит није могуће посматрати самостално, већ је потребно мерити их емпиријски. Стога, да би се потврдило присуство активности управљања зарадом могуће је применити дискреционе обрачунске моделе или изабрати методе управљања реалним зарадама.

Модели за детекцију управљања зарадама се разликују, те је неопходно сагледати природу и карактеристике сваког модела приликом доношења одлуке о њиховој примени. Модели су формирани под утицајем различитих макроекономских фактора, попут степена развоја тржишта, врсте индустрије, потенцијалних ризика, што су само неки од разлога зашто модели нису примењиви у свакој привреди (Valaskova, Kliestik и Kovacova, 2018). Поред тога, на склоност ка управљању зарадама утичу и бројни микроекономски фактори попут величине компаније (Meek, Rao и Skousen, 2007; Valaskova и сар., 2018), структуре власништва, старости компаније (Valaskova и сар., 2018), раста компаније, чињенице да ли се акције компаније већ котирају на берзи или ће тек (Chen, Chou и Wei, 2020), те квалитет ревизије (Lopez и Vega, 2019) и сличне карактеристике. Такође, руководиоци могу бити подстакнути да обелодањују финансијске извештаје са оптимистичним садржајем како би ублажили утицај кризе и одржали своје односе са заинтересованим странама током периода турбуленције (Lisboa и Kacharava, 2018). Разлози за управљањем зарадама односно добитком могу бити свакојаки. У приказу који следи приказан је преглед најчешћих мотива за манипулативном и креативном праксом.



Слика 1: Мотиви за управљање зарадама
Извор: Милетић, 2021

2.1. Управљање обрачунским компонентама зарадама

Један од најчешћих начина детекције праксе управљања зарадама јесте употребом рачуноводствених обрачунских разграничења, познатијих као укупна разграничења. Рачуноводствена разграничења се рачунају као разлика између објављене добити у финансијским извештајима и новчаног тока из пословних активности (Милић, Мијић и Јакшић, 2018).

Управљање обрачунским разграничењима се често поистовећује са праксом управљања зарадама. Многе одлуке везане за уређење и примену рачуноводствених политика се доносе од стране менаџера. Према томе, руководство има велики утицај на рачуноводствену функцију компаније, односно оно бира између начина обрачуна појединих рачуноводствених категорија, као што су стопе амортизације, методе процене основних и обртних средстава, пре свега залиха, као и рокове и стопе отписа застарелих потраживања. На тај начин, менаџери не покушавају да измене, искриве стварне оперативне активности компаније, већ покушавају да смање рачуноводствену транспарентност истих. Утицањем на висину обрачунских разграничења, могуће је утицати на висину исказане и пријављене зараде, што последично води до промене у расподели добити између акционара, односно власника.

Укупна обрачунска разграничења представљају збир (TA) недискреционих (NDA), односно нормалних, и дискреционих (DA) разграничења. За разлику од недискреционих разграничења који реално представљају финансијски учинак компаније, дискрециона компонента је предмет манипулације руководства, која представља резултат креативних активности и манипулација (Lassoued и Khanchel, 2021).

Највећи недостатак примене обрачунских категорија јесте што се дискрециона компонента не може директно одредити, већ се употребом одговарајућих модела процењују недискрециона разграничења. Потом се она одузимају од укупних разграничења и на тај начин се долази до, такође, процењене вредности дискреционе ставке. У зависности од претпоставке о константним недискреционим разграничењима, разликујемо статичке моделе који претпостављају непромењивост недискреционих разграничења, као и динамичке моделе, који под утицајем унутрашњих и екстерних фактора не претпостављају константну недискрециону компоненту.

2.1.1. Jones модел

Процес емпиријског изучавања детекције управљања зарадама помоћу дискреционих обрачунских модела карактерише неколико значајних истраживања која су остварила релевантан утицај на развој савремених и прецизних модела. Међу првима значајан допринос анализи ове теме је дао Jones (1991) који је покушао применом регресионе анализе да контролише недискреционе варијабле, одређивајући линеарну везу између укупних разграничења и промене изабраних варијабли попут прихода од продаје и материјалних основних средстава (Kliestik, Belas, Valaskova, Nica и Durana, 2021). Jones је сматрао да су укупна обрачунска разграничења у функцији раста прихода од продаје и промена у висини вредности некретнина, постројења и опреме. Поред тога, Jones не обухвата моделом друге трошкове као објашњавајуће варијабле иако утичу на укупна разграничења, што се сматра једним великим недостатком модела, који утиче на прецизност модела (El Diri, 2018). У наставку је приказана формула Jones модела.

$$\frac{NDAit}{Ait-1} = \frac{TAit}{Ait-1} = +\alpha 0\frac{1}{Ait-1} + \alpha 1\frac{\Delta REVit}{Ait-1} + \alpha 2\frac{PPEit}{Ait-1} + \varepsilon it$$

При чему: NDAit – недискрециона разграничења у години t, TAit – укупна разграничења у години t, Ait-1 – укупна актива у години t-1, ΔREVit – годишња промена вредности прихода у години t, PPEit – вредност материјалне основне имовине у години t, εit – случајна грешка.
Са намером да се превазиђу недостаци Jones модела, многа истраживања су покушала да га модификују додавањем нових променљивих варијабли перформанси компаније, узимајући у обзир динамичку природу разграничења и токова готовине, као и елиминисање екстремних запажања (El Diri, 2018).

2.1.2. Индустријски модел

Dechow и Sloan (1991) извели су индустријски модел за мерење недискреционих обрачунских разграничења, сматрајући да се компаније које послују у оквиру исте делатности, односно индустрије суочавају са истим мотивима и разлозима за дискрециono понашање. Према овом моделу, сматра се да ће управљање зарадама бити уочљиво уколико постоји разлика између разграничења анализиране компаније и разграничења компанија које послују у оквиру исте делатности. Међутим, највећа слабост овог модела јесте претпоставка да све компаније које послују у оквиру исте индустрије послују под истим условима и мотивима за манипулацију зарадама (Dechow, Sloan и Sweeney, 1995). У наставку је приказана једначина модела.

$$NDAt = \gamma 1 + \gamma 1 \cdot median(TAt)$$

При чему: NDAit – недискрециона разграничења у години t, TAit – укупна разграничења у години t.

2.1.3. Модификовани Jones модел

Критикујући тај став, Dechow и сар. (1995) су модификовали Jones модел увођењем категорије промене потраживања као битног фактора приликом детектовања манипулација, наводећи предузимање базичних активности утицаја на продају, као што су одобравање повољнијих рокова плаћања и услова куповине купцима. У конкретном случају, при непромењеним осталим околностима, недискрециона разграничења се повећавају, при чему се последично дискрециона разграничења смањују (Lassoued и Khanchel, 2021). Иако је овај модел често критикован због слабе специфицираности те недостатка релативних алтернатива, модификовани Jones модел је и даље један од најпримењивијих у емпиријским истраживањима (Lee и Vetter, 2015). У наставку је приказана формула модификованог Jones модела.

$$\frac{NDAit}{Ait-1} = \frac{TAit}{Ait-1} = +\alpha 0\frac{1}{Ait-1} + \alpha 1\frac{\Delta REVit - \Delta RECit}{Ait-1} + \alpha 2\frac{PPEit}{Ait-1} + \varepsilon it$$

При чему: NDAit – недискрециона разграничења у години t, TAit – укупна разграничења у години t, Ait-1 – укупна актива у години t-1, ΔREVit – годишња промена вредности прихода у години t, ΔRECit годишња промена вредности потраживања у години t, PPEit – вредност материјалне основне имовине у години t, εit – случајна грешка.

2.1.4. Kotahri модел

Dechow и сар. (1995) су уочили да су дискрециона обрачунска разграничења одређена помоћу Jones и модификованог Jones модела виша (нижа) од очекиваних за компаније са високим (ниским) пријављеним зарадама. Према томе, примена тих модела није повољна за компаније које исказују екстремне вредности финансијских резултата. Kothari, Leone и Wasley (2005) су новим моделом покушали да унапреде претходне, тако што су укључили варијаблу профитабилности, односно поврат на укупно уложена средства (ROA). У наставку је приказана формула Kothari модела (Keung и Shih, 2014).

$$\frac{NDAit}{Ait-1} = \frac{TAit}{Ait-1} = +\alpha 0\frac{1}{Ait-1} + \alpha 1\frac{\Delta REVit - \Delta RECit}{Ait-1} + \alpha 2\frac{PPEit}{Ait-1} + \alpha 3\frac{ROAit-1}{Ait-1} + \varepsilon it$$

При чему: NDAit – недискрециона разграничења у години t, TAit – укупна разграничења у години t, Ait-1 – укупна актива у години t-1, ΔREVit – годишња промена вредности прихода у години t, ΔRECit годишња промена вредности потраживања у години t, PPEit – вредност материјалне основне имовине у години t, ROAit-1 – принос на укупно ангажована средства у години t-1, εit –случајна грешка.

Претходно су представљени неки од најзначајнијих модела обрачунских разграничења за детекцију активности управљања зарадама. Највећи недостатак њихове употребе се испољава у наредном обрачунском периоду, обзиром да лимитира примењивање истог принципа у наредној финансијској години и да прокњижена разграничења морају бити укинута (Baber Kang и Li, 2011). Такође, једна група ових модела не захтева спровођење регресионе анализе, већ се у обзир узима висина текућих и прошлогодишњих одступања, што умањује моћ модела да открије креативну рачуноводствену праксу компанија. Додатно, поједини модели нису превазишли недостатке попут изостављања варијабли, симултаност између зависних и независни варијабли, игнорисање варијабли перформанси, слабе претпоставке модела које резултирају субјективним мерењем и неприкладност за екстремно мале или велике узорке (El Diri, 2018).

2.2. Управљање зарадама путем реалних трансакција

Поред техника креативног рачуноводства и управљања зарадама помоћу обрачунских разграничења, у пословној пракси су присутне и активности управљања реалним зарадама. За разлику од прва два начина где се зарадама управља на начин да се крше рачуноводствена правила и стандарди, односно да се на дискрециони начин маскира истинито пословање и тиме смањује његова транспарентност, до управљања реалним зарадама долази тако што руководство компаније мења оперативне послове и активности компаније како би утицала на зараде. На тај начин, компанија спроводи активности којима одступа од своје најбоље праксе како би повећала зараду са жељом да се барем неке заинтересоване стране наведу да поверују у нормални ток редовних операција као и у истинито финансијско извештавање (Roychowdhury, 2006). Најчешће мере које се примењују су убрзање продаје које омогућава купцима веће погодности приликом плаћања, боље услове продаје, као и дуже рокове отплате. Поред тога, компаније врше продају основних средстава, као и улагања у периодима финансијске године када ће такви приходи или расходи остварити најпожељнији утицај на зараду. Такође, неретко се кроз повећање производње и економије обима смањују фиксни, а притом и укупни трошкови по јединици производа, или се манипулисање зарадом спроводи кроз дискреционе трошкове попут трошкова менаџмент услуга, услуга истраживања и развоја, маркетинг услуга и слично.
Главни циљ оваквих манипулација јесте измена новчаних токова жртвујући најоптималније спровођење операција. Међутим, Gunny (2010) сматра да поред тога што се приликом управљања реалним зарадама не максимизује учинак, да се у будућим периодима то надомести бенефитима које доноси боља репутација на тржишту. Најчешће коришћени модели за детекцију управљања реалним зарадама у индустријама су Roychowdhury модел и Gunny модел.

2.2.1. Roychowdhury модел

Roychowdhury (2006) је развио модел који се састоји од три компоненте, односно анализира три једначине. Прва компонента представља смањење новчаних токова из редовног пословања као последица приступачнијих услова продаје у виду попуста и рокова плаћања.

$$\frac{CFOit}{Aavg} = \alpha + \alpha 1\frac{1}{Aavg} + \beta 1\frac{Salesit}{Aavg} + \beta 2\frac{\Delta Salesit}{Aavg} + \varepsilon it$$

При чему: CFOit – токови готовине из редовног пословања у години t, Salesit – висина прихода од продаје у години t, ΔSalesit – промена прихода од продаје у години t, Aavg – просечна укупна актива

Друга компонента представља смањење дискреционих трошкова који укључују трошкове истраживања и развоја, маркетинга, административних и менаџмент услуга, при чему модел укључује и приходе од продаје из претходне финансијске године, како би се избегло дискреционо управљање политикама продаје у текућој години.

$$\frac{DiscExpit}{Aavg} = \alpha + \alpha 1 \frac{1}{Aavg} + \beta 1 \frac{Salesit - 1}{Aavg} + \varepsilon it$$

При чему: DiscExpit – дискрециони трошкови у години t, Salesit-1 – висина прихода од продаје у години t-1 представља продају из претходног периода, Aavg – просечна укупна актива

Трећа компонента модела се односи на промену оперативних трошкова повећањем производних капацитета, смањујући фискне, па притом и укупне трошкове производње и трошкове продатих производа.

$$\frac{PRODit}{Aavg} = \alpha + \alpha 1 \frac{1}{Aavg} + \beta 1 \frac{Salesit}{Aavg} + \beta 2 \frac{\Delta Salesit}{Aavg} + \beta 2 \frac{\Delta Salesit - 1}{Aavg} \varepsilon it$$

При чему: PRODit – трошкови производње у години t, Salesi t – висина прихода од продаје у години t, ΔSalesit – промена прихода од продаје у години t, ΔSalesit-1 – промена прихода од продаје у години t-1, Aavg – просечна укупна актива

2.2.2. Gunny модел

За разлику од Roychowdhury, Gunny (2010) мери четири врсте активности за управљањем реалним зарадама, и то трошкове истраживања и развоја, затим трошкове промењене политике продаје, осталих општих и административних трошкова, након тога активности одређивања тренутка за продају основних средстава која ће утицати на висину зараде, и на крају активности увећане производње како би се економијом обима утицало на трошкове продатих производа. У наставку су приказане регресионе једначине модела (Habib, Ranasinghe, Wu, Biswas и Ahmad, 2022).

$$\frac{RDt}{Aavg} = \alpha + \alpha 1 \frac{1}{Aavg} + \beta 1 MVt + \beta 2 Qt + \beta 3 \frac{INTt}{Aavg} + \beta 4 \frac{RDt - 1}{Aavg} \varepsilon t R\&D$$

$$\frac{SGAt}{Aavg} = \alpha + \alpha 1 \frac{1}{Aavg} + \beta 1 MVt + \beta 2 Qt + \beta 3 \frac{INTt}{Aavg} + \beta 4 \frac{\Delta St}{Aavg} + \beta 5 \frac{\Delta St}{Aavg} * DD + \varepsilon t SG\&A$$

$$\frac{Gaint}{Aavg} = \alpha + \alpha 1 \frac{1}{Aavg} + \beta 1 MVt + \beta 2 Qt + \beta 3 \frac{INTt}{Aavg} + \beta 4 \frac{ASalest}{Aavg} + \beta 5 \frac{ISalest}{Aavg} + \varepsilon t Asset$$

$$\frac{PRODt}{Aavg} = \alpha + \alpha 1 \frac{1}{Aavg} + \beta 1 MVt + \beta 2 Qt + \beta 3 \frac{St}{Aavg} + \beta 4 \frac{\Delta St}{Aavg} + \beta 5 \frac{\Delta St - 1}{Aavg} + \varepsilon t Production$$

При чему: RDt – трошкови истраживања и развоја у години t, Aavg – просечна укупна актива, MVt - природни логаритам тржишне вредности компанија израчунат као производ броја обичних акција и цене акције у години t, Qt - представља Tobin's Q коефицијент израчунат као збир тржишне вредности обичних акција, књиговодствене вредности преференцијалних акција, дугорочних и краткорочних задужења, подељених са укупним капиталом и обавезама у години t, INTt – сопствена (интерна) средства обрачуната као збир зараде пре ванредних ставки, трошкова истраживања и развоја, и трошкова амортизације у години t, RD t-1 - трошкови истраживања и развоја у години t-1, DD – варијабла која представља променљиво понашање приликом намерног смањења трошкова продаје, као и општих и административних трошкова када приходи од продаје опадну, на начин да је једнако 1 када продаја у паду између t-1 и t, односно 0 у супротном. SGAt – трошкови продаје, општи и аминистративни трошкови у години t, ΔSt – промена прихода од продаје у години t, Gaint t, ASalest – продаја дугорочних средстава у години t, ISalest – продаја дугорочних потраживања (улагања) у години t, PRODt – збир набавне вредности продате робе и промене вредности залиха у години t, ΔSt-1 промена прихода од продаје у t-1.

ЗАКЉУЧАК

Основни предуслов за прогрес и успешност тржишта капитала јесте да се умањи присуство асиметрије информација између руководства и осталих учесника на тржишту, односно заинтересованих страна. База таквог стања јесу висококвалитетни, благовремени и транспарентни финансијски извештаји који представљају полазну тачку у доношењу одлука. Економије у развоју и транзицији се суочавају са многим проблемима у процесу побољшања квалитета финансијског извештавања који су међусобно испреплетани. Основни проблем јесте слабо развијено тржиште капитала што носи са собом неажурно реаговање на благовремене податке из финансијских извештаја. Најчешћи разлог такве реакције лежи у свођењу функције објављивања финансијских извештаја на испуњавање законске обавезе компанија. Систем као такав не подстиче даљи напредак у развитку тржишта капитала и квалитета финансијских извештаја.

Управљање зарадама се сматра виталним индикатором квалитета финансијског извештавања, с обзиром да је позиција зарада једна од најпроматранијих података у финансијским извештајима. Управљање зарадама се дефинише као активност примењивања различитих техника помоћу којих се утиче на истинитост и транспарентност рачуноводствених информација које су обелодањене, са намером да се корисници финансијских извештаја доведу у заблуду о финансијским резултатима компаније. Манипулације у погледу управљања зарадама од стране руководиоца компанија могу се састојати од дискреционих потеза у вези обрачунских разграничења, или понашање може бити окренуто ка изменама у свакодневним и краткорочним оперативним активностима које мењају новчане токове компаније. Начини за утицање на зараде се деле на управљање обрачунским категоријама добитка, односно употребу различитих креативних рачуноводствених техника са једне стране, и управљање зарадама путем реалних активности, односно трансакција са друге стране.

У раду су представљени најчешће употребљени модели из обе групе, при чему доминирају модели на бази обрачунских компоненти зарада. Томе у прилог говори и чињеница да је на подручју досадашњег емпиријског истраживања учињен значајан напредак у развоју модела за детекцију управљања зарадама помоћу обрачунских разграничења, док су модели за откривање управљања зарадама на основу реалних трансакција још увек у повоју.

Управљање обрачунским категоријама зарадама не утиче на основне операције компаније, већ обухвата промену и манипулације у рачуноводственим обухватањима и евидентирањима тих активности. Како висина обрачунских разграничења заузима улогу у калкулацији зарада, последично утиче и на расподелу добити између заинтересованих страна. Са друге стране, прокњижена обрачунска разграничења у текућој финансијској години, односно обрачунском периоду, морају бити поништена у наредном периоду, што представља једно од главних ограничења примене ових модела у пракси, с обзиром да таква техника лимитира манипулације на један обрачунски период или годину.

Када је реч о управљању зарадама путем реалних трансакција, компанија напушта најефикаснији начин пословања и одступа од своје најбоље праксе како би повећала зараду са жељом да се барем неке заинтересоване стране наведу да поверују у привидни ток редовних операција као и у истинито финансијско извештавање. Ипак, не можемо закључити да примена те групе модела није ризична и не изазива трошкове. Промене у редовним пословним и инвестиционим активности могу имати непожељне последице у будућим обрачунским периодима, првенствено са утицајем на смањење вредности компаније и репутације, зарад остваривања краткорочних циљева.

Прегледом досадашњих истраживања установљено је да је избор модела за оцену присутности управљања зарадама субјективни став аутора, те је препорука за даља истраживања да се користи више од једног модела, са намером да се избегну некритички и субјективни резултати. Развој прецизнијих модела остаје један од изазова за будућа истраживања.

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XXVIII Интернационални научни скуп
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РУСКО-УКРАЈИНСКИ РАТ: УТИЦАЈ ЕКОНОМСКИХ САНКЦИЈА НА РУСКУ И СВЕТСКУ ЕКОНОМИЈУ ИЗ УГЛА РАЧУНОВОЂЕ

Апстракт: Руска инвазија на Украјину почетком 2022. године повећала је геополитичке тензије између западних земаља и Русије, снизивши притом очекивања глобалног раста због неизвесности у погледу ефеката сукоба. Док са једне стране, САД и Европска Унија покушавају да утичу на понашање Русије увођењем великог обима комерцијалног и финансијског ембарга и санкција, Русија се са друге стране брани увођењем санкција европским званичницима. Јасно је да су овакве међусобне акције довеле до шокова у снабдевању енергијом и другом робом. Бројне компаније широм света прекинуле су сарадњу са руским компанијама, изазивајући шокове и на финансијским тржиштима, што је коначно резултирало порастом општег нивоа цена, односно глобалном инфлацијом. У овом раду биће разматран економски утицај и потенцијалне импликације руско - украјинског сукоба на економију саме Русије, као и на глобалну економију.

Кључне речи: Санкције, руско-украјински рат, Светска економија

RUSSIAN – UKRANIAN WAR: THE IMPACT OF ECONOMIC SANCTIONS ON RUSSIAN AND GLOBAL ECONOMY THROUGH THE EYES OF AN ACCOUNTANT

Abstract: Russia's invasion of Ukraine in early 2022 has increased geopolitical tensions between Western countries and Russia by lowering global growth expectations due to uncertainty about the effects of the conflict. While on the one hand, the US and the European Union are trying to influence Russia's behavior by introducing large-scale commercial and financial embargoes and sanctions, Russia is defending itself by imposing sanctions on European officials. It is clear that such mutual actions led to shocks in the supply of energy and other goods. Numerous companies around the world stopped cooperation with Russian companies, causing shocks in the financial markets as well, which finally resulted in an increase in the general level of prices, i.e. global inflation. This paper considers the economic impact and potential implications of the Russian-Ukrainian war on the economy of Russia itself, as well as on the global economy.

Keywords: Sanctions, Russian – Ukranian war, Global Economy

1. УВОД

Историјски посматрано, војни сукоби су остављали значајан траг, како на регионалну, тако и на глобалну економију. На први поглед, најоштећеније су земље учеснице сукоба, које услед ратова пролазе кроз бројне губитке – од губитака производних капацитета и радне снаге, до трговинских, монетарних и генерално, економских девастација. Ове ефекте, првобитно регионалног карактера, врло брзо услед ефекта преливања осете и суседне земље, као и друге трговинске стране (Khudaykulova et al., 2022). Како су Plakandaras et al. (2019) навели, на геополитичке ризике, по степену неизвесности, може да се гледа као на терористичке нападе. Бројни аутори су се бавили испитивањем утицаја на одрживост економских активности у временима пандемијске кризе (Saif et al., 2021; Waiganjo et al., 2021; Nuševa et al., 2022), чији су ефекти још осетни, а од 2022. су надограђени ефектима преливања услед руско-украјинског конфликта.

Русија и Украјина су, као бивше чланице Совјетског Савеза, имале веома блиске односе. Ове две земље су културолошки, етнички, али и демографски блиске, што је довело до развијања братског односа између народа Русије и Украјине (Prathama & Novianto, 2022). Упркос статуса независних земаља који обе имају, Русија зависи од Украјине и обрнуто. Након руске инвазије на Украјину у фебруару 2022. године, Европска Унија, Сједињене Америчке Државе, Велика Британија, Јапан, Канада, Аустралија, као и многе друге земље, увеле су опсежне санкције Русији. Ограничења су се пре свега односила на трговину робом и услугама, што се одразило на финансијски сектор (нпр. искључење већине локалних банака из СВИФТ-а), па чак и на одређене појединце повезане са руском владом, војском или државним предузећима (Borin et al., 2022). Велики број мултинационалних компанија, укључујући велике транспортне и логистичке компаније, напустило је руско тржиште или је ограничило локалне операције – што је управо и циљ санкција. Санкције су инструменти који су економске или дипломатске природе и настоје да промене став или политику земље због кршења међународног права или игнорисања владавине права и демократских принципа (Prathama & Novianto, 2022). Бројни су облици у којима се санкције могу појавити, као што су ембарго и различите врсте ограничења трговине, монетарна ограничења, ограничења уласка у земљу и сл. Сврха увођења санкција је вршење притиска на циљну земљу да промени своју политику, као и сигнализирање циљним земљама да њихово понашање нарушава међународне норме (Oxenstierna, 2019).

Циљ рада је дескриптивна анализа утицаја руско-украјинског рата на земље инволвиране у сукоб и на глобалну економију, у контексту утицаја на економску активност и инфлацију. У наставку рада приказан је положај Русије пре руско-украјинског сукоба, а затим су приказане последице по Русију и глобалну економију.

2. ПРЕГЛЕД ЛИТЕРАТУРЕ

Док се свет још увек опоравља од пандемије вируса Ковид-19, која је уздрмала све светске економије, заустављала пословање и успоравала комплетне привредне гране, гасила услужне делатности, изоловала земље, али и отварала простор за развијање нових начина пословања, свет се почетком 2022. године сусреће са новом кризом проузрокованом руско – украјинским сукобом. Велики број санкција и ембарга који је уведен Русији, не само да наноси штету самој руској економији, већ њихове последице прете и глобалној економији, потресају финансијска тржишта и „чине живот опаснијим за све“ (Wiseman, 2022). Русија и Украјина су значајни играчи у извозу нафте, природног гаса, угља, пшенице и других роба на глобалном тржишту. Русија је позната као највећи светски добављач пшенице и заједно са Украјином, производи скоро четвртину укупног светског извоза пшенице (Cohen et al., 2022). Још један ефекат руских санкција на светску привреду је смањење залиха пољопривредног ђубрива, будући да Русија и Белорусија контролишу више од трећине светске производње калијума, који је кључни елемент у производњи ђубрива. Марк Занди, главни економиста у Moody’s Analytics тврди да Русија и Украјина покривају око 70% светске производње неона, који је неопходан за производњу полупроводника и компјутерских чипова. Готово сви произвођачи аутомобила широм света осетили су ову несташицу (Mbah et al., 2022). Увоз нафте и гаса из Русије у Европску Унију у 2019. години процењен је на 200 милијарди евра, што је двоструко више од девизних резерви у земљама Г7 (Канада, Француска, Немачка, Италија, Јапан, Уједињено Краљевство и Сједињене Државе) на крају 2021. године (Pisani-Ferry, 2022). Ембарго на увоз руске нафте подигао је цене горива на светском тржишту, што је изазвало проблеме и прекиде у снабдевању, чије се последице могу ублажити једино проналаском нових извора (Khudaykulova et al., 2022). Европска унија је велики увозник гаса и других енергената из Русије. Више од 50% руске сирове нафте и гасног кондензата (рафинисаног гаса) извози се у Европску унију, а већина се извози у Немачку, Холандију и Пољску (Prathama & Novianto, 2022). У складу са класичном економском теоријом, макроекономски ефекти ембарга на увоз руских енергената одређени су релевантношћу гаса, нафте и угља за потребе индустријске производње и еластичношћу супституције ресурса (Bachmann et al., 2022).

Са друге стране, пружање веродостојне квантитативне процене утицаја рата и санкција на руску економију остаје сложено јер су локалне институције обуставиле објављивање неколико званичних статистичких података (укључујући месечну билатералну трговину робом) (Borin et al., 2022). Доступне бројке и информације указују на значајан ударац руској економији (Sonnenfeld et al., 2022), при чему неки сектори већ бележе значајне контракције активности. Русија је под неком врстом западних санкција још од анексије Крима 2014. године,

које су јој, стицајем околности, помогле да се припреми за широк спектар санкција који је уследио. Оно што Русија није очекивала јесте замрзавање средстава руске Централне банке која се држе на Западу и, de facto, трговински ембарго у кључним секторима (Titov, 2022). Са економским санкцијама које су угрожавале изгледе земље, вредност руске рубље је смањена за половину, што је приморало руску централну банку да у настојању да одржи њену вредност, умањи девизне резерве за 200 милијарди долара (Prathama & Novianto, 2022). Због свих шокова и поремећаја у привреди који настану у кризним ситуацијама, држава мора да реагује регулацијом државног буџета како би ублажила последице на националну економију. Значајне буџетске трансформације се дешавају током ратова и сукоба, јер се буџети тада морају повлачити, а ресурси прерасподелити како би се ублажио утицај поремећаја снабдевања на цене, смањила прекомерна зависност од ресурса увезених из земље високог ризика, за покретање програма енергетске отпорности на ванредне ситуације и за јачу интеграцију енергетских система (Hang et al., 2021). Ипак, руска економија није пропала. Рубља се стабилизовала кроз разне ванредне мере које су уведене, паника је прошла, а каматне стопе су снижене са високих 20 одсто. Руски буџет је осмишљен тако да чак и са тренутним смањеним прометом руске нафте, има суфицит (Titov, 2022). С обзиром да руске нафтне компаније већ увелико траже нова тржишта у Кини и Индији, мало је вероватно да ће изгубити све приходе од нафте и гаса.

Насупрот санкција које су уведене Русији, Украјина је добила велику количину хуманитарне помоћи, наоружања, као и бесповратних финансијских средстава од стране Европске Уније. И сама Украјина усвајањем нових законских одредби који одређују пореску политику државе у ванредном стању, покушала је да заштити привреду и мале предузетнике. Нарочито изменом поједностављених система опорезивања, где индивидуални предузетници - обвезници јединственог пореза прве и друге групе, имају право да не плаћају јединствени порез док се не заврши ратно стање (Ishchenko, et al. 2022).

3. ЕКОНОМСКА ПОЗИЦИЈА РУСИЈЕ ПРЕ РУСКО-УКРАЈИНСКОГ СУКОБА

Будући да се руско – украјински рат у тренутку писања овог рада још увек није завршио, подаци који су тренутно доступни можда нису финални. Такође, као што је поменуто раније у овом раду, Русија је већ дужи временски период, тачније од 2014. године - након анексије Крима, под различитим врстама санкција, које су оставиле траг на руској привреди. Како би у фокусу рада били подаци везани конкретно за тренутни рат и како би био сагледан ефекат санкција које су уведене тек након руског напада на Украјину, обрађени су само подаци за Украјину, Русију и неколико земаља Европске Уније, Америке и Азије, преко два макроекономска индикатора: бруто домаћег производа и стопе инфлације.

На графикону број 1 приказан је руски увоз по земљама:

Графикон 1: Увоз у Русији по земљама, исказан у милијардама долара за 2021. годину
Извор: Аутор на основу података са Trading Economics,2021.

Графикон 2: Извоз из Русије по земљама, исказан у милијардама долара за 2021. годину
Извор: Аутор на основу података са Trading Economics,2021.

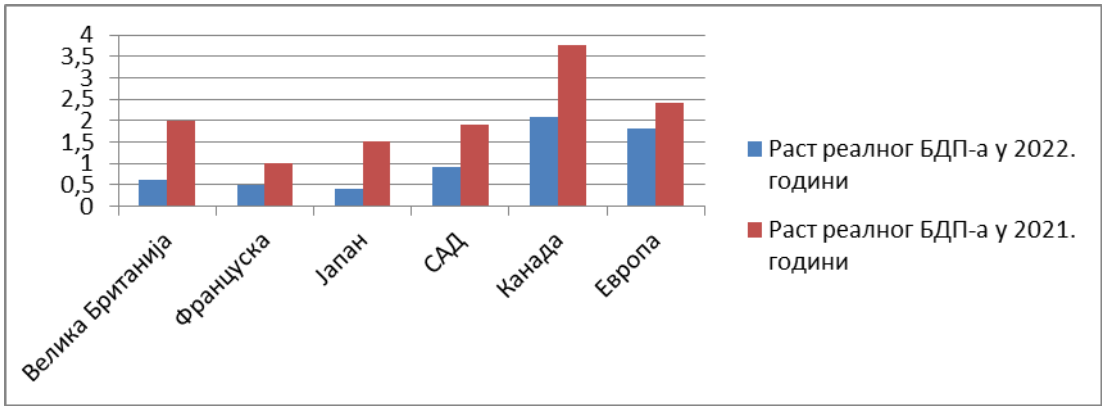
На претходним графиконима приказан је положај Русије пре почетка рата, као и њене највеће увозне и извозне партнере. На графикону број 1, приказане су земље које су највећи увозни партнери Русије, па тако, Кина, Немачка, САД, Белорусија, Јужна Кореја, Француска, Италија, Јапан и Казахстан представљају главне увозне партнере за Русију (Liadze et al., 2022). Са друге стране, на графикону број 2, приказан је извоз по земљама у милијардама долара, на основу података из 2021. године. Највећи извозни партнери Русије су: Кина, Холандија, Немачка, Турска, Белорусија, Велика Британија, Италија, Казахстан, САД, Јужна Кореја и Пољска. Убедљиво највећи извозни партнер је Кина са 68,68 милијарди долара извоза током 2021. године, од чега је преко 45 милијарди долара износио само извоз уља, нафте и нафтних деривата. За економију Русије је важно што јој је Кина и највећи увозни, али и највећи извозни партнер, управо због тога што Кина и Русија имају добре пријатељске односе, при чему Кина није Русији увела ни санкције, ни ембарго.

4. ПОСЛЕДИЦЕ ПО ЕКОНОМИЈУ РУСИЈЕ И ГЛОБАЛНУ ЕКОНОМИЈУ – РЕЗУЛТАТИ ИСТРАЖИВАЊА И ДИСКУСИЈА

Економске последице санкција могу да се сагледају анализом промене БДП-а и стопе инфлације, што ће у овом раду и бити урађено.
На следећем графикону приказан је паралелни преглед БДП-а Русије и Украјине. Украјина је већ и пре рата била веома сиромашна земља са стварним БДП-ом од само 160 милијарди долара. Чак и пре него што се рат заврши, очекивано је да физички губитак из рата у најмању руку одговара висини њеног БДП-а (Roberts, 2023). Утицај руске инвазије на украјинску економију био је разоран. Трећина свих предузећа су одмах престала са радом, због уништења производних објеката и инфраструктуре, поремећаја ланаца снабдевања и драматичног повећања трошкова производње. Управо имовина предузећа представља специфичан рачуноводствени проблем, будући да због своје територијалне локације у зони активних непријатељстава, у зони привремене окупације или других негативних фактора утицаја рата и сродних околности (тржишних, економских, правних, итд.), изгуби своју корисност (Ishchenko et al., 2022). Имовина може бити уништена, делимично уништена или остати нетакнута. Због немогућности њиховог даљег коришћења или коришћења такве имовине у друге сврхе, привредни субјекти остварују губитке.
Са друге стране, Русија се суочила са санкцијама, великим одливом страног капитала, одласком светских компанија, али и миграцијама сопственог становништва. Велики број Руса напустио је своју земљу, како због војних мобилизација које су се одвијале у неколико етапа, тако и због могућности да наставе да привређују у другим земљама.

Графикон 3: Годишњи реални раст БДП-а Русије и Украјине у периоду од 2000. до 2022. године
Извор: Roberts, 2023.

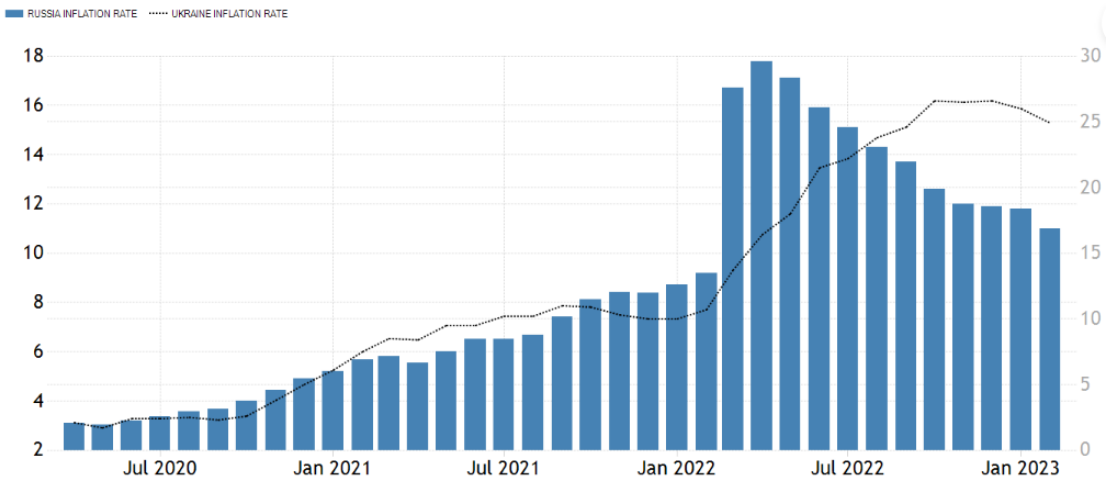
На основу графикона број 3 можемо да уочимо нагли пад реалног бруто домаћег производа у обе земље у периоду глобалне финансијске кризе 2009. године, затим 2014. приликом анексије Крима, уследео је пад економске активности 2020. године као последица пандемијске кризе, све до 2022. године када је почео руско – украјински рат. Свака од наведених криза је погађала руску економију интензивније, него украјинску, до 2022. године када обе економије бележе симетрични пад економске активности.



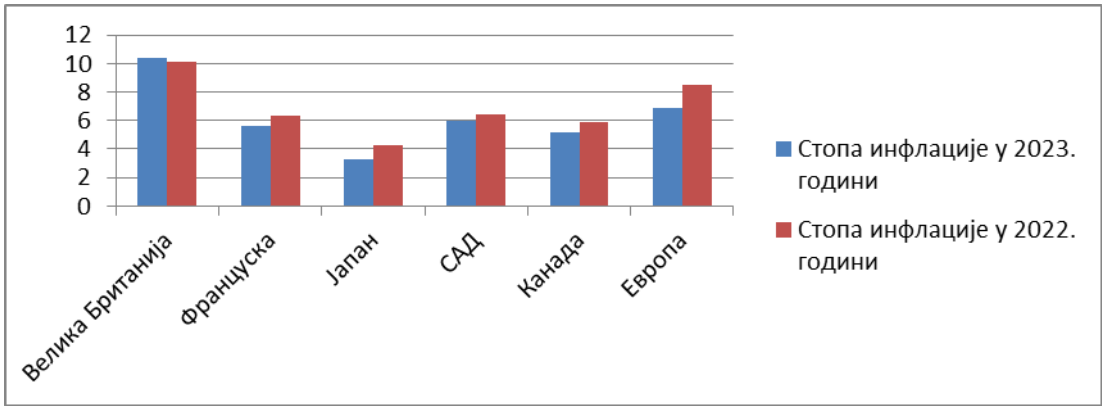
Графикон 4: Годишњи реални раст БДП-а у појединим земљама Европе, Азије и Америке у 2022. и 2021. години
Извор: Аутор на основу података са Trading Economics,2022.

Анализирајући графикон број 4, можемо да уочимо да је и у Европи и Америци у току 2022. године примећен раст реалног БДП-а, али да је тај раст мањи него раст у истом периоду у претходној години. На основу тога бисмо могли да закључимо да је руско – украјински рат, заједно са осталим кризама од 2009. године, довео до смањивања БДП-а на глобалном нивоу.
Свака кризна ситуација, као што се одрази на бруто домаћи производ, одрази се и на општи ниво цена у привреди. Годишња стопа инфлације у Русији пала је на 11% у фебруару 2023. године са 11,8% у претходном месецу. То је уједно најнижа стопа од почетка руске инвазије на Украјину, нижа и од тржишних очекивања која су износила 11,2%. Цене су пале за прехрамбене производе (на 9,3% са 10,2% у јануару), непрехрамбене производе (на 11,2% са 12,2%) и услуге (на 13% са 13,3%). Руски CPI на месечној бази расте по 0,5 посто (Trading Economics, 2023).
Годишња стопа инфлације у Украјини износила је 24,9% у фебруару 2023. године, додатно се смањивши са 26% из јануара 2023. и у односу на седмогодишњи врхунац од 26,6% који је остварен у децембру 2022. године. Иако су цене и даље високе, примећује се успоравање даљег раста. На месечном нивоу, инфлација је пала на 0,7 одсто због поскупљења хране (Trading Economics, 2023).

На графикону број 5 приказано је кретање стопе инфлације у Русији и Украјини у периоду 2020 – 2023.



Графикон 5: Кретање стопе инфлације у Русији и Украјини у периоду од 2020. до 2023. године.
Извор: Trading Economics,2023.



Графикон 6: Стопа инфлације у појединим земљама Европе, Азије и Америке у 2022. и 2021. години
Извор: Аутор на основу података са Trading Economics,2023.

На основу графикона број 5 можемо да уочимо да се и у осталим земљама света, инфлација углавном постепено смањује у односу на претходну годину и да је стање економија постепено почело да се нормализује. Наравно, руско-украјински сукоб није једини догађај који је био одговоран за инфлаторни раст, већ и експанзивна фискална и монетарна политика током пандемијске кризе, квантитативно попуштање, санкције након анексије Крима и светска економска криза 2009. године.

ЗАКЉУЧАК

Рат Русије и Украјине би могао да се укратко објасни речима Ентонија Блинкена, америчког државног секретара, који је истакао да је овај рат „већи од сукоба између две земље, да је већи чак и од Русије и НАТО-а и да је за превазилажење ове кризе са глобалним последицама, потребна глобална пажња и акција“ (U.S. Department of State, 2022). Потпуно је јасно да је овај рат, нарочито после пандемије вируса Ковид – 19, изазвао удар на глобалну економију. Русија, велика економска сила, суочила се са уведеним санкцијама које су ограничиле њено пословање, онемогућиле међународну размену, изазвале одлив страних инвестиција, изазвале финансијски колапс, укидање СВИФТ трансакција и умањивање вредности рубље. Са друге стране, Украјина, знатно економски слабија и сиромашнија земља, потпуно је разорена, како физички – услед бомбардовања и сукоба, тако и економски – услед прекида пословања бројних предузећа, јавних установа, гашења комплетних делатности како би се буџет реорганизовао и новац преусмерио у потребне сегменте економије. Овако велики сукоб, пореметио је функционисање бројних земаља. Поремећаји у међународној трговини и обустава испоруке руског гаса у значајној мери изазвали су несташице у највећем делу Европе, па самим тим и скокове цена, изазивајући пораст инфлаторних стопа. Уочавају се пропусти код организације пословних процеса обе

сукобљене земље, где се захтева прилагођавање њихове документације како би се обезбедило континуирано рачуноводство и формирање оптималних токова информација.
Како време одмиче, Русија се све више прилагођава датим условима и, чини се, из дана у дан постаје све мање зависна од светске привреде. Ако се санкције наставе и Русија покаже да је способна да функционише самостално без подршке западних земаља, овај удар на Европску унију, према мишљењу аутора овог рада, могао би да учини Русију још стабилнијом државом и да подстакне Европску Унију да преиспитају ефикасност и исплативост уведених санкција.

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ПРИСТУПИ ОДРЖИВОСТИ ЈАВНОГ ДУГА – ПРИМЕНЉИВОСТ У РЕПУБЛИЦИ СРБИЈИ

Апстракт: Циљ рада је да се анализом савремене литературе идентификује спектар примењених метода за предвиђање одрживости јавног дуга. Концепт одрживости јавног дуга привлачи велику пажњу последњих година, услед нагомилавања јавних дугова већине земаља и раста глобалне економске неизвесности. Општа је оцена, у досадашњим истраживањима предвиђања одрживости јавног дуга, да не постоји идеалан аналитички метод. Анализом предности и недостатака идентификованих метода искристалисан је сет преовлађујућих метода адекватних за оцену јавног дуга у Србији. Дескриптивна статистичка анализа је примењена ради анализе квалитета одабраних варијабли за оцену динамике јавног дуга Србије у периоду од 2012. до 2022. године, као предуслова за примену стохастичких метода.

Кључне речи: одрживост, јавни дуг, Србија, стохастички методи.

APPROACHES TO SUSTAINABILITY OF PUBLIC DEBT – APLICABILITY TO REPUBLIC OF SERBIA

Abstract: The goal in this paper is to reach set of methods applied in forecasting sustainability of public debt through literature review. Concept of public debt sustainability attracts great attention last years, as result of accumulation of public debts in most countries and growing global economics uncertainties. Major assessment, in previous literature, is that there is no single plausible method in forecasting of public debt sustainability. Analysis of pros and cons for identified methods gave set of appropriate methods to estimate Serbian public debt. Applied descriptive statistics in analyses of quality for chosen variables is necessary precondition for stochastic methods use in assessment dynamics of Serbian public debt in period 2012 to 2022.

Key words: sustainability, public debt, Serbia, stochastic methods.

1. УВОД

Ексцесивно нагомилавање јавног дуга многих земаља у протеклих неколико деценија, посебно у контексту финансијске нестабилности и ниских стопа економског раста, повећало је потребу за дубљом анализом и проценом одрживости јавног дуга. Одрживост јавног дуга, која подразумева способност државе да испуни све финансијске обавезе које произилазе из дуга током будућег периода, показала се прилично неухватљивим концептом. Ово није изненађујуће, с обзиром на његову зависност од суштински неизвесне будућности.

Постоји обиље научне и стручне литературе у којој се води расправа о томе која је најприкладнија методологија за анализу и процену одрживости јавног дуга. У аналитичком контексту, основни приступ питању одрживости јавног дуга може се поделити на статички и динамички, који се даље дели на детерминистички и стохастички. Циљ статичког приступа је сагледавање тренутног стања јавног дуга, без анализе његовог кретања, односно динамике. За разлику од статичког приступа којим се анализира тренутно стање, у детерминистичком и стохастичком приступу симулирају се пројекције путања јавног дуга. Вероватно најчешће коришћен приступ за процену одрживости јавног дуга у пракси је *DSA* (енгл. *Debt Sustainability Assessment*) приступ, развијен од стране Међународног монетарног фонда (ММФ). Према методологији *DSA*, процена одрживости јавног дуга врши се на основу средњорочне симулације односа дуга према бруто домаћем производу (БДП), с обзиром на специфичне макроекономске прогнозе и претпоставке фискалне политике. Овај приступ је у основи детерминистички јер има за циљ процену учинка промене макроекономских варијабли на кретање јавног дуга путем једног средишњег сценарија. Детерминистички приступ, за разлику од стохастичког, не обухвата неизвесност важних макроекономских одредница при пројекцији путање јавног дуга. С друге стране, стохастички приступ узима у обзир неизвесност утицаја кретања макроекономских варијабли попут стопе раста БДП-а, каматне стопе и примарног салда на путању јавног дуга, те представља много потпунији алат за предвиђање.

Циљ овог рада је да се анализом савремене литературе идентификује спектар примењених метода за предвиђање одрживости јавног дуга. Анализом предности и недостатака идентификованих метода искристалисан је сет преовлађујућих метода адекватних за оцену јавног дуга у Србији. Дескриптивна статистичка анализа је примењена ради анализе квалитета одабраних варијабли за оцену динамике јавног дуга Србије у периоду од 2012. до 2022. године, као предуслова за примену стохастичких метода.

Рад је конципиран на следећи начин: након увода, у другом делу рада анализирана је савремена литература како би се стекао увид у спектар примењених метода, с циљем сагледавања њихових предности и недостатака. У трећем делу дат је преглед кретања одређених макроекономских варијабли од утицаја на динамику јавног дуга Србије у периоду од 2012. до 2022. године и извршена њихова дескриптивна статистичка анализа. Након тога следе закључна разматрања.

2. ОДРЖИВОСТ ЈАВНОГ ДУГА: АНАЛИЗА САВРЕМЕНЕ ЛИТЕРАТУРЕ

По *Khalladi* (2019), у зависности од временског хоризонта предвиђања у литератури су се, у основи, искристалисала три приступа:

1. Краткорочни, у коме се испитују могућности рефинансирања дуга уз процену ризика ликвидности,
2. Средњорочни, у коме се пројекције путање дуга врше на бази неколико различитих сценарија на период од 5 до 15 година, и
3. Дугорочни, у коме се процене одрживости јавног дуга израђују за наредних неколико деценија, узимајући у обзир демографске промене и старење становништва на фискални биланс државе (стр. 3).

Средњорочни *DSA* приступ најчешће је коришћен у свом конвенционалном, односно детерминистичком облику заснованом на стандардној једначини акумулације дуга, у коме кључне варијабле од утицаја на динамику јавног дуга нису међузависне. У низу радова који су имали за циљ унапређење конвенционалног *DSA* модела сугерисана је употреба стохастичког приступа предвиђању уместо шокирања варијабли појединачно у односу на базни сценарио. Тако је идентификован нови *SDSA* (енгл. *Stochastic Debt Sustainability Assessment*) приступ, у коме су ризици повезани са средњорочном динамиком јавног дуга узети у обзир експлицитно, кроз интеракцију макроекономских и фискалних шокова. У овом приступу широко су коришћени лепезасти графикони како би се на врло једноставан и прегледан начин представиле могуће путање дуга, односно интервали поверења према степену неизвесности.

Garcia и *Rigobon* (2004) практично уводе стохастичко моделирање у конвенционални оквир за процену одрживости јавног дуга. Циљ њиховог истраживања био је проучавање питања одрживости јавног дуга из перспективе управљања ризиком, кроз анализу стохастичких својстава динамике дуга на примеру Бразила. У раду је примењен *VAR* (енгл. *Vector Autoregressive*) модел за процену корелације макроекономских варијабли (реалног раста БДП-а, реалне каматне стопе, примарног салда мереног кроз однос са БДП-ом, реалног девизног курса), који је затим коришћен за имплементацију Монте Карло симулација. Ове симулације омогућавају прорачун вероватноће ризика, тј. вероватноће да симулирани рацио дуга према БДП-у премаши дати праг који се сматра ризичним. Главни допринос овог рада је пропозиција једног, на ризику заснованог, мерила одрживости јавног дуга. Основни разлог за предлагање оваквог приступа је тај што се код тржишних економија у развоју одрживост јавног дуга показала прилично ризичном. Предложени приступ конструисан је из оквира који комбинује статистички модел за откривање стохастичке релације међу варијаблама које директно или индиректно утичу на акумулацију дуга помоћу симулације будуће путање односа дуга према БДП-у. Примена ове методологије на примеру Бразила показала је да, иако би јавни дуг могао бити одржив у одсуству ризика, постоји много сценарија у којима је јасно неодржив.

Celasun, Debrun и *Ostry* (2006) користе стохастичке симулације у циљу процене одрживости дуга пет земаља у развоју са прилично различитом конфигурацијом ризика: Аргентине, Бразила, Мексика, Јужне Африке и

Турске. Аутори указују на недостатке стандардног детерминистичког *DSA* приступа анализи одрживости јавног дуга и предлажу потпунији пробабилистички приступ анализи, уз употребу лепезастог дијаграма путем кога се осликавају магнитуде ризика који окружују пројекције путање јавног дуга као резултат неизвесних економских услова и политика. Стохастички *DSA* алгоритам путање јавног дуга развијен је, комбинацијом чисто економских поремећаја од утицаја на кључне макроекономске варијабле, ендогеног одговора фискалне политике на исте, као и могућих шокова који произилазе из саме фискалне политике. Симулациони алгоритам задржао је извесни степен стандардизације како би се олакшало поређење између земаља. Истраживање је показало да се применом *SDSA* алгоритма добија потпунија, објективнија и реалнија процена ризика него што је то могуће уз примену нестохастичког *DSA* шаблона, који се ослања на неколико стандардних детерминистичких везаних тестова. Применом *SDSA* модела постиже се реалнија процена у три критичне димензије. Прво, користе се процене заједничких дистрибуција вероватноће економских шокова за конструисање великог броја сценарија који обухватају коваријансе међу шоковима, као и динамички одговор фискалне политике. Друго, омогућује се фискалној политици да се прилагоди овим шоковима према обрасцу који је уобичајен за земље у развоју, што је и приказано процењеним функцијама фискалне реакције у моделу. Треће, моделом је дозвољено да сама фискална политика буде потенцијални извор ризика. Процена одрживости дуга у овом раду је у потпуности пробабилистичка и као таква показала се веома корисном за креаторе економске политике, пре свега као флексибилан алат за разумевање карактеристика динамике јавног дуга специфичних за конкретну државу, јаснији сигнал о ризицима повезаним са одлагањем фискалног прилагођавања или предузимањем мера фискалне експанзије, као и за боље средњорочно планирање буџета.

Di Bella (2008) представља *DSA* оквир за анализу одрживости јавног дуга Доминиканске Републике који је комплементаран оквиру који генерално користе међународне финансијске институције. Модел за анализу одрживости дуга у овом раду се састоји од интегрисаног и конзистентног рачуноводственог оквира, процене одговарајућег прага дуга за земљу и метода за израчунавање примарног биланса *CPS* (енгл. *Consolidated Public Sector*) неопходног за постизање жељених таргета нивоа дуга, без прибегавања ad hoc претпоставкама за вредности макроекономских варијабли унутар планског хоризонта. Резултати истраживања су показали да величина *CPS* примарног биланса потребног за постизање прага дуга од 25% БДП-а до 2015. године износи око 2,5% БДП-а (почев од 2009.), уз вероватноћу од око 70%. Заузврат, ако је аутоматска стабилизација дозвољена, *CPS* структурни примарни биланс потребан за постизање таквог циља такође би износио око 2,5% БДП-а, и он би се повећао/смањио за 0,2% БДП-а за сваки позитиван/негативан процентни поен производног јаза. *CPS* структурни примарни биланс мање величине би и даље смањивао рацио дуга при средњем сценарију, али би дошло до повећања овог рација уколико би економија константно била изложена стресу. Ова анализа наглашава важност одабира одговарајућег основног сценарија. Ако економија остаје рањива на шокове, избор релативно оптимистичног основног сценарија може резултирати примарним суфицитом *CPS* који није довољно велик да апсорбује наведене шокове. У таквим околностима, боље је изабрати основни сценарио повезан са примарним суфицитом довољним да се постигне циљни однос дуга према БДП-у са већим степеном вероватноће нпр. 70%, уместо да се изабере средњи основни сценарио, тј. онај повезан са примарним суфицитом који резултира постизањем циљног односа дуга према БДП-у у 50% времена.

Giovanni и *Gardner* (2008) спроводе истраживање с циљем процене одрживости јавног дуга Либана применом једноставног пробабилистичког модела. Методологија прати два корака. Први је утврђивање коваријансне структуре шокова, након чега следи Монте Карло симулација путем које су ови шокови увршћени у једначину акумулације дуга. Коваријанса шокова реалне каматне стопе, реалног раста БДП-а и односа примарног салда према БДП-у се утврђује из историјских месечних података у периоду од 1998. до 2007. године. Монте Карло симулација је спроведена 10.000 пута за прогностички период од 2008. до 2012. године, што је омогућило конструкцију интервала поверења око средишњег сценарија. Даље, су изведене различите претпоставке о томе како шокови утичу на једначину акумулације дуга. У раду су коришћени лепезасти графикони да би се приказала дистрибуција вероватноће односа јавног дуга према БДП-у према средњорочном сценарију прилагођавања, као резултат утицаја шокова на раст БДП-а и каматне стопе. Дистрибуција шокова је изведена из прошлог утицаја шокова на ове варијабле на основу коваријансне матрице. Специфичност приступа примењеног у овом раду састоји се у томе што су, за разлику од сличних модела, стохастичке технике примењене на нормативни (прилагођавајући) сценарио, уместо на основни сценарио (непромењене политике). Разлог томе је што је основни сценарио у конкретном случају већ сам по себи неодржив, тако да додавање стохастичког елемента у њега није имало смисла. Главно ограничење ове анализе је то што она дозвољава могућност негативних фискалних шокова, на пример услед политичке нестабилности, реализације потенцијалних обавеза, или ограничења у буџетској контроли. С друге стране, не разматра могућност одговора фискалне политике на негативне шокове.

Hajdenberg и *Romeu* (2010) проширују *DSA* приступ експлицитно узимајући у обзир грешке прогнозе параметара у алгоритму пројекције дуга. Ово проширење наглашава неизвесност око пројекције јавног дуга која произилази из нетачности прогнозе параметара економетријких модела који се користе за пројекције. Нови алгоритам презентован у овом раду примењен је за спровођење *DSA* анализе јавног дуга Уругваја.

У истраживању (*Kawakami* и *Romeu*, 2011), моделиран је стохастички оквир за предвиђање дуга који идентификује и процењује утицај повратне спреге између фискалне политике и макроекономских пројекција, што углавном није било обухваћено у претежно коришћеним моделима за предвиђање дуга. У студији је

представљен оквир за симулацију дистрибуције односа дуга према БДП-у који илуструје неизвесност утицаја будућих економских шокова, структурних и цикличних промена фискалне политике, те неизвесност процене параметара. Укључивањем повратних утицаја фискалне политике у макроекономске пројекције дуга, осигурава се да те пројекције одражавају и директан утицај примарног биланса на отплату дуга, као и његов индиректан утицај на макроекономске варијабле као што је БДП. Резултати истраживања показали су да за један проценат већи примарни салдо снижава будуће реалне домаће каматне стопе за отприлике два процентна поена, што заузврат подстиче раст БДП-а и смањује однос дуга према БДП-у. Упоређујући прогнозе дуга са и без ових ефеката, разлика у предвиђеном паду дуга је отприлике 10-15% БДП-а током петогодишњег периода пројекције на примеру Бразила. Штавише, канал кроз који примарни биланс утиче на основне макроекономске агрегате је посебно значајан. Ако нижи примарни салдо данас повећа раст БДП-а следеће године, дуг би могао иницијално да падне, а затим би полако опадао у средњем року, пошто су ефекти смањења дуга услед већег БДП-а делимично надокнађени почетним нижим примарним салдом. Ако већи примарни биланс данас снизи реалну домаћу каматну стопу следеће године, дуг можда неће опадати у почетку, али би накнадно смањење каматних стопа довело до нижег односа дуга и БДП-а на средњи рок. Емпиријски докази сугеришу историјску везу примарног биланса и реалних домаћих каматних стопа, а самим тим и довољно висок примарни биланс могао би донети значајно смањење дуга уз ниже домаће реалне трошкове задуживања. Уопштено говорећи, представљени докази сугеришу да пројекције кључних макроекономских агрегата, које не успевају да инкорпорирају повратне утицаје политичких одлука на макроекономска кретања, пате од значајних пристрасности као и нетачних мера неизвесности прогнозе.

Berti (2013) примењује стохастички модел за пројекцију јавног дуга у 24 земље Европске уније (ЕУ) са циљем указивања на релевантност примењене методологије у обезбеђивању свеобухватне и конкретној земљи прилагођене процене ризика везаних за динамику дуга, на основу које се могу дефинисати препоруке за вођење економске политике. Стохастичка пројекција дуга заснована је на коваријансној матрици историјских шокова. Методологија је посебно погодна за потребе укључивања неизвесности у анализу динамике дуга. Шокови раста БДП-а, каматне стопе и девизног курса имају утицај на еволуцију односа дуга према БДП-у, стога су они узети у обзир када се врше пројекције дуга као и процене његове одрживости. Изразита предност методологије која се у овом раду користи, у односу на методологију која се ослања на *VAR* моделирање, лежи у могућности коришћења прогноза независних од модела за дефинисање централног сценарија на који се примењују шокови. У моделу се не претпоставља реакција фискалне политике. Стохастички оквир представљен у овом раду производи пробабилистичке исходе, попут вероватноће да је рацио дуга за одређену земљу већи од одређене вредности у датој години пројекције или вероватноће да се рацио дуга стабилизује или смањује унутар хоризонта пројекције. Резултати истраживања указују на релевантност примењене методологије у обезбеђивању свеобухватније и конкретној земљи прилагођене процене ризика везаних за динамику дуга, на основу које се могу дефинисати препоруке за вођење економске политике. Три земље (Италија, Шпанија и Мађарска) су биле предмет детаљнијег разматрања у раду. За Италију, резултати симулације су показали да је највероватнији исход опадајући рацио дуга у периоду пројекције (2013-2017), упркос могућим негативним шоковима на раст БДП-а и каматне стопе. Ипак, резултати предвиђања су показали да ће рацио дуга у 2017. години бити и даље већи од 120% уз вероватноћу од 30%, и већи од 116% уз вероватноћу од 50%, када се узму у обзир привремени шокови. За Шпанију, резултати симулације указивали су на забринутост у погледу одрживости дуга због његовог раста током читавог периода пројекције, за све симулиране комбинације шокова. Под претпоставком привремених макроекономских шокова, вероватноћа да ће шпански однос дуга према БДП-у бити већи од 100%, је чак 80% у 2017. години. Коначно, за Мађарску постоји прилично висока вероватноћа од 60%, да се однос дуга према БДП-у у великој мери стабилизује на око 76-77% или да достигне већи ниво након 2013. године. Под претпоставком о привременим шоковима, Мађарска би имала 40% вероватноће да ће однос дуга према БДП-у бити већи од 80% у 2017. години.

Здравковић (2014), у свом истраживању спроведеном на примеру Републике Србије, примењује стохастички приступ процени одрживости јавног дуга, у сврху испитивања прогностичке успешности модела поређењем добијених резултата са званичним проценама ММФ-а и Владе Републике Србије, као и указивања на предности поменутог приступа у односу на конвенционални приступ анализи одрживости јавног дуга. Компоненте економског модела у овом раду дефинисане су полазећи од једначине акумулације јавног дуга. Затим је извршено тестирање стационарности прикупљених временских серија података о кретању кључних варијабли одрживости јавног дуга у сврху провере њихове адекватности, а све у циљу спровођења стохастичке симулације путање удела јавног дуга у БДП-у применом *VAR* модела. Стохастички модел процене одрживости јавног дуга на бази примене *VAR* модела дао је врло сличне резултате оним који су објављени у званичној процени кретања путање удела јавног дуга у БДП-у Републике Србије од стране ММФ-а, док је са друге стране показао да су званичне прогнозе Владе Републике Србије исувише оптимистичне. Применом стохастичког приступа анализи одрживости јавног дуга указано је на битну предност овог приступа у односу на конвенционални, јер уместо предвиђања односа дуга према БДП-у у једној тачки током времена, стохастички приступ обезбеђује низ могућих односа дуга према БДП-у са додељеним вероватноћама њихове реализације у било ком тренутку. Наиме применом стохастичког модела, у било ком тренутку је могуће израчунати вероватноћу да ће дуг према БДП-у премашити неку граничну вредност. Резултати истраживања на пример показују да, ако је гранична вредност односа дуга према БДП-у постављена на 70%, дељењем броја симулација

већег од 70% са укупним бројем симулација постоји вероватноћа од 12,4% да ће дуг према БДП-у премашити 70%. Резултат је могуће поставити и обрнуто тако да се одреди критична вредност дуга према БДП-у која неће бити прекорачена за дату вероватноћу, нпр. за ниво вероватноће од 95%, критична вредност је 70,73%. То значи да постоји 95% шансе да дуг према БДП-у неће прећи вредност од 70,73%.

У једном истраживању спроведеном на примеру шпанског дуга (*Cuerpo* и *Ramos*, 2015) развијен је свеобухватни оквир анализе одрживости дуга *DSA*, који укључује једначину акумулације дуга, затим процену реалности претпоставки на којима се заснивају детерминистичке пројекције дуга и, на крају, стохастичку *VAR* симулацију која има за циљ разумевање неизвесности повезане са детерминистичким моделом. Поменути оквир је примењен кроз моделирање основне путање јавног дуга повезаног са званичним фискалним пројекцијама. Спровођењем детерминистичке анализе одрживости шпанског јавног дуга, која описује основни сценарио за период 2015-2025, процењена је реалност претпоставки овог сценарија и пружена квантитативна процена одрживости према алтернативним детерминистичким сценаријима. Резултати истраживања су показали да моделирана основна путања дуга изгледа одржива јер се динамика дуга стабилизује већ 2015. и креће опадајућим путем од тада па надаље, достижући на крају кумулативну корекцију за 29% БДП-а до 2025. године. Реализација основне путање дуга подразумева стриктно поштовање ЕУ и националних и фискалних правила. Међутим, постоје ризици повезани са неизвесним будућим економским условима, који би могли да угрозе одрживост јавних финансија у Шпанији, у случају слабе посвећености стриктној имплементацији фискалних правила. Вероватноћа основног сценарија је процењена као ниска ако фискална политика следи историјску функцију фискалне реакције. У стохастичком мултиваријантном оквиру, узимајући у обзир утицај шокова на БДП, каматне стопе и примарни биланс, вероватноћа да однос дуга према БДП-у премаши основни ниво у 2018. је 77%.

Výškrabka (2016) презентује алате за стохастичко предвиђање кретања јавног дуга Словачке помоћу којих је могуће пружити независну, на моделу засновану прогнозу јавног дуга која унакрсно проверава официјелну прогнозу, као и извршити процену дистрибуције вероватноће која омогућава квантификацију неизвесности прогнозе. У моделу је коришћен временски период од 2000. до 2018. године, при чему је за моделску процену коришћен период од 2000. до 2014. године, док је за стохастичку симулацију коришћен период од 2014. до 2018. године. У основи модела је стандардна једначина акумулације дуга која се користи за генерисање великог броја случајних прогноза. Једначина дуга сумира стохастичко понашање детерминанти дуга (раст номиналног БДП-а, каматне стопе, примарни суфицит и егзогено финансирање дуга), а процењује се у три корака. У првом кораку, раст номиналног БДП-а и каматне стопе се добијају у *VAR* моделу. Независно, у другом кораку фокус је на утврђивању ефеката компоненте егзогеног финансирања. Коначно, у трећем кораку користи се резултат два претходна корака и симулира функција фискалне реакције заједно са једначином акумулације дуга у циљу генерисања скупа насумичних прогноза дуга. Резултати истраживања представљени су у форми лепезастог графикона. У циљу бољег сагледавања извора неизвесности, извршен је пресек детерминанти дуга у првој години прогнозе и такође у четвртој години прогнозе. Две најпроменљивије компоненте пројектоване за годину дана унапред су примарни суфицит и егзогено финансирање. Неизвесност раста номиналног БДП-а такође није превелика. Ово имплицира да ће све детерминанте вероватно допринети опадајућој путањи дуга. Вероватноћа да ће се дуг смањити у средњем року је око 80%. Штавише, вероватноћа да ће дуг бити испод званичне прогнозе је више од 60% (званична прогноза Министарства финансија Словачке из октобра 2015. године била је да ће се ниво јавног дуга у односу на БДП смањивати са 53,6% у 2014. години на мање од 49% до краја 2018. године). И званичне и алтернативне прогнозе опадају на хоризонту пројекције. Међутим, фактори који их покрећу се донекле разликују. Каматне стопе, раст БДП-а и примарни дефицит допринеће опадајућој путањи званичне прогнозе. С друге стране, алтернативна пројекција очекује да ће углавном каматне стопе и раст БДП-а доприносити опадајућем путу дуга.

Paret (2016) примењује Монте Карло симулације са, за конкретну земљу специфичном, функцијом фискалне реакције и *VAR* модел за симулацију понашања макроекономских варијабли, како би се проценила одрживост дуга Аргентине, Бразила, Турске, Русије и Филипина.

На основу изнетог, може се закључити да се у савременим истраживањима на пољу одрживости јавног дуга предност даје стохастичким прогностичким моделима. Ипак, формална израда стохастичких *VAR* симулација одрживости јавног дуга је изузетно сложен задатак који превазилази оквире овог експлораторног истраживања. Стога ће се фокус у овом раду задржати на анализи макроекономских варијабли од утицаја на динамику јавног дуга Србије, у циљу тестирања њиховог квалитета, као предуслова за будућу примену стохастичких метода.

3. АНАЛИЗА КРЕТАЊА МАКРОЕКОНОМСКИХ ВАРИЈАБЛИ ОД УТИЦАЈА НА ДИНАМИКУ ЈАВНОГ ДУГА У РЕПУБЛИЦИ СРБИЈИ У ПЕРИОДУ ОД 2012. ДО 2022. ГОДИНЕ

У аналитичким оквирима за приказивање стања јавног дуга често се користи једноставна једначина која описује јавни дуг помоћу стања дуга на крају претходне године, оствареног примарног буџетског салда и прилагођавања стања и тока јавног дуга, што се приказује следећим изразом:

$$D_t = D_{t-1} - (B_t^p - K_t) + S_t$$

при чему је D_t номинални износ дуга на крају године t, D_{t-1} стање дуга на крају претходне године, B_t^p остварени примарни буџетски салдо, K_t износ расхода за камате, а S_t прилагођавање стања и тока дуга у години *t*. С обзиром на чињеницу да је за аналитичке сврхе најчешће релевантан удео појединачних варијабли у БДП-у претходни израз потребно је поделити са БДП-ом, при чему се добија:

$$d_t = \frac{1}{1 + g_t^N} \times d_{t-1} - (b_t^p - k_t) + s_t$$

где је d_t удео јавног дуга у БДП-у на крају године t, d_{t-1} удео јавног дуга у БДП-у на крају претходне године, g_t^N номинална стопа раста БДП-а, b_t^p примарни салдо опште државе, k_t удео расхода за камате на јавни дуг у БДП-у, а s_t прилагођавање стања и тока дуга као проценат БДП-а у години *t*.

У вези са претходно изнетим, за потребе анализе у овом раду прикупљена је серија годишњих података, званично публикованих од стране Народне банке Србије и Министарства финансија Републике Србије, о кретању јавног дуга, примарног дефицита/суфицита, БДП-а и расхода за камате на јавни дуг у Републици Србији за период од 2012. до 2022. године. Мастрихтским критеријумима конвергенције прописано је, између осталог, да буџетски дефицит земље која претендује да буде примљена у ЕУ, не сме бити већи од 3% БДП-а, а да ниво јавног дуга не сме бити већи од 60% БДП-а. ММФ у својој методологији анализе одрживости јавног дуга DSA претпоставља да је дуг одржив уколико дужник може да настави са уредним сервисирањем својих дугова без нереално велике корекције у билансу прихода и расхода. У даљој анализи водићемо се управо наведеним критеријумима. Независне варијабле које су одабране у овом раду су углавном стандардне у истраживањима јавног дуга. Кретање одабраних макроекономских варијабли у Републици Србији приказано је на следећој слици:

Слика 1: Кретање јавног дуга, примарног салда, расхода камата и стопе раста БДП-а у Републици Србији у периоду од 2012. до 2022. године

Извор: Аутори, према подацима Народне банке Србије и Министарства финансија Републике Србије

Однос дуга према БДП-у у Републици Србији растао је почев од 2012. године достижући свој максимум 2015. године када је износио 71,2%, да би затим почео да опада све до 2020. године, када услед кризе изазване пандемијом *COVID*-19, долази до раста рација дуга према БДП-у. Међутим, све време од 2017. године па до краја анализираног периода однос јавног дуга према БДП-у налазио се испод лимита прописаног мастрихтским

критеријумом за јавни дуг. Кретање издатака по основу камата следило је путању рациа дуга према БДП-у. Када је реч о кретању примарног салда буџета, у првих четири године анализираног периода остварен је примарни дефицит, да би од 2016. био остварен примарни суфицит, све до 2020. године када је услед негативних утицаја кризе поново остварен релативно висок дефицит. У 2021. и 2022. години примарни дефицит је значајно смањен. Током свих година анализираног периода остварен је раст БДП-а, осим 2012., 2014. и 2020. године када је забележен његов пад. У табели 1. дат је приказ матрице корелације анализираних варијабли:

Табела 1: Матрица корелације одабраних варијабли

	дуг/БДП	стопа раста БДП-а	примарни салдо/БДП	расходи камата/БДП
дуг/БДП	1,0000			
стопа раста БДП-а	-0,2669	1,0000		
примарни салдо/БДП	0,0268	0,5110	1,0000	
расходи камата/БДП	0,8694	-0,2522	0,2897	1,0000

Извор: Аутори, Stata 13.0

Из матрице корелације приказане Пирсоновим коефицијентима може се видети смер и јачина утицаја независних варијабли на рацио дуга према БДП-у. Варијабла стопа раста БДП-а има негативан предзнак, што значи да би, уколико дође до раста БДП-а, то утицало на смањење рација јавног дуга. Корелација између ове две варијабле је умерено висока. Између примарног буџетског салда и рација дуга постоји мала позитивна корелација, док је између расхода камата и рација дуга присутна висока корелација позитивног смера. Матрица такође, приказује и корелацију између независних варијабли модела.
У табели 2. дат је приказ дескриптивне статистике анализираних варијабли кроз време:

Табела 2: Дескриптивна статистика одабраних варијабли

Варијабле	Број опсервација	Аритметичка средина	Стандардна девијација	Минимум	Максимум
дуг/БДП	11	59,61454	6,397205	52,8	71,2
стопа раста БДП-а	11	2,318182	2,682841	-1,6	7,5
примарни салдо/БДП	11	-1,081818	3,184594	-6,0	3,6
расходи камата/БДП	11	2,236364	0,506503	1,5	3,0

Извор: Аутори, Stata 13.0

Из наведеног приказа може се видети да аритметичка средина рација дуга у периоду од 2012. године до 2022. године у Републици Србији износи 59,6%, што би се условно могло узети као показатељ одрживости јавног дуга у анализираном периоду, јер се налази испод границе одређене мастрихтским критеријумом. Стандардна девијација или просечно одступање рација дуга од аритметичке средине износи 6,4%. Минимална вредност рација дуга у анализираном периоду износи 52,8%, а максимална вредност 71,2%. Просечни примарни буџетски салдо је у дефициту и износи -1,1%, а расходи камата 2,2%. Ово уједно значи да је буџетски дефицит у Републици Србији у анализираном периоду у просеку износио око 3,3%, што је више од нивоа који је прописан мастрихтским критеријумом. Раст БДП-а у посматраном периоду у просеку износи 2,3%.

4. ЗАКЉУЧНА РАЗМАТРАЊА

Полазећи од основног циља овог рада, извршена је анализа савремене литературе како би се идентификовао спектар примењених метода за предвиђање одрживости јавног дуга. Концепт одрживости јавног дуга привлачи велику пажњу последњих година, услед нагомилавања јавних дугова већине земаља и раста глобалне економске неизвесности. Општа је оцена, у досадашњим истраживањима предвиђања одрживости јавног дуга, да не постоји идеалан аналитички метод. Анализа литературе је показала да у основи постоје два приступа процени одрживости јавног дуга: детерминистички и стохастички. У пракси је донедавно, највише у употреби био *DSA* приступ развијен од стране ММФ-а, који је у суштини детерминистички, јер има за циљ процену утицаја промене макроекономских варијабли на кретање јавног дуга путем само једног средишњег сценарија. Овај приступ пати од озбиљног недостатка јер не обухвата неизвесност важних макроекономских одредница при пројекцији путање јавног дуга. Савремена истраживања на пољу одрживости јавног дуга сугеришу примену стохастичких *VAR* модела, јер они, за разлику од детерминистичких, узимају у обзир неизвесност утицаја

кретања макроекономских варијабли на путању јавног дуга, и стога представљају значајно потпунији алат за предвиђање.
С обзиром на то да је формална израда стохастичких *VAR* симулација одрживости јавног дуга изузетно сложен задатак, који превазилази оквире овог експлораторног истраживања, у раду је спроведена дескриптивна статистичка анализа макроекономских варијабли од утицаја на јавни дуг Србије у периоду од 2012. до 2022. године, као предуслов за будућу примену стохастичких метода. Резултати дескриптивне статистичке анализе показали су да је у Републици Србији у анализираном периоду, однос јавног дуга према БДП-у у просеку износио 59,6%, што би се условно могло узети као показатељ одрживости јавног дуга, јер се налази испод границе одређене мастрихтским критеријумом за јавни дуг. Са друге стране, буџетски дефицит који је у анализираном периоду у просеку износио 3,3% БДП-а, што је изнад нивоа прописаног мастрихтским критеријумом за буџетски дефицит, јавља се као потенцијални фактор ризика који би у будућем периоду могао негативно да утиче на одрживост јавног дуга у Републици Србији.

Доступност података и квалитет анализираних варијабли од утицаја на динамику јавног дуга у Републици Србији, дају солидну основу за примену стохастичких *VAR* модела за процену одрживости јавног дуга, што ће бити предмет будућих истраживања.

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FINANCE AND ACCOUNTABILITY IN GROWING NONPROFIT ORGANISATIONS

Abstract:
Nonprofit organisations play an essential role in society: their activities range from various forms of traditional charity to working on 'self-care' schemes in local communities, from advocacy to recreation, from supporting those in need to educating for self-reliance. The various forms of civic self-care and community organising help to build capacity for action and autonomous solutions, strengthen local communities and, thus, their role in social networks and integration. Their more targeted focus can complement state solidarity or draw attention to target groups or problems that have missed by the attention of the state institutions.
Transparent and prudent finance and accountability can support organizations in efficient operation, in organizational development (by displaying bottlenecks and weaknesses) and in more focused mission fulfilment. In this area, NGOs have some specific characteristics, which result in the need for a specific toolkit in aspects of their everyday finance and comprehensive accountability. In this study it will be presented, that the set of methods are not only influenced by the nonprofit area, but also by organisational growth factors, based on which one can identify the optimal toolkit to support the organisation.
The following are the results of Hungarian nonprofit research, which examined the organisational growth aspects of Hungarian youth-related nonprofit organisations. Based on the analysis of 277 organisations, it can be overviewed how the organisations handle finance and accountability in the different growth stages. As we can learn later, the development of these areas can become critical to the organisation when it recognises that this is important to mission fulfilment. However, at different stages of the growth phase, this becoming more aware and professional. As a result, if we can first identify the growth stage of a nonprofit organisation, developing the toolkit within the focus of the current growth stage can support the organisation's prudent operation and long-term sustainability.
In the following pages, first the different aspect of nonprofit accountability can be read, then the growth model of NGOs is introduced, followed by the detailed description of the finance-linked organizational features at the different growth stages.

Keywords: nonprofit growth, organizational growth, nonprofit finance, accountability

1. INTRODUCTION

From an organisational point of view, nonprofit sector actors can take various forms, from small, one-person or informal groupings to large professional corporations. At one end of the scale, the nonprofit sector includes those nonprofit limited-liability companies that operate on a purely market basis, producing a product or service, except that the profits generated are not distributed as dividends. At the other end of the scale, there are small associations and foundations that operate purely voluntarily, with purely social objectives and missions that they believe serve their communities.
NGOs, as defined by Salamon and Anheier (1992), are those which are (a) institutionalised and regularly active, (b) legally wholly independent of the state (even if they receive subsidies from the state), (c) do not distribute dividends but reinvest them in the organisation's objectives, (d) are not influenced by any external organisation, (e) can be associated voluntarily as members or participants.
As being strongly mission-focused organisations, in NGOs the development of supporting areas can become critical to

the organisation to the extent that it recognises that this is important to mission fulfilment. Finance and accountability is one of the important supporting areas, but this mission-focus limitates the resources the organisation can allocate to this area. However, transparent operation and accountability can efficiently support sustainability of the organisation on long-term, so it is crucial to find and implement the best practices at this area.
NGOs are partly similar to business organisations, so some of the economic instruments associated with them can be used without change. However, some specific organisational characteristics require developing a particular set of nonprofit tools. The three most critical organisational characteristics are (a) the presence of volunteers, (b) non-professional management, and (c) the presence of specialised areas (e.g. resource generation) (Dobrai - Farkas 2016). These characteristics also affect the financial management of NPOs, from day-to-day operations to the revenue structure design and performance evaluation. However, the different financial challenges do not similarly affect NPOs of various sizes - financial awareness and the tools to support it evolve as the organisation grows.
This paper summarises the results of a research about a group of Hungarian NGOs, the local organisations of scout movement. The research identified five different stages of organisational development based on differences in the internal functioning of the organisations. This paper first introduces the different aspects of nonprofit finance based on literature review: financial operations and accountability, fundraising, and opportunities for business evaluation. Then presents the research results on the development of finances of NGOs from a perspective of organisational growth.

2. FINANCIAL OPERATIONS AND ACCOUNTABILITY OF NONPROFIT ORGANISATIONS

In the not-for-profit sector, organisations are often confronted with significant difficulties and shortcomings in finance, including the accounting activity itself, reporting, financial discipline, cost planning, and the assessment of financial accounting, sustainability etc. It is particularly true of classical NGOs that the accounting field is not only seen as remote but also useless and is, therefore, not given any attention.
There are four definitions of accountability in the nonprofit sector: 1) financial honesty and avoidance of fraud, 2) good organisational governance, 3) striving to fulfil the organisational mission, and 4) demonstrating the effectiveness of charity (Brody 2001). From a financial, or rather primarily operational, financial point of view, the first definition is the most important.
As regards the characteristics of the **internal accounting system**, NGOs can most often be described (Keating - Frumkin 2003) as

- *small, mission-driven, and often with only cash flow*
- *operate with few (or no) accounting resources, often voluntarily*
- *the accounting system is usually done using low-cost or free accounting software that is not tailored to the specificities of the nonprofit*
- *cash-based bookkeeping on an annual basis, followed by an external accountant once a year*

These characteristics limit the accounting system's reliability and the data's robustness, especially for financial planning.
The nonprofit organisation (NPO) accounting system has two significant actors (or groups of actors): the organisation itself and the 'target audience'. The reporting process consists of interactions between these two groups: the organisation asks for support from the external community and, in return, provides information about its activities, which the community can use to decide whether to continue supporting the organisation's activities (Keating and Frumkin, 2003). Both groups of actors can influence the financial reporting and monitoring system. For this reason, the interaction between the two components must also be examined and considered when analysing the system's effectiveness.
If we look at the **stakeholder system** of nonprofit organisations, we can see that they have different characteristics compared to the for-profit sector. This consists of the following:
Board members: these actors hold critical positions in the governance of NPOs. On the one hand, they select the executive director and on the other hand, they are much more active than in the business sector in terms of strategy formulation, regulation and financial decisions at the strategic level. It is interesting to note the relationship (which is well articulated) between the board of directors holding the staff 'accountable' for the performance of the organisation and the public holding the board of directors accountable.
Paid staff are responsible for the financial and operational delivery of the organisation's objectives. As an NGO, the question of the organisation's success is difficult. Still, the professionalisation of recent years has led to increasing use of metrics and performance measurement methodology.
Sponsors are the actors who provide a greater or lesser share of the organisation's financial resources. This group has a very mixed structure: foundations, companies, individuals, government agencies, etc., with a varied ability to interpret financial information or accounts and a varied need to make decisions on further support based on an accurate assessment of the organisation's performance.
Clients: the last two decades have seen an increase in the economic activity of organisations, with self-sustainability becoming an increasingly important aspect of sound operations. As a result, membership fees have become more important, as have the provision of additional economic services to the core activity. At the same time, customer satisfaction has emerged as an essential factor in evaluating organisations.

Wider communities: NGOs can play an important role in the life of local communities and therefore have some impact on the perception of the organisation. However, this perception is mainly based on the core activities rather than on financial reporting.

The **steps of financial accounting** in NPOs are as follows:

- *organisational activities*
- *their presence in the accounting system*
- *periodic preparation of financial statements for stakeholders*
- *review and monitoring of these statements by external experts (e.g. external auditors*
- *financial statements are used by investors, sponsors, government, customers, etc., to assess the performance of the organisation to determine how practical its activities have been*
- *based on which a decision is made about future funding or participation (Keating and Frumkin, 2003).*

3. FUNDRAISING AS A PARTICULAR REVENUE-GENERATING FUNCTION IN NONPROFIT ORGANISATIONS

In many cases, the "service" provided by NPOs is free of charge. However, this does not mean that it costs nothing, only that it is not paid for by those who use it. In other words, it is an essential part of the activities of NPOs to create the financial basis for their operations.

The trend towards a greater expectation of social responsibility from consumers towards companies has positively influenced this constraint. Today, it is not enough to compete on price and quality; it is also essential to ask how environmentally conscious a company is, how much animal testing it carries out, how much it uses clean technologies or supports research into renewable energy or some form of support for the underprivileged (Angel 2008):

On the one hand, through good practices - these campaigns (often built at very high cost and very high quality) are good examples from which the methodology of raising private funds itself can be learned more directly by NSAs, as they need less shaping, are much easier to replicate and are more inspiring.

On the other hand, by sensitising society: global companies are now campaigning for various social causes - hence this kind of thinking is (also) becoming more widespread. And as a result, the 'pro-cause' or even fundraising communication of NPOs is also more easily attracted because the messages are amplified to consumers by for-profit CSR campaigns.

The following trends and activities can be suggested for CSOs in resource generation activities (Bray, 2022):

1. Donor acquisition: in resource generation, careful consideration should be given to who the target group is, which age or lifestyle, which communication channel would be used and where they can be reached. Tailored communication with the group is essential.
2. Data-based operation: collect and process data on donors and the organisation's activities is essential, which can be used to refine the marketing strategy and the financial plans of projects.
3. Ease of access: it is also increasingly important to make charity easy: mobile apps, online access and ease of use are at the forefront.
4. Personalisation: on one hand, there are tools of personalisation (made widely available through digital channels). On the other hand, there is an easy measurement of the number of views achieved and the financial success of campaigns (also easily accessible through these channels).
5. Demonstrating impact: visible mission, communication of results, and regular reporting are increasingly important. Digital tools make this easier, but perhaps more challenging for NGOs, as they need to communicate in a more project-oriented way instead of the often-general objectives (e.g. "help animal shelters") to show results (e.g. "with your help, we have rehomed 500 more animals this year and added 30 more cages to our shelter").

With the rise of the digital world, a new tool for fundraising, crowdfunding, is worth mentioning in particular, as it is gaining ground in the nonprofit sector (Kuti et al. 2017). Its main characteristic (in contrast to more traditional forms of fundraising) is its project-like nature, i.e. the funds raised support a well-defined, specific, time-bound and concrete (usually development) investment. For example, the purchase of a significant new piece of equipment for a foundation hospital, the (building) extension of a dog shelter, the fitting of 15 ambulances with some more expensive equipment, the renovation of a playground, etc. Projects that have a tangible, verifiable result are easier to communicate to funders, so organisations should strive to set more tangible, concrete and communicable goals, even for crowdfunding campaigns linked to the core activity (e.g. "with your help, the clown doctors can provide 120 more hours of fun for children"; etc.)

These characteristics answer the question, "Why should I support this organisation?". However, to provide a convincing answer to this question, organisations need to be financially professionalised, i.e. to quantify and communicate the return on their investment (i.e. the grants).

4. OPPORTUNITIES FOR NONPROFIT BUSINESS EVALUATION

"A nonprofit organisation can be considered effective if its performance serves both to achieve mission objectives and to maintain viability." (Pavluska 2006, p. 24) These are some of the reasons for the ranking of evaluation options for NPOs.

One way is to apply **classical financial metrics** to NPOs, but this often runs into problems. First, this method is worth assessing NPOs that carry out economic activities (but many NPOs are not, especially those that are classical NGOs). But even if this is true, the financial methodology used can only assess the function of maintaining the organisation's viability, which is unjustified without considering the mission objectives. There could be a function of valuation to consider 'how much the NPO is worth', but this would only make sense if we could talk about selling in the economic sense of the word.

The other way is the overarching theme of **social impact measurement** (Pavluska 2006). Social impact measurement can serve four purposes, according to Nicholls (2012):

- *strategic alignment: i.e. examining how well the organisation's activities are aligned with its long-term mission objectives*
- *communication: the results of social impact measurement make the activity well communicated*
- *resource generation: quantified indicators of return on investment can help convince donors*
- *acceptance of the activity: the results of impact measurement can help to secure the commitment of external or internal stakeholders*

Within this, I would highlight one method, the calculation of **Social Return On Investment** (SROI) (Nicholls et al. 2012), which works similarly to the cost-benefit analysis approach and looks at monetary values (using financial proxies), thus producing comparable and easily communicable figures.

The steps of the method:

- *Setting the boundaries, identifying the key players*
- *Mapping the outcomes: mapping the social impact, showing the relationship between inputs, outputs and outcomes*
- *Quantifying the results: collecting data to quantify the results and then evaluating the result (in monetary terms)*
- *Impact identification: filtering out independent impacts or due to other factors*
- *Calculating SROI: summing up the total benefits, subtracting negative impacts or comparing with the investment*
- *Reporting, use and embedding: communicating results to stakeholders and drawing lessons to improve the day-to-day operations of the organisation*

This sequence of steps is concise, and in many cases, SROI is developing specific indicators, which makes it even more challenging to concretise. However, this is what makes it so widely applicable. The methodological description Nicholls et al. (2012) developed can also be used in practice, thus providing NPOs with a concrete measurement and evaluation tool. Its main merit is that it can offer a monetary answer to the question, "How much social benefit does an organisation's 1 HUF of support generate?"

5. FINANCIAL ACCOUNTABILITY IN THE CONTEXT OF ORGANISATIONAL GROWTH

The lack of professionalism, and its various manifestations, is a systemic feature of this sector - so accounting regulation, cost planning or strategic planning should not be built on "what if organisations were professional" but should consider this.

It is worth exploring this area further because, despite the differences at the institutional level, the international literature has some valuable lessons. And accounting-financial performance measurement could also be an important tool for success in the nonprofit sector, although the methodology will necessarily differ. In the following, we present a Hungarian study that describes organisational characteristics from the perspective of corporate growth, i.e., it studies the internal features of organisations at different stages of the growth trajectory. The research was conducted with 277 local organisations, which were local scout organisations of the Hungarian scout movement. The research methods included a complete interview survey (with 277 organisations) on qualitative criteria of internal functioning (processed using the content analysis method) and a survey on the number of members of the group of organisations (which can be considered a plausible outcome variable due to the activity of the organisations), which includes annual data back to 1990 and thus can be used to incorporate quantitative methods. Since the group of organisations are engaged in the same activity and have many aspects in common, the effect of organisational growth on the internal functioning of the organisations is easier to detect, as different core activities, missions or organisational forms cannot explain it.

As a result of this research, a model of nonprofit growth (Pótó, 2023) can be described, which consists of five stages.

Since the organisations studied fall into the category of NGOs with membership, the types were defined by the number of members. The category below 20 people is called the activity-building phase, while the routine-building phase includes organisations with between 20 and 50 people. The section between 50 and 100 people is for process-building organisations, the section between 100 and 160 people is for sustainability-building organisations, and the largest section, above 160 people, is for professionalism-building organisations.
Below we show how each category relates to the dimension of financial accountability.

5.1. Finance in activity-building organisations

The smallest category within the surveyed organisations is characterised by having a membership of less than 20, which, however, includes groups of children resulting from the activities of the organisations. Hence, this implies a few (1-3) adult leaders, including the founding leader. They often either start up alone or with no more than one helper: a spouse or a close associate. The activity is purely voluntary, and the focus is very much on the development of the core activity.
The primary determinant of the amount of work put in and the rhythm of tasks is, according to the results of the interviews, lack of capacity. A task or process lasts as long as there is energy and attention: if lost along the way, task completion stalls. Accountability is not at all a feature, and there are only aspirations for regularity, but adaptation to other areas of life is a priority - it is 'just' a voluntary activity, they frequently say.
It is, therefore, not surprising that the supporting areas, including the whole financial area, are completely overshadowed by the narrowly defined service. As the development and learning of the tasks related to the core activity take a lot of energy, there is no interest at all in the back office processes. This is compounded by the fact that, since anyone can be a volunteer, the people who set up the activity do not necessarily have background experience in organisation, administration, financial management or resource generation, whether from work or other sources. This leads to the critical fact that they also have no experience of why this is important and how much they can add to the core activities of an organisation.
In the organisations surveyed, we can see that they do not fulfil their reporting obligations or fulfil them only with a long delay, and in many cases, they perceive it as a 'useless favour'. Finances are practically not followed up at all; reports are only produced with significant delays (if at all), and asset management is entirely haphazard, not to mention relations with external partners.
This phenomenon can be explained by the fact that, because of its small size, virtually everything depends on the founding leader, i.e. their attention and energy is the most crucial bottleneck in the organisation. The key to the survival - and especially the growth - of the organisation at this stage is the quality of the core activity, not the quality of the back-end processes. And if the founding leader focuses on this, the organisation is more likely to grow but may not have time for back-office management. However, the study suggests this price is still worth paying to stabilise the NGO.

5.2. Finance of routine-building organisations

The next category is characterised by one or two key leaders and a few volunteers involved (with a total of 20-50 members). At this stage, activities are consolidated, and the first routines are established. Although the fact that actions are still based on experiential learning (i.e. there is no formal knowledge management) makes it difficult to practice the processes, a balance is established. This also means that some attention is paid to the underlying processes. In the organisations surveyed, this typically involves, in order, the methodology for recruiting child members; liaison with parents; essential mandatory data provision to headquarters and authorities; some equipment procurement (often still in a completely informal setting), and - also in a completely informal setting - resource generation, mainly in the form of fundraising (in kind or cash) for programmes. Lastly, there is the monitoring of finances.
Two characteristics hamper financial transparency. Firstly, the specificity of managing finances and sharing information about them within the organisation is often a question of power. This means it is difficult to challenge financial flows and accounts; conversely, it is difficult to establish good practices (and indeed procedures) in finance or asset management. This leaves the organisation's manager alone on two sides of the issue: they may be inclined to interpret organisational efforts to understand the organisation's assets or cash flow as an attack, and others may see asking questions as a conflicting ground.
Another essential feature is that at this stage, NGO leaders (especially founders) often fail to distinguish between their own lives and the organisation, which also means that they do not keep track of their own personal investments (in time, energy and, not least, money) in the organisation, although it can be significant. Transparent accountability would show this well, and they are reluctant to face up to it.

5.3. Finance of process-building organisations

However, this situation changes when the organisation reaches the third stage (50-100 people, 10-15 volunteers involved, and 4-8 key volunteer leaders). This stage is about intensive management improvements, a drive to improve

processes, and an investing and improving atmosphere, which is also reflected in the support areas. During this phase, there is an increased focus on support processes, with the emergence of major asset purchases and (due to larger purchases) more visible (and more effective) monitoring of finances, resource generation, and more precise member and other administration.
On the one hand, the tracking of finances becomes transparent. However, it is still true that this is an annual cash turnover and that an external accountant is brought in once a year (or continues to do the accounting voluntarily). On the other hand, due to the increased tasks, the money management for events is rotated among management members; a finance function is possibly developed within management members so that the money management and accounting processes can be learned and controlled.
A (more) formal resource generation is reinforced, mainly due to asset acquisition needs. The organisation engages in tendering activities and/or more formal fundraising events, with the same intense development drive and strong emotions that can be observed throughout the internal functioning of the whole phase. It is often the case, for example, that there are ambitions to write proposals, but that the management of the first winning tenders does not take the incoming funding well at all, especially when it has to take on the task of tender administration and project implementation. In this case, the arrival of external resources may even become a further source of conflict, as management may not appreciate the appearance of new (and disproportionately expensive) resources (because "we were doing fine without them"). Still, it may react unduly negatively to the need to collect invoices, attendance sheets and accounts.
The other primary type of acquisition is the search for a usable property, which at this stage is not typically done by the organisations surveyed by buying one (as they have neither the money nor the competence to do so), but by finding potential donors who can offer one or two rooms or a small property for use as a community centre, as another form of resource generation. If this is successful, the early part of the process typically goes well (as with all procedures at this stage): as long as it is a renovation, furnishing, or one or two big occasions, the familiar developer-expansion-investor modus operandi works well. However, when the property is supposed to be maintained, the organisation starts to have severe problems because the (back)processes are not yet in place to run the proper routine. Whether it is a question of paying rent or maintenance regularly, or of carrying out maintenance tasks or purchasing consumables, this is typically not without problems because the organisation is not yet ready to reliably perform repetitive tasks in the supporting areas, as management is concentrating on learning (at the organisational level) how to develop this reliability in the core business.

5.4. Finance of sustainability-building organisations

The above-mentioned operations and reliability emerge as a focus area in the fourth stage. In this phase, the organisation completes the major investments and focuses on sustainability. In terms of assets, this means sorting, scrapping, repairing and maintaining assets. In tenders, it is a matter of selecting and better-targeting tenders; in renting or used property, it is a matter of organising cleaning and maintenance more sustainably, etc. New processes are being developed for this, for which the organisation is assigning individual responsibilities; however, in specific areas, ways of transferring knowledge are not yet in place, so these areas are challenging to develop or expand.
Among the activities, resource creation stands out as a major focus at this stage, not in terms of spectacular energy investment and innovation, but in terms of organisation and sustainability. Organisations at this stage are regularly and increasingly professionalising their tendering activities, developing a multi-legged resource management portfolio, and professionally monitoring their finances and accounting for their projects. They often bring in a permanent external expert. The most frequently paid 'outsider' remains the accountant, but organisations sometimes also employ a tender writer (on a fee-for-service basis or through other forms of outsourcing). The significance of this is that the involvement of professionalism is already a permanent feature of the operations of the organisations studied. Still, as they operate voluntarily, it is interesting that professionalism is 'decoupled' from the organisation.

5.5. Finance of professionalism-building organisations

This professionalism is already integrated into the internal functioning of the largest organisations. These organisations have a total membership of 160-450 people, around 50-70 volunteers involved and a strategic management of 15-30 people (still volunteers). At the same time, professional management, prudent and expert handling of the organisation's finances, accounts, investments, and complete back office management (supported by paid and contracted experts) already feature.
Within this, two main patterns can be observed. The organisation may start new significant investments, for example, when it does not have a suitable property that can accommodate as many sessions as there are in a week, and it needs the right physical assets to accommodate a rapidly expanding membership. The other way (if the organisation has already done this or is lucky enough to have external resources) is to professionalise the operation: new posts and teams are created in administration, property management, and resource creation, who organise the backup separately in liaison with other departments.
In addition, new activities are being developed at this stage. The formalisation of organisational communication appears as a new area: the organisation devotes special attention (and human resources) to external communication, reporting,

and resource creation PR-related activities.
Attempts to measure organisational impact and effectiveness can also be observed. However, the late emergence of this organisational characteristic may be a feature of the organisations studied: headcount is a relatively good indicator of success in the earlier stages, and it is understandable that organisations start to look for deeper, more nuanced indicators when headcount alone provides little information on the scope for further improvement and efficiency gains.
To summarise, the functions of financial accountability presented at the beginning of this study appear at different stages of the growth trajectory. There is (optimally) a drive towards financial awareness and responsibility in organisations, but this may be secondary to the organisational mission and core business. Research interviews suggest that organisations develop support areas when the main areas are balanced. And the subsequent intensive development of core activities often relies on the security that comes from the orderliness of the support areas - they are thus mutually reinforcing, alternating developments in the organisations.
Table 1 summarises when the different characteristics associated with accountability typically emerge during organisational growth.

Table 1.: Presence of organisational characteristics of financial accountability in growth stages

	Activity-builder	Routine-builder	Process-builder	Sustainibility-builder	Professionalism-builder
activity accounting	none / ad hoc	none / ad hoc	separate accounting per event	annual financial monitoring	professional accounting
financial planning	none	none	ad hoc	annual financial plan	planning and evaluation
asset purchases	none / ad hoc	none / ad hoc	large investments	balance, organised replacements	large investments / maintenance
inventory	none	none	initial attempts	estabilishing procedures	system operation
scrapping, maintenance	none	none	none	estabilishing procedures	system operation
fundraising	none	in-kind	first tenders / fundraising	regular tenders, other sources, planning	multi-leg portfolio; new fundraising activities
financial statements	none	none	none	initial steps	internal statements; sometimes external reporting
performance evaluation	none	none	none	internal evaluation	internal evaluation
social impact measurement	none	none	none	none	attempts

Source: own editing

Table 2 shows how the interpretations of accountability presented at the beginning of this paper (Brody, 2001) appear at different stages of growth. Striving towards an organisational mission is vital at each stage, but the other three definitions only rise to a conscious level during organisational growth. This is not to say that 'financial fraud' is present in smaller organisations, for example, but instead that the organisation's activities are so small, with little financial turnover, informal and volunteer-driven, that the relevant definitions do not seem to be significant. Later, however, they appear to become important for organisations, as growth in size and level of division of labour makes transparency and internal traceability of processes important.

Table 1.: The emergence of definitional elements of accountability in the stages of growth

	Activity-builder	Routine-builder	Process-builder	Sustainibility-builder	Professionalism-builder
striving to fulfil organisational mission	yes	yes	yes	yes	yes
financial honesty and avoidance of fraud	not visible, non-conscious	not visible, non-conscious	under construction	transparent operation	transparent operation
demonstration of effectiveness of charity	not visible, non-conscious	not visible, non-conscious	number of membership + PR activities	PR activities	impact measurement efforts
good organisational governance	non-conscious	non-conscious	under construction	consolidated system	established and sustainable system

Source: own editing

6. SUMMARY

Looking at the different aspects of NPO accountability and the internal functioning of the organisations in the research, it can be concluded that NPOs are distinctly different from the for-profit sector from a financial point of view. One reason for this is the non-professional nature of their operations, in which the presence of financial analysis or even cost planning is not expected. The second reason is that the performance of NPOs is often difficult to quantify (even though this would benefit their activities). The third reason is that neither of the for-profit firms' two major classical financial characteristics (profit maximisation and asset value, i.e. saleability) applies to NPOs. Therefore other criteria must be sought for their evaluation.

However, looking through the growth life cycle, it can be seen that NPOs strive to meet different aspects of accountability. However, given the crucial presence of volunteers (hence the lack of capacity) and a solid mission-driven focus, supporting areas (and finance and accountability certainly fall into this category) and the development of supporting areas can become critical to the organisation to the extent that it recognises that this is important to mission fulfilment. However, it can be seen that at different stages of the growth phase, this means becoming more aware and professional.

In sum, it is not reasonable to expect the same professionalism and financial prudence from all NPOs. However, taking into account the 'organic' state of the organisation (i.e. the stage of growth they are in) in terms of financial accountability, professionalism and resource generation, they can be more effectively supported towards transparency (also in the financial area), as this will also help to achieve the organisational mission.

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THE EFFECTS OF THE COMPENSATION SYSTEM ON JOB SATISFACTION AND TURNOVER INTENTIONS OF EMPLOYEES IN THE REPUBLIC OF SERBIA

Abstract: The main goal of this research is to examine the relationship between the compensation system, job satisfaction, turnover intentions, and the mediating effect of job satisfaction in the relationship between the compensation system and turnover intention. The main research question relates to determining the effect of the compensation system on turnover intentions and the role of job satisfaction in this relationship. The methodology of the work consists of the theoretical and empirical part of the research. Empirical research was conducted on a sample of 100 employees from organizations operating in the Republic of Serbia. The collection of samples lasted from March to May 2022 through an electronic questionnaire based on which respondents had the opportunity to answer at any time, wherever they were, through their electoral devices. The proposed relationships were tested with the PLS-SEM method, using the SmartPLS software. The main findings of the research indicated that there are direct positive effects of the compensation system on job satisfaction and turnover intention, and that job satisfaction has an indirect effect on the relationship between the compensation system and the turnover intention of employees. Employees who are offered an adequate compensation system do not want to leave their job, and also if the employees are satisfied with the compensation sys, they will not want to leave their job.

Key words: compensation system, job satisfaction, turnover intentions, employee attitudes, Republic of Serbia

INTRODUCTION

Employees are one of the most important strategic resources, which includes a workforce whose competence and business activities depend on the results of the organization's operations. Authors Raid & Alzoubi (2021) emphasize that human resources would lead to the success of the organization when they are managed efficiently and effectively. The attitudes and performance of employees in the organization are the results of the influence of a large number of factors. According to the authors Stevanović & Belopavlović (2011) employee motivation refers to the reasons for the achieved performance, dedication to work, and satisfaction of the employee in the work he performs. Remuneration can be cited as an effective instrument of motivation and alignment of the interests of employees and capital owners. Reward in human resources management is compensation for work, i.e. the employee's performance at work. The main type of compensation for an employee's work is the basic salary. Stimulations on various grounds and benefits aimed at employees are part of the compensation package that affects the personal status of the employee.
Pay satisfaction indicates the employee's positive or negative perception of salary and implies satisfaction with the level and structure of salary. Pay satisfaction is the employee's positive perception of the fairness of the compensation and the way compensation is provided (Mustika, Prihanto & Winarno, 2021). Satisfied employees will be less absent from work. Sometimes even a satisfied employee has to be absent from work. Several factors force an unsatisfied employee to still come to work, such as fear of losing his job, and responsibility towards colleagues at work or towards the client (Brown & Sessions, 1996). The existence of an intention to leave is a prerequisite for someone to leave a job or

organization (Mustika et al., 2021). Factors that influence employees' intentions to leave are related to job satisfaction, job stress, organizational culture, organizational commitment, earnings, and advancement opportunities. Employee turnover intentions represent the ability of employees to leave a job as a logical step after experiencing dissatisfaction (Aburumman, Salleh, Omar & Abadi, 2020). If talented employees are leaving the organization, it is important the organization needs to try turnover intentions of employees (Mustika et al., 2021).

This research aims to examine the relationship between the compensation system and the intention to leave employees, as well as the indirect effect of job satisfaction on the relationship between the compensation system and the intention to leave employees. The subject of the research is determining the effect that the compensation system causes on intentions to leave and the role of job satisfaction in the aforementioned relationship.

The research consists of four parts, in the first part a theoretical explanation of the variables that will be used in the research will be made, as well as a presentation of the previous research results of other authors on this topic. The second part refers to the description of the research methodology, in which the questionnaire that was used during the collection of the sample, the period of the collection, as well as the presentation of the sample based on one research that will carried out, will be presented. The third part refers to the presentation of the results and the discussion of the results obtained using PLS-SEM analysis in the program SmartPLS. The last part refers to the concluding remarks in which the authors will discuss the most important aspects of the research and make suggestions for future research.

1. THEORETICAL BACKGROUND

1.1. Compensation system, Job Satisfaction, and Turnover Intentions

Compensation includes all forms of financial income, services, and benefits that the employee can achieve based on his work in the organization. According to Štangl Šušnjar and Leković (2009) compensation can be viewed in two ways: first as a cost to the company, and second as an investment in the added value of the company. According to the authors Salisu, Chinyio and Suresh (2015) compensation provides income to employees and represents an important cost item for the employer. Earnings, incentives, benefits, ts and other benefits that employees enjoy in organizations can be seen as activities that directly or indirectly result in an outflow of funds. If the owners of the capital perceive monetary expenditures or compensations paid and given in another form as an investment, they can expect quality work, dedication, desired achievement, and improvement of the organization's operations from the employees (Jevtić, Vladimirović & Jevtić, 2022). According to the authors Berber, Morley, Slavić and Poór (2017) compensation is a systematic approach to providing benefits to employees. Compensation represents the evaluation of achievement for all the work, time and effort that the employee provides to the organization (Winda, Nayati & Arik, 2017). In exchange for their work and services, employees receive the benefits provided by the compensation plan. Compensation plays a multifaceted role in attracting new high-potential employees and in retaining and continuously motivating all existing employees to achieve higher levels of performance (Berber et al., 2017). According to Murtiningsih (2020) by providing appropriate rewards to employees, organizations can influence employee retention. The optimal compensation system is the result of strategic, personnel, financial and many other factors (Berber & Štangl – Šušnjar, 2013). The support and achievement of the organization's goals, the achievement of the expected profit, as well as the conquest of the widest possible market, are conditioned by the job satisfaction of the employees. With the reward system, it is necessary to harmonize and ensure the achievement of the employees' various individual needs and the organization's set goals (Vidaković, 2012). Key factors when designing a compensation system are the motivators and needs of the employees themselves. Managerial positions are generally accompanied by higher earnings, in accordance with the responsibilities of the position, additional compensation and benefits that contribute to employee satisfaction (Brown & Sessions, 1996). Benefits and additional compensation for employees in managerial positions enable a more efficient balancing of private and business life. The feeling of loyalty to the company is intensified and a common system of values within the organization is created. The company's goal is to "tie" employees to the organization in the long term, and therefore it is necessary to design a long-term investment plan in employees (Wheatley, 2017, p. 581). According to Rahman and Syahrizal (2019), job satisfaction is considered a strong determinant of employee turnover. According to Riayanto, Endri and Herlisha (2021) job satisfaction is a positive emotion of employees that comes from work experience. Job satisfaction according to Mira, Choong i Thim (2019) refers to the feelings of employees towards certain situations in the workplace. Job satisfaction can be measured based on the feelings and emotions of employees. Job satisfaction is only one of the factors that, in combination with other factors of varying importance (health condition, work ethic, socioeconomic pressures, standard of living, etc.) contributes to making a decision about the intentions to stay or leave the organization (Bevan & Thompson, 1992). Turnover intentions is defined as the conscious and deliberate intention of the individual to leave the job and is described as the last in a series of cognitions that precedes withdrawal from the job (Hom et al., 2017).

1.2. Relationship between Compensation System, Job Satisfaction and Turnover Intentions

In this part, a theoretical presentation of previous research by various authors on the impact of compensation systems on job satisfaction and turnover intention will be made, as well as the mediating role of job satisfaction in the relationship between the compensation system and turnover intention. After the presented results of other authors, hypotheses will be set that will be tested in the third part using the SmartPLS program and PLS-SEM analysis.

1.2.1. Relationship between compensation system and job satisfaction

According to Koderman (2021) all job satisfaction factors can be grouped into two categories: organizational and personal job satisfaction factors. It is also stated that the social atmosphere is an important factor in job satisfaction, the higher the salary, people are generally more satisfied with their work, workers are more satisfied if they perceive that the reward system is fair and treats all employees equally, the better the working conditions, it is logical that worker satisfaction is higher, people are often dissatisfied with poor working conditions, workers do not like changes, uncertainty, ambiguity (Koderman, 2021, p. 21). According to Winda et al. (2017), there is a positive effect of compensation on job satisfaction, which means that more earnings would increase job satisfaction. Also, research Permandi, Landra, Kusuma and Sudja (2018) confirms that compensations have a positive impact on job satisfaction. According to Purwanto (2020), the compensation system achieves positive effects on job satisfaction. Based on the above, the first research hypothesis is:

H_1: The compensation system is positively related to job satisfaction.

1.2.2. Relationship between compensation system and turnover intentions

Different authors' studies around the world have pointed out a significant negative relationship between prizes, human resource management practices and traffic resource intentions (Allen, Shore & Griffeth, 2003; Weldeyohannes, 2016). Armstrong & Murlis (2007) indicate that high salaries hit employees in the organization for a long time. Nadiri & Tanova (2010) emhasize that the rational distribution of wages has a positive effect on turnover intentions. The research of authors Carraher & Buckley (2008) indicates a significant negative relationship between the compensation system on turnover intentions. Based on this, we conclude that if the employee is satisfied with the salary he receives, he will not want to leave his job, and on the other hand, the employer will keep the employee in his company. Therefore, researchers hypothesize as follows:

H_2: The compensation system is negatively related to turnover intentions.

1.2.3. The mediating role of job satisfaction on the relationship between compensation system and turnover intentions

Job satisfaction according to Rahman and Syahrizal (2019) considered a strong determinant of turnover intentions. Turnover intentions is influenced not only by job satisfaction/dissatisfaction, but also by the pressure or lack of pressure to attend. The biggest problem with large and unjustified absenteeism is that it results in a high turnover of workers. In the research work of the authors Mustika et al. (2021); Lim, Loo and Lee (2017), and Vizano et al. (2021) the research indicated that job satisfaction positively mediates the relationship between the compensation system and the intention to leave employees. Starting from the basic subject, as well as the research goal of this work, and taking into account previous scientific research on this topic, the main hypothesis is the subject of testing with the intention of proving it and reads:

H_3: Job satisfaction has a positive mediation effect in the relationship between the compensation system and turnover intentions.

2. METHODOLOGY

In this part, there was a description of the opinion that was used during the sample collection, the way in which the respondents had the opportunity to answer the questions, the time period of the sample collection, as well as the presentation and description of the sample.

2.1. The questionnaire

During the research process of the relationship between the compensation system, job satisfaction and employees' intentions to leave, that is, the indirect influence of compensation on the intention to leave, an electronic questionnaire "Google Forms" was used, which consists of two parts. The first part of the questionnaire refers to control questions such as gender, age, level of education and position in the company. The second part of the questionnaire was related exclusively to the evaluation of the performance and compensation of employees, as independent variables, and to job satisfaction and intentions to leave employees as dependent variables. For research and measurement, a Likert scale was used, ranging from 1 to 5, where 1 represents the statement "strongly disagree", 2 "disagree", 3 "undecided"; 4 "agree" and 5 "strongly agree" (Joshi, Kale, Chandel & Pal 2015).

2.2. Sample characteristics

The questionnaire was intended exclusively for employed persons from different economic sectors, such as agriculture, mining, manufacturing, construction, transport and storage, information and communication, financial activities and activity, education, health and social protection and other service activities. A questionnaire relating to the relations between the compensation system, the satisfaction of the work and the intentions of the departure has completed 100 employees in the territory of the Republic of Serbia. Data collection was performed since March 2022 until May 2022. Table 1 shows the structure of the sample according to the semi, in years, the education and position of the employee in the company. The sample consisted mainly of female respondents (64%), a younger employee of 25 to 34 years (35%), with completed four-year academic studies (40%), in professional positions in the organization (58%).

Table 1: Sample characteristics

Sample characteristics	Number of respondents	Percentage (%)
Gender		
Male	36	36
Female	64	64
Age structure		
Less than 25	33	33
25 - 34	35	35
35 - 44	14	14
45 - 54	10	10
More than 55	8	8
Level of education		
High school	15	15
Three years of vocational studies	20	20
Bachelor's degree	40	40
Master's study	23	23
Ph.D.	2	2
Position in the company		
Manager	10	10
Professional worker	58	58
Administrative worker	22	22
Manuel worker	10	10

Source: The authors' research

3. RESULT AND DISCUSSION

To present the results of research on the existence of relations between the compensation system, job satisfaction and turnover intentions, as well as the mediation role of job satisfaction on the relationship between compensation system and turnover intentions the statistical software "SPSS IBM statistics" and "SmartPLS 3" were used. In order to adequately determine the relations between the observed variables, the PLS-SEM analysis was performed. During the research we will use structural equation modeling with partial least squares (PLS-SEM) to test the proposed model. PLS-SEM is a method based on the analysis of complex interrelated relationships between constructs and indicators (Becker et al., 2023). PLS path models have two sets of linear equations: a measurement model (outer model) and a structural model (inner model). While the external model specifies the relationship between the construct and its observed indicators, the internal model refers to the relationships between the constructs (Gašić & Berber, 2023). This research have two sets of linear equations: measurement model (outer model) – specifies the relationship between the construct and its observed indicators (formative/reflective construct) and structural model (inner model) – specifies the

relationship between the construct (compensation system on job satisfaction and turnover intentions as well as mediation role of job satisfaction on the relationship between compensation system and turnover intentions). For the first, we start with analysis of the measurement model (outer model) and after that with structural model. Table 2 shows descriptive statistics for each of the observed variables.

Table 2: Descriptive statistics for observed variables

	Number	Minimum	Maximum	Mean	Std. Deviation
Compensation system	100	1,25	5	3,17	1,02
Job satisfaction	100	1,00	5	4,01	0,89
Turnover Intentions	100	1,00	5	2,66	1,08

Source: The authors' research

As part of the first part of the analysis, the results of measuring reflective constructs within the set model, where it is necessary to analyze the external load of indicators for each variable within the model, but also reliability, convergent validity and discriminatory validity. In Table 3, the external load of the indicator for each variable in the set model is displayed. As they state Grubor, Berber, Aleksić & Bjekić (2020); Berber, Slavić & Aleksić (2020) loads below 0.708 should be excluded from further analysis. According to Berber, Gašić, Katić & Borocki (2022) Loads between 0.4 and 0.7 should be kept in the model, only if other indicators are not removed. Within the first step of analysis of the results obtained, the COM8 indicator is turned off. After turning off the indicator that did not pass the test, in the second step, all indicators had loads above 0.4.

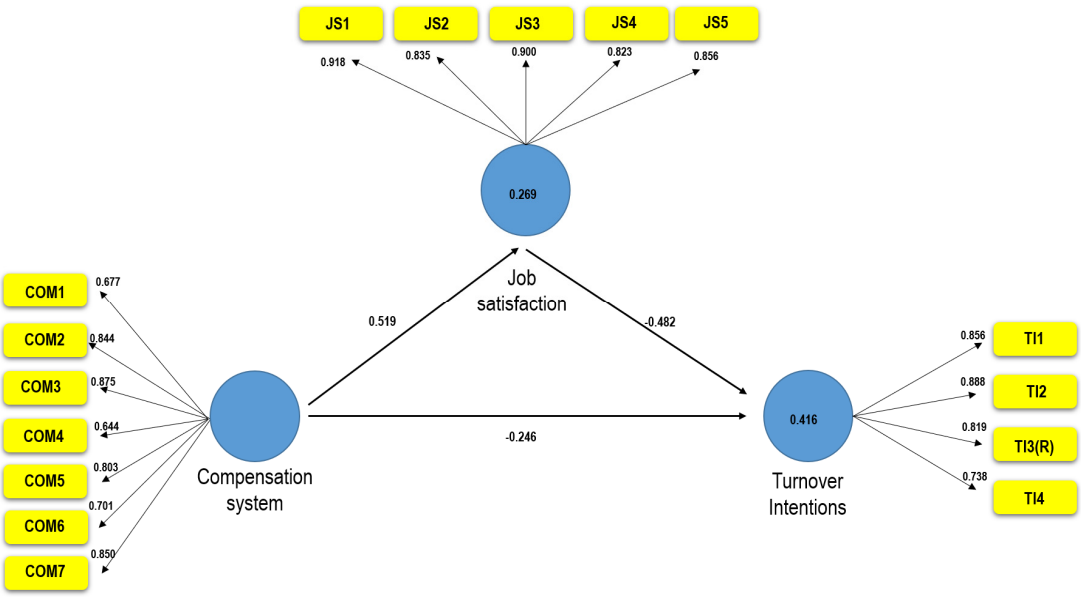

Figure 1: Path coefficient estimates
Source: The authors' research

Table 3: Reflective indicator loadings

Items	Compensation system	Turnover Intentions	Job Satisfaction
COM1	0.677		
COM2	0.844		
COM3	0.875		
COM4	0.644		
COM5	0.803		
COM6	0.701		
COM7	0.850		
TI1		0.856	
TI2		0.888	
TI3(R)		0.819	
TI4		0.738	
JS1			0.918
JS2			0.835
JS3			0.900
JS4			0.823
JS5			0.856

Source: The authors' research

Table 4 represent "Internal consistency and convergent validity" that is measured with Cronbach's alpha, Composite reliability and Average variance extracted (AVE). According to Gašić & Berber (2021), The limit value for Cronbach's Alpha is 0.6. Convergent validity is achieved for all constructs from the model, because the values of Cronbach's Alpha are higher than 0.60. According to Gašić & Berber (2023), the recommended "threshold" value for composite reliability is 0.70. Composite reliability is between 0.80 and 0.95 for each construct from the model, while the average variance extracted (AVE) is greater than 0.50, as well as stated Berber et al. (2020) and Salis et al. (2015).

Table 4: Internal consistency and convergent validity

	Cronbach's alpha		**Composite reliability**		**Average variance extracted (AVE)**	
	Values	**Criterion**	**Values**	**Criterion**	**Values**	**Criterion**
Compensation system	0.887	**> 0.6** (Gašić & Berber, 2021)	0.912	**> 0.7** (Gašić & Berber, 2023)	0.601	**> 0.5** (Berber et al., 2020; Salis et al., 2015)
Turnover Intentions	0.845		0.896		0.684	
Job Satisfaction	0.919		0.938		0.752	

Source: The authors' research

According to Berber et al. (2022) Discriminating validity can be determined based on cross-loading, Fornell-Larcker and Heterotrait-monotrait **-** HTMT criteria (stricted criterion). In Teble 5, the analysis of cross-burdens is presented, which is an assessment of discriminant validity at the indicator level. The observed model has adequate discriminant validity if any indicator of a certain construct is poorly correlated with other constructs, ie if the load of the indicator is greater than any cross-burden (Grubor, Đokić, Milićević & Đokić, 2021). In Table 5, it is evident that the load of each indicator is larger than any other construct in the same column or row.

Table 5: Discriminant validity – Cross-loadings

	Compensation system	**Turnover Intentions**	**Job Satisfaction**
COM1	**0.677**	-0.238	0.314
COM2	**0.844**	-0.463	0.410
COM3	**0.875**	-0.365	0.394
COM4	**0.644**	-0.358	0.263
COM5	**0.803**	-0.369	0.496
COM6	**0.701**	-0.307	0.333
COM7	**0.850**	-0.513	0.523
TI1	-0.419	**0.856**	-0.566
TI2	-0.328	**0.888**	-0.465
TI3(R)	-0.520	**0.819**	-0.541
TI4	-0.337	**0.738**	-0.415
JS1	0.394	-0.456	**0.918**
JS2	0.405	-0.433	**0.835**
JS3	0.417	-0.513	**0.900**
JS4	0.354	-0.377	**0.823**
JS5	0.590	-0.730	**0.856**

Source: The authors' research

At the indicator level, discriminant validity is established if the extracted average variance (AVE) for each construct is greater than its square correlations with other constructs (Grubor et al., 2021). Fornell-Larcker criterion is filled if the first construct is larger than another construct. Based on Table 6, it can be concluded that discriminant validity using fornell- Larker's criteria are satisfied.

Table 6: : Discriminant validity – Fornell – Larcker criterium

	Compensation system	**Turnover Intentions**	**Job Satisfaction**
Compensation system	0.775		
Turnover Intentions	-0.496	0.827	
Job Satisfaction	0.519	-0.610	0.867

Source: The authors' research

Table 7 shows the Heterotrait-monotrait **-** HTMT approach that can overcome potential deviations in terms of discriminant validity and therefore the most accurate indicator of discriminant validity. The limit value is 0.90 (Franke, & Sarstedt, 2019). As values below 0.9 are in the table, this indicates that discriminant validity is achieved in this criterion.

Table 7: Discriminant validity - Heterotrait-monotrait - HTMT

	Compensation system	Turnover Intentions	Job Satisfaction
Compensation system			
Turnover Intentions	0.547		
Job Satisfaction	0.537	0.647	

Source: The authors' research

The results shown in Table 8 represent a multicollinearity analysis, with VIF values in most cases below 3. The limit value for VIF is 3 (Hair, Sarstedt, Hopkins & Kuppelwieser, 2014). According to Shams, Niazi & Asim (2020) the limit value is 5, while Hair, Risher, Sarstedt & Ringle (2019) accept values of less than 10. However, there are cases such as COM2, COM3, JS1, JS2, and JS3, which have values above 3 and they are accepted by the authors who accept VIF values of 5.

Table 8: Multicollinearity testing of indicators - VIF

Items	VIF
COM1	2.416
COM2	3.613
COM3	3.254
COM4	1.508
COM5	2.576
COM6	1.768
COM7	2.628
TI1	2.207
TI2	2.828
TI3(R)	1.768
TI4	1.574
JS1	4.910
JS2	3.694
JS3	3.954
JS4	2.893
JS5	2.166

Source: The authors' research

In order to test the structural model, a bootstrapping analysis was performed. Subsamples are randomly drawn observations from the original data set (with replacement). The subsample is used to estimate the PLS path model. The process is repeated until a large number of random subsamples (eg 5000) are generated. Estimates from bootstraping subsamples are used when determining standard errors for PLS-SEM results.
R Squared shows that changes in job satisfaction with 26, 9% caused by compensations, while other unexplored factors account for 73.1%. Changes in intentions to leave are 41.6% caused by compensations.

Table 9: Coefficients of determination of the construct

Variable name	R-square
Turnover Intentions	0.416
Job Satisfaction	0.269

Source: The authors' research

The last step refers to the analysis of the relationship between the independent variable and the dependent variables, ie the compensation system, job satisfaction, and turnover intentions, as well as the mediating role of job satisfaction in the relationship between compensation system and turnover intentions.

Table 10: Statistical significance testing - direct and specific (mediator) indirect effect

	Original sample (β)	St. deviation	T statistics	*p*-values	Hypothesis
Compensation system → Job Satisfaction	0.519	0.063	8.175	0.000	H_1: Accepted
Compensation system → Turnover Intentions	-0.246	0.087	2.831	0.005	H_2: Accepted
Compensation system → Job Satisfaction → Turnover Intentions	-0.250	0,047	5,374	0.000	H_3: Accepted

Source: The authors' research

Table 9 includes the mean value, standard deviation, t-statistics and p-value to confirm or refute the set hypotheses. Based on the obtained results, it can be concluded that there is a positive and statistically significant relationship between compensation and job satisfaction (β=0.519, T=8.175, *p*=0.000), a negative and statistically significant relationship between compensation and intention to leave (β= -0.246, T =2.831, *p*=0.005). When it comes to the mediating role of job satisfaction in the relationship between compensation and intentions to leave, i.e. the indirect influence of compensation on intentions to leave, through mediation a negative and statistically significant relationship is determined, the indirect influence of compensation on intentions to leave (β= -0.250, T=5.347, *p*=0.000).

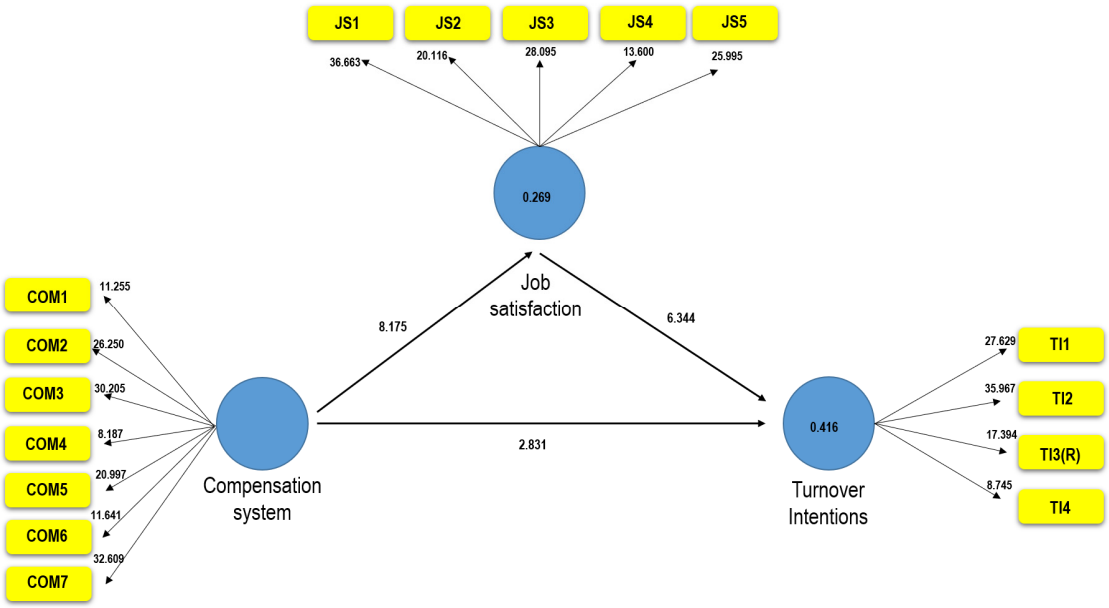

Figure 2: The path model with bootstrapping results
Source: The authors' research

CONCLUSION

Based on the review of the literature and the conducted research, it is concluded that the implementation of the compensation and rewards system has great benefits on the attitudes of employees and thus increases their satisfaction with the work they do and thus reduces their intention to leave the organization. If employees are satisfied with what they do, then they perceive work less as work and more as enjoyment. Job satisfaction affects the reduction of absenteeism, turnover intentions and work performance of employees.

Research results indicate that compensation system has a positive effect on job satisfaction (which is also confirmed in the research work of the author's Koderman (2021); Winda et al. (2017); Permandi, Landra, Kusuma & Sudja (2018) and Purwanto (2020)) and turnover intentions (which is also confirmed in the research work of the author's Allen, Shore & Griffeth, (2003); Weldeyohannes, (2016); Nadiri & Tanova (2010) and Carraher & Buckley (2008)). Based on the conducted analysis, it was confirmed that job satisfaction mediates the relationship between the compensation system and the intention to leave, which indicates that if employees are satisfied with the reward system, they will not want to leave their job (which is also confirmed in the research work of the author's Mustika et al. (2021); Lim, Loo & Lee (2017), and Vizano et al. (2021)). Based on the presented results, all three hypotheses can be confirmed: H_1: The compensation system is positively related to job satisfaction; H_2: The compensation system is negatively related to turnover intentions; H_3: Job satisfaction has a positive mediation effect in the relationship between the compensation system and turnover intentions. Given that there are direct links between the compensation system and job satisfaction and the intention to leave, as well as an indirect link between the compensation system and the intention to leave through job satisfaction as a mediator, it can be concluded that a partial mediation has been formed.

The limitation of the conducted research is related to the relatively small sample. Some of the suggestions for future research is to increase the number of respondents in organizations that develop different models and systems for measuring job satisfaction. The bottom line is that job satisfaction has become a key issue in modern work organizations. Based on the job satisfaction measurement system, organizations should strive to unleash the creative potential of employees with various material and non-material incentives.

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A LITERATURE REVIEW ON ARTIFICIAL INTELLIGENCE IN GLOBAL SUPPLY CHAIN MANAGEMENT

Abstract: Artificial intelligence (AI) can significantly improve the efficiency and resilience of supply chains due to its potential to forecast future demand, reduce costs, optimize logistics, enhance quality control, improve inventory management, as well as to increase both customer satisfaction and overall effectiveness of global supply chain management (global SCM). Despite these benefits and popularity, research to date on the contributions of AI to global SCM is rather dispersed. This paper aims to synthetize this relevant body of knowledge and assess the current context of AI in supply chain literature.

Keywords: literature review, synthesis, artificial intelligence, global supply chain management

1. INTRODUCTION

Over the last few years, the world is increasingly moving towards a digital era and Industry 4.0. Technology is steadily emerging as a crucial provider of adequate solutions for complex problems in business operations, while supply chains are certainly no exception to such trends. Against this backdrop, artificial intelligence has long been recognized as one of the leading technologies capable of enabling communication between machines and devices (Guzman & Lewis, 2020; Dwivedi et al., 2021). In point of fact, artificial intelligence, as a highly disruptive technology, has drastically changed the way decisions are made and also affects the progress of both businesses and industries. More than a decade ago, a major decline in trade followed by a number of transmission mechanisms was seen as one of the most prominent features of the 2007-2008 financial crisis (Kostoska, Stojkoski & Kocarev, 2020). Among these mechanisms, an exceptional role has been assigned to the emergence of global supply chains, and also to the differing compositional effects of the demand shock on trade and GDP (Altomonte et al., 2012). In short, the global financial crisis has already had a strong impact on global supply chains with potentials to permanently change some of the fundamental supply relationships. Many companies that have offshored their sources of supply, have encountered severe disruptions in the ability to procure materials and products. "The sudden drop in orders in developed countries spread rapidly through global supply chains, resulting in severe cutbacks in production in the multiple tiers of the supply chain. In some cases, suppliers failed due to lack of financial capacity to survive the sudden fall in orders. In other cases, they cut quality or lengthened delivery times in a desperate attempt to reduce costs" (Mefford, 2009, p.9). In the coming decade, global value chains will experience an even greater transformation. The change will be prompted by the need for greater supply chain resilience on account of Covid-19, which in turn is compounded by existing pressures from the technological revolution (Baldwin, 2019; Bolwijn et al., 2019; Brun et al., 2019), rising economic nationalism (Blanchard, 2019; Bellora & Fontagnè, 2019; Zhan, 2019) and the imperative for sustainability (De Backer & Flaig, 2017; Kolk et al., 2017). Corona virus pandemic costed both millions of lives and significant disruptions in supply chains of various industries. Indeed, poor supply chain information has caused a series of unforeseen delays in receiving materials from certain locations (Paul & Chowdhury, 2021), whilst some other factors such as reduction of production costs, consolidation of suppliers and risk minimization have reduced the available inventories leading to the current state of knotty shortages (Dolgui & Ivanov, 2020; Wang-Mlynek & Foerstl, 2020). What is extremely important is to highlight the challenges in today's supply chains that have caused this level of crisis for companies. Namely,

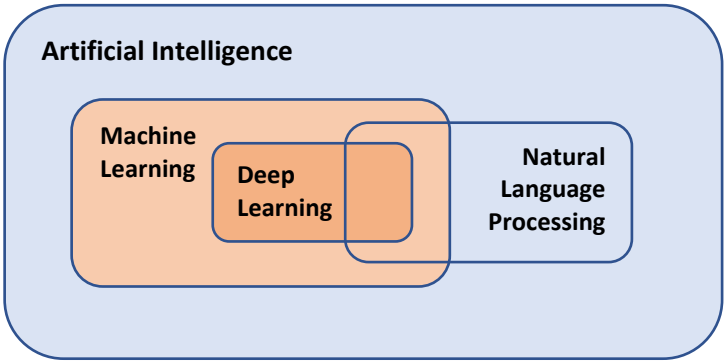
manufacturing has become very complex with respect to outsourcing components from multiple locations to produce a single product. In other words, there is an exceptional dependence on logistics, import and export, which in turn requires smart solutions to address the harmful disruptions (Choi, 2020; Wamba et al, 2020a, Wamba et al., 2020b). In a time of Covid-19, shortfalls in the network, and especially the risk of distribution (for example responsive allocation, direct distribution and stuffing of warehouses) represent an even greater challenge (de Koster & Warffemius, 2005; Butt, 2021). For this reason, logistics professionals should consider integrating the cutting-edge systems, especially those pivoted around artificial intelligence to fill the gap that the human resources cannot effectively manage. By combining AI tools with human control, managers will be able to better protect supply chains from current and future challenges. For example, machine learning is a system that might examine a huge amount of data and also acknowledge the signals, patterns and trends in data, providing for adjustments in the supply chain when necessary. Internet of Things devices, on the other hand, can assist in monitoring supply chains by collecting the necessary data to notify supply chains professionals when the machine needs maintenance or replacement. In short, what is important is that artificial intelligence does not refer to a specific technology, but rather a paradigm shift in respect to how we think over the technology itself. We often think of artificial intelligence as something that allows for automation, but this view, by its nature, is too limited. "The true role of artificial intelligence in the supply chain is to enhance and augment human intelligence and decision making, as opposed to being something that makes it obsolete…Ultimately, the role of AI in supply chains is two-fold: the automation of repetitive tasks and processes across supply chain functions; the realization of new forms of strategic decision-making and collaboration" (Bradic, 2020, paras.5,7). With all this being said, it is clear that artificial intelligence is taking an increasing presence in the scholarly discourse of global SCM. Hence, the purpose of this paper is to contribute to a systematized understanding of AI's contribution to global supply chain management studies.

The rest of the paper is organized as follows. The section 2 refers to artificial intelligence and its (sub)fields. The section 3 and section 4 are focused on pros and cons of AI-powered global supply chains. The last section concludes and recommends.

2. ARTIFICIAL INTELLIGENCE AND ITS (SUB)FIELDS

The concept of artificial intelligence focuses on the capacity of modern technologies to interpret different types of data, learn from data and flexibly adapt to different situations (Angeleski et al., 2022). It is a technology that uses modern algorithms and historical data to develop systems capable of performing tasks analogous to those performed by humans. The primary goal of this technology is to create advanced tools that use available data and offer opportunities to efficiently solve various business problems (Angeleski & Kostoska, 2022). So, artificial intelligence refers to systems that demonstrate intelligent behavior by examining and interpreting their environment, and then independently taking actions, with a certain degree of autonomy, to achieve certain goals (Boucher, 2020).

Artificial intelligence includes a number of research fields such as: machine learning (ML), deep learning (DL), natural languages processing (NLP), expert systems, evolution algorithms, search algorithms, knowledge graphs and many others (Xu et al., 2021) that can find application in various fields. Considering that machine learning (ML), its subfield deep learning (DL) and natural languages processing (NLP) are the most exploited fields of AI and whose algorithms are mostly used in SCM, a brief introduction to all of them will follow (Picture 1).



Picture 1: Artificial Intelligence and its (sub)fields overlapping: Machine Learning, Deep Learning and Natural Language
Source: Author's representation

Machine learning is a branch of artificial intelligence (AI) which focuses on the use of data and algorithms to imitate the way that humans learn and behave, gradually improving its accuracy from experience without being explicitly programmed and that can access data and use it to learn for themselves (Expert.ai, 2022; IBM, 2022). There are three main classes of machine learning techniques: Supervised learning, Unsupervised learning and Reinforcement learning (Simeone, 2018). Supervised learning is simply a formalization of the idea of learning from examples (Dey, 2017). In the learning process of Supervised learning, two sets of data are defined, that is a training set and a test set. The

algorithm learns to make predictions or decisions based on labeled data in the training set. Labeled data is data that has been previously tagged with the correct output. Supervised learning algorithms generate models from the training data set which can be used to classify other unlabeled data (Cunningham et al., 2008), or to predict some continuous numerical value. "In other words, in supervised learning we have labeled data in the sense that each data point has an input and an output which explicitly explains 'what we see in the data'" (Lindholm et al., 2019, p.7). In unsupervised learning, the algorithm works with input data that does not have labeled targets or desired outcomes. Instead, the algorithm analyzes the patterns and relationships within the unlabeled data and clusters the data into distinct groups based on their similarities underlying structure and patterns in the data on its own (Haldorai et al., 2020). Reinforcement learning is based on feedback of actions, that is the opportunity to learn in an interactive environment by trial and error, using feedback from its own actions and experiences (Bhatt, 2018; Wuest et al., 2016). Deep Learning is a specialized area within the broader field of machine learning that involves the use of artificial neural networks, which are designed to mimic the structure and function of the human brain. These networks are composed of multiple layers that enable them to process and analyze complex data sets, using nonlinear methods to extract valuable insights and patterns (Brownlee, 2020; Graupe, 2016). Natural Language Processing (NLP) is an Artificial Intelligence discipline that enables machines to understand, interpret, and extract logical meaning from human languages. In other words, "NLP is the use of computers to understand and then process human language in the form of text or speech" (Toorajipour et al., 2021, p.509).

3. ADVANTAGES OF AI APPLICATIONS IN GLOBAL SUPPLY CHAIN MANAGEMENT

Global supply chain management is a key component of business operations as it involves the coordination, planning and control of the delivery of goods and services from suppliers to customers. The optimal utilization of resources in supply chain processes has become a special challenge for businesses, especially in a global environment. Fortunately, the use of artificial intelligence has the great potential to revolutionize such processes and contribute to their optimization. AI applications can help companies predict demand, manage inventory, and automate processes. Artificial intelligence models find application in almost all processes related to Supply Chain Management (planning, sourcing, manufacturing, inventory and warehousing, delivering and logistics, returning) including all actors of the supply chain (suppliers, producers (manufacturer), intermediaries (distributors), retailers, customers). Since global supply chain management encompasses activities from sourcing raw materials, manufacturing, inventory to distribution to end consumers, artificial intelligence can greatly help in increasing efficiency, minimizing costs, improving customer satisfaction and constant monitoring and optimization of the inventory levels. "Inventory bottlenecks lead to delays and reductions in revenue. With the help of AI, businesses can gain complete visibility of supply chain variables and identify the processes that act as bottlenecks" (Cin7, 2022, para.26). Besides, research shows that "marketing and sales, and supply-chain management and manufacturing are among the functions where AI can create the most incremental value" (Chui et al., 2018, p.1).
The next few paragraphs will provide an analysis of several SCM processes that benefit from AI integration (Picture 2).

3.1. Forecasting in Global SCM

One of the rapidly growing technologies in global SCM that offers numerous benefits to businesses is the prediction of various SCM processes. Predictive Analytics enables companies to improve and refine their supply chains in ways that were not feasible before. As the creation of artificial intelligence models is based on large data sets, and the use of ICT in SCM processes makes data increasingly accessible, the use of Predictive Analytics and other AI-based solutions for forecasting and planning within supply chain processes is growing. This will certainly improve production processes, reduce inventory cost, fulfill customer demands, enhance consumer service and expand market share (Naz et al., 2022). Predictive analytics, using historical and current data to identify patterns and make predictions, can improve supply chain analytics, accurately predict demand for products and services, optimize inventory levels, and reduce costs through downsizing of waste (Kassies, 2022). In fact, AI can be used to extract useful information from data in the manufacturing process where large data sets generated without the use of AI algorithms are often difficult to analyze. This means that AI-driven machines are capable of performing a variety of tasks, such as identifying complex patterns, combining data, and predicting outcomes (Wuest et al., 2016). Since artificial intelligence has the ability to automatically process, analyze and make predictions based on data, the application of its algorithms can schedule production to optimize resources and improve demand forecasting (Younis et al., 2022). This allows businesses to optimize the procurement of raw materials resulting in lower costs related to transportation, storage and supply chain management in general (Dash et al., 2019). Predictive analytics, using machine learning, can reduce the time required to solve design problems for manufacturers, reducing the cost of iterations and testing (Bughin et al., 2017).

3.2. SCM processes simulation

The simulation, that is, creating a virtual model of SCM processes, allows for generating different scenarios that will lead to a deeper understanding of SCM operations, better decision-making, and an increase in the overall supply chain

performance. Digital twins assisted by AI algorithms can largely be included in this kind of simulation. A Digital Twin is a dynamic and real-time digital model of a physical entity, such as a product, process, or system. “A digital twin is a virtual replica of the supply chain that can include assets, warehouses and materials. The advantage of a digital twin is it allows supply chain professionals to simulate the flow of materials, acting out a multitude of possible ‘what-if’ scenarios. For example, a digital twin could predict how a supply chain will be impacted if there is unrest in a location where warehouses are located, or if materials get lost due to extreme weather conditions. Creating potential scenarios and watching how each will impact the supply chain provides a unique vantage point to effectively judge risk and efficiency” (Civil, 2022, paras. 3-4). It is built using a combination of sensors, data analytics, and simulation software to capture and monitor real-time data and the behavior of the physical object. The purpose of the digital twin is to develop precise virtual replicas providing capabilities for assessment, improvement, and forecasting (Graessler & Poehler, 2018). A Supply Chain digital twin is a computer model that represents various components and processes involved in the supply chain such as warehouses, transportation networks, and production facilities (Saci, 2022). For example, a digital twin of a manufacturing process can be used to simulate different scenarios and identify potential areas for optimization. When combined, AI and digital twins can create a powerful tool for analyzing and optimizing complex systems and to support product design, equipment manufacturing, medical analysis, aerospace and other fields (Lv & Xie, 2022).

3.3. Quality control

The data collected in the production process can be used to identify product anomalies that will lead to "prevention of critical quality faults" (Schlegl et al., 2021, p.1547), but also to identify equipment malfunctions that can serve as a basis for creating estimates of future system performance (Wuest et al., 2016). Collecting predictive data in the manufacturing process uses various sensors that detect various factors such as vibration, temperature, humidity or sound, and whose data can be used to predict potential defects. As the volume of data from a particular sensor grows, manual monitoring and analysis becomes impractical and unfeasible, making machine learning, and especially deep learning, ideal for predictive data processing (Klein & Bergmann, 2018). Namely, machine learning enables the automated examination of defects in machines and detection of damage through the recognition of certain conditions (image, sound, etc.) on which the ML models were previously trained. This automation results in a reduced probability of delivering defective products to end consumers, leading to improved customer satisfaction.

3.4. Customer services

Artificial intelligence fundamentally changes the way businesses interact with their customers (Pasonen, 2020) and can lead in improving response times to customers and increase customer satisfaction (Hosseinnia Shavaki & Ebrahimi Ghahnavieh, 2022). The findings show that AI allows customers to track their goods across the global supply chain until the final delivery stage and can provide the customers with real-time feedback on product details (Nozari et al., 2022). On the other hand, the use of AI can enhance customer experience by customizing it according to individual preferences (Kaptanoğlu, 2020). Businesses have the option to utilize AI-powered chatbots, which are automated communication systems designed to respond to inquiries and offer customer service. The use of chatbots in customer service applications leads to optimizing customer service and reducing costs for companies (Kinsey, 2019). Instead of manned call centers, AI-powered chatbots with 24/7 support and using NLP standards can answer customer questions in a number of different languages about the status of their orders, delivery and other details providing fast and efficient customer support (Choudhuri, 2021), creating interactions that can be personalized by AI-driven bots (Modgil et al., 2021).

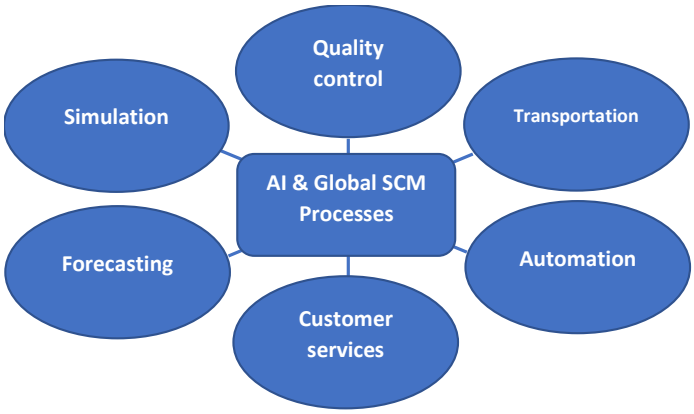
3.5. Transportation

Autonomous delivery solutions have a goal to tackle some of the most complex logistical obstacles, such as reducing the ecological impact of parcel delivery, decreasing the expenses associated with driver’s wages and benefits, overcoming the challenges of reaching remote regions, navigating through the congested traffic of urban centers and improving safety in the supply chain (Everything Supply Chain, 2023). In this context, there are four different types of autonomous delivery solution or autonomous vehicles: autonomous delivery drones; autonomous trucks; autonomous delivery cars or vans and autonomous delivery robots (Lmad.eu, 2022). AI is a critical technology for efficient autonomous vehicles functionality and has significantly enhanced the design, development, validation, and real-time monitoring of Autonomous Vehicles. AI enables effective achievement of perception, path planning, and decision-making in Autonomous Vehicles. The use of AI in Autonomous Vehicles involves determining their routes based on predictive models; learning from past experiences to decide on the optimal speed and path; enhancing the transportation system's efficiency and providing real-time data by various types of sensors (Bathla et al., 2022).

3.6. Automation of the processes

The advancement of AI technologies has resulted in significant progress in the automation process of the global SCM. “Supply chain automation is a broad term that refers to technology that reduces or eliminates human involvement in supply chain activities” (Sherrer, 2022, para.1). The range of automation solutions covers a variety of technologies that can range from solving basic rule-based tasks to sophisticated intelligent systems. Rule-based automation uses

structured data and predetermined rules and responses to generate results. In contrast, intelligent automation uses cognitive technologies to process unstructured and semi-structured data from various sources. It can handle complex tasks by imitating human decision-making processes and constructing new rules to adapt to different situations (The Consumer Goods Forum, 2018). The impact of automation on global supply chain management is most evident in the manufacturing industry. Given the constant fluctuations in demand, manufacturers must frequently adjust their production strategies to remain competitive. Automation has simplified the process by automating much of the documentation involved in global SCM. This allowed factories to produce more goods with less labor and less downtime, resulting in greater efficiency and productivity. For example, an automated warehouse powered by AI, predominantly depends on robotic systems for the storage, identification, and retrieval of goods. These machines are pre-programmed to carry out these duties on a regular basis, resulting in faster packaging procedures and increased levels of productivity. Despite the reduced human involvement, the enterprise operates without any disruptions and business runs more smoothly. Simply put, the businesses can use robotics to perform repetitive, labor-intensive tasks with logical processes empowering their supply chain teams to concentrate on more strategic and decision-making responsibilities. By doing so, they can foster a culture of continuous innovation, keeping their teams motivated and satisfied with their work (Virbahu, 2019).



Picture 2: Applications of AI in Global Supply Chain Management
Source: Author's representation

4. DRAWBACKS OF AI-POWERED GLOBAL SUPPLY CHAINS

Artificial intelligence is still developing, with constant research and development initiatives happening around the world. "But when algorithms begin to create other algorithms, which are then auto-executed, this presents a "black box" scenario. Researchers and AI engineers may not be able to quickly untangle the nuts and bolts of these AI-generated algorithms" (Thomas Insights, 2018, para.6). In other words, alongside the benefits, there are also disadvantages of implementing artificial intelligence in global supply chain management. First, the costs of implementing AI can be very high. Moreover, it is not simple to replace the old technologies and put the focus entirely on artificial intelligence. The whole process requires time and expert knowledge (from software development to data science) in order to implement the system without errors from the very beginning. Besides, artificial intelligence is not a self-sufficient system but humans still need to control it and provide inputs to ensure effortless functioning. The technology is still relatively new and not sufficiently tested, so many unpredictable problems can occur. Moreover, AI needs a lot of data to function properly, so if there is any kind of data problem, it can induce disruptions in the supply chains. Artificial intelligence does not only process information, but the system also learns and becomes more intelligent. AI systems can be very complex and obscure, hence difficult to manage and monitor. AI is a digital system that administers a wealth of sensitive business information. This issue can be extremely important if one does not invest in high-quality protection systems with sophisticated safety mechanisms. Finally, as it automates and replaces tasks currently performed by human resources, AI may impose a number of risks to jobs in the supply chain management industry. Overall, "AI within the supply chain should be carefully considered within a comprehensive risk, contingency, and mitigation matrix. And remember: AI is a tool, and is best used in conjunction with human skills and decision-making processes — not simply as a replacement for human labor" (Thomas Insights, 2018, para.8).

5. CONCLUSION

Global supply chains are imbued with several elements that increase their complexity, viz. government regulations, rising transportation costs, changing customer demands, and some global shocks delivered from events such as pandemics. As already stated, artificial intelligence is one of innovations that aids in optimizing the supply chains by

better predicting customer preferences and reducing costs by automating some recurrent manual tasks. In point of fact, the AI-powered supply chains benefit from several key points that can help transform and develop the businesses around the globe. The (warehouse) automation is one of the foremost benefits of applying AI to control supply chains. Aside from accelerating the work and saving time, AI automation can diminish the number of warehousing staff and save money that would have been spent on salaries. Given the capacity to accumulate, filter, and analyze huge dataset, artificial intelligence is increasingly advancing in inventory management. Reduction of the operational costs is yet another advantage of AI inclusion into supply chains. Most of the work is now automated, which would imply the engagement of fewer people. Besides, technology, unlike humans, can work 24/7 with maximum productivity and reduced number of workplace incidents and mistakes. The application of artificial intelligence in supply chains can also lead to better shipping control. Satisfied customers will not only buy again in the future, but will actively participate in brand promotion. How can AI be used to boost customer service? The answer lies in chatbot technologies - artificial operators are available around the clock and are likely to completely replace humans in the near future. Through machine learning companies can also use predicative analytics. In such manner, firms can identify patterns from historical data and current purchasing patterns for better forecasting. Nevertheless, artificial intelligence comes with some intrinsic risks and drawbacks - the systems can be expensive to implement and hard to manage, and could also cause both potential disruptions to existing workflows and job losses in the global supply chain management industry. While artificial intelligence will surely prove to have more benefits than disadvantages, AI is still only a tool, and as such can best be used only in combination with human skills and decision-making processes.

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ECONOMIC DIVERSIFICATION IN A WAR ENVIRONMENT

Abstract: The dynamics of the environment cause changes (destructive and creative) and require response strategies. Cybernetic balance is a result of homeostasis. Disturbance indicators and the severity of impact cause a multitude of responses. Regress and progress are the manifestations. Response strategies may be different depending on the geostrategic position of the threatened. Is the solution in intellectual capitalism or in the search for new strategies of social justice? Economic structures are looking for ways to function.

Keywords: economy, system, diversification, environment, war

1. INTRODUCTION

How could the destructive activities of the achieved civilizations, at the peak of their power, not find ways of further development and survival, introducing in that way into devaluing themselves, according to the principle of progress, the new incoming forces, in the beginning of their enthronement, increase their destructive effect as much as the strength of the existing resistance grows stronger. The behavior of an organization will not change unless it is acted upon by some external force. We modified Newton's first law.

Rarely is an organization faced with the need to make a significant internal change without some significant degree of influence from external forces acting from the environment and related to it. The reasons for their acceptance as well as active feedback can be found in the environment. Under the influence of the main categories of real and potential customers, the company's internal reaction to challenges coming from outside is realized.

Depending on the amount of changes and their intensity in the behavior of organizational systems, the reaction will be directly proportional to the amount of effort put into the organizational system, which is in accordance with Newton's second law, which we have also modified. The bigger and wider the turbulence, the stronger the need to react. Any type of imbalance requires homeostatic behavior of both organizational systems and its structural subsystems. Behavior in a war environment is difficult to predict, but a reaction "before the fact" is the basis for avoiding surprise.

2. RESPONSIVENESS OF THE SYSTEM AND DECISION-MAKING SPEED

Changes and pressures in and around the environment raise the question of the effectiveness of different types of changes due to the fact that it is quite clear that a major change in strategy requires major changes in the sources of obligations. This procedure is not automatically followed by the required behavioral changes. Diversification also requires diversification of behavior and responses.

In the processes of striving for cybernetic balancing, through the elimination of disturbances that have the characteristic of changes. "The organization's resistance to change will be of the same value but in the opposite direction to the amount of effort invested in its change" (Davidson, 1995, p. 25). Depending on internal cohesion and its stability, continuously observed development processes, which correspond to natural behavior, are easier is to follow the

dynamism of the environment and its development chances as caused or intended changes. The development intensity is generally stronger if the organization's culture is stronger. The behavior of the organization can be twofold: either to channel external resistance and influences or to enter into the areas of other activities through diversification, depending from the degree of its flexibility i.e. the ability to change. Depending on the strength of the agents of change, the chance in making strategic decisions depends. The perspective can be: small chances or big chances, depending on the position on the matrix of chances and dangers. With increasing the level of culture in the expression the effects of production work will undoubtedly increase the competitive position of the company and the economy de as a whole. Maintaining high success is a manifestation of a company's competitively healthy position. In war conditions, the principle of sufficiency comes into play.

The transition to business in irregular conditions, of which wartime conditions are determinants of behavior and the decision about it as a form of quick response, can be imperative or adaptive. Speed, as a form of encountering changes and making decisions, must be at least as a form of acceleration - the first derivative of the velocity vector. With the passage of time of irregularity, there is a continuous and concerted acceleration of decision-making, whether it is a large social system or the economy as a whole and its subsystems down to the enterprise and the workplace.

In disruptive situations: war; floods; fires; pandemics, etc. setting up a hypothesis, testing it, pilot research as well as the decision itself are unverifiable, but they can be confirmatory - affirmative during implementation or fiasco - trope, wrong - unrealized.

Irregularities in the functioning of economic systems in irregular conditions are consistent with irregularities in so-called regular conditions when crises arise. Crises generally occur in both situations as errors in the assumed continuity (Todosijević, 2010; Kontic, 2006).

In complex organizations, maximization is never possible, both due to the insufficiency of quality information, as well as their inaccuracy, and due to the fact that the decision cannot be tested. The decision is essentially made on the basis of system decomposition, which implies making a decision on the basis of a small amount of information with a high degree of reliability, so that the outcome of the decision is as if we had made it on the basis of the totality of information. We assess the degree of sufficiency and likelihood of risks and outcomes. We can never have the totality of all relevant information, which would mean that we would not make a decision. A decision cannot be made!? In the last resort, someone has to arbitrate. In the coordination of decisions, decentralized parts of the system, due to the action of the theory of limitations, which the organizational system faces, the coordination of decisions with regard to goals is also necessary, and then the activities and the result can be described as satisfactory and not as maximizing.

Simon (1997) states that deciding in real situations about acceptable activities must satisfy a whole series of requirements and limitations. A set of activities appears as an arbitration category because management problems must be broken down into sets of subproblems (subsystems) at which level decisions will also be made. Decentralization of decision-making leads, as a rule, to local rationalization within a certain problem of organizational subsystems. The concept of limited and limited operations is very simple. and directly puts it in the epicenter of the analysis of the rabbit, that people have a limit that no one knows room, it will not limit the power to look at it and compare all the alternatives, in for lack of knowledge about future duties, as well as lack of skills to access information about work (Aleksić, 2007). When, through decomposition, the decision-maker decides on one segment of a certain problem and with a limited number of goals, local optimization action is possible. It is unlikely that the same can lead to overall optimization (Todosijević et al., 1994).

According to Cyert and March (1992), the temporal approach between decision situations "provides" the system with a convenient mechanism for avoiding the explicit resolution of conflicting goals.

In the behavioral theory of the firm (there is no time for other theories due to the imposed need to react quickly in order to avoid any possible surprises), goals appear as "independent compulsion" but also limitations that are imposed on the organizational system as a result of bargaining (agreed decisions) of potential coalition members of participants in problem solving (Todosijević et al., 1994).

Changes in the environment also lead to changes in coalition structures and the way they react. If competitive weakness caused crisis in a company with medium competitive position, top management would select external strategies. The attributes of successful recovery strategies are often inferred from the actions taken in high profile successes: quick and forceful decision-making, deep cost cutting, and divestitures. While interesting, such perceptions are neither universally accurate nor consistently beneficial. They do provide recommendations for managers of companies facing declining business performances (Kontic et al., 2012).

3. A BRIEF REVIEW AT THE ROLE OF RESOURCES

Without the intention to classify and identify them, we present a short summary assessment of the role of resources as a reason for irregular - warlike events. Keep your own, steal from someone else's. The end justifies the means, we have Machiavelli's attitude. By increasing wealth, force and power are constructed in order to preserve and increase what has been acquired. And there is globalization, but gently, with capital based on whose sensors they have constructed an algorithm for penetration by grace or force.

Resources have always been the cause of reaction throughout the history of human civilization in all weather situations and geographical and spatial environment. Today, it is mostly manifested through globalization as an expression of force and power. Poverty and hunger on the one hand and abundance and affluence on the other deepen inequalities. The reaction is rebellion and conflict. The outcome is devastating.
Why do wars happen when it is known that after every war there are negotiations. Why do negotiations have no anticipatory response but are always the result of success or failure in war? The reason for war is always the same: threat to interests or desire for domination and display of power. In a word, greed as a cause is unfortunately a "motivational factor" which is followed by a reaction due to threats and there is war. Sometimes wars are justice and protection. The parties to the war never have the same attitude about him. Failure to remove the causes and disinformation and here are the tragic consequences.
If the gap in the relationship "greediness - sufficiency" deepens, there is war, but as a rebellion, that is, a revolution, which corresponds to the basic biological as well as civilizational laws on the domination of the species. "The western dominance and monopolisation of natural resources has caused an unlevel playing field for development, economic advancement and climate change in the region through the imbalance of power in the oil market" (Saidin & O'Neill, 2022, p. 3756). Some authors have argued that it is either resource wealth or resource scarcity, but not both, that gives rise to conflict (Renner, 2002).

The geographic spatial frameworks of the distribution of both inputs and outputs in wartime conditions are as a rule limited, thus narrowing the spatial variations for business activities depending on the level of economic performance.

4. REVIEWS OF SOME VIEWS ON THE CAUSES OF CHANGES OF DESTRUCTIVE CHARACTER

Every autonomous change, carried out as an order or a creative one, has two mutually opposite effects. Similar to technical progress: it affirms or devalues. There is no absolute progress without relative regression.
In critical moments, "you must have the best possible people in critical positions. One good man is, of course, much better than a hundred fools" (Menadžer na mafijaški način, 2018, p. 69).
There are no pilot activities - only dress rehearsals and not even that. Immediate reaction depending on the level of risk that can be controlled. Reacting subsystems in unstable conditions leads to political obedience and is put into the function of algorithmization of political goals. Innovation as an achievement requires special treatment. Protection against the harmful effects of innovation requires complete mastery of innovation. Management, learning and other cognitive activities at a distance do not devalue the space.
If reason does not oppose the futurophobists in an extreme performance, it may suffer the fate of Muammar el Gaddafi. Probably, among other things in "disobedience", alone without support, the following statement cost him his life: "They will create viruses themselves and sell you medicine. In the process, they will pretend that they need time to find a solution that they already have". This statement corresponds with Wiener's view on the concentration of media power.
Social control and collective resistance to excesses are necessary. The threat of compromising what has been achieved historically, for example vaccines and vaccinations, by non-human profiteers and amateurs. In connection with the above, we quote the statement of Mahatma Gandhi (1869-1948): "Seven things that will destroy us: wealth without work; pleasure without conscience; knowledge without character; religion without sacrifice; politics without principles; science without humanity, business without ethics"?!
Warfare strategies (conflict, competition, misunderstanding, non-cooperation) carry with them the assumption of interruption in the availability of inputs. The process stops. There is no chamber - identity card, no oil, no ammunition, no raw materials and materials, people are running away, no energy. It is only a question of concretizing the state of war: "gunpowder or money".
Cecil Rhodes, King of Diamonds and Nathaniel Mayer Rothschild in 1891. founded a secret society to restore ties between Britain and the United States. The goal was to dominate trade, industry, banking and exploit other countries, so that the achieved power would not decrease. The opponent is the growing power of Germany. By cutting supply lines and propaganda, war with Germany took place. The largest Guild was paid by Serbia.
The British demystified themselves "... Every sword drawn against Germany is a sword drawn for peace", and then they pointed out for the First World War that it was "the war to end all wars". By preventing the import of food into Germany, the British exposed large masses of the German population to starvation and malnutrition. https://www.standard.rs/2020/04/17/hoce-li-korona-probosti-dolarski-mehur/ 04/17/20. 21:58
German U-boat warfare was a desperate response to the British blockade – otherwise so effective that it threatened to knock Germany out of the war. America's supply lines come from China. Consumer goods, consumer electronics and many other IT "toys" including medical and technological equipment carry the "Made in China" label. Only in the last 100 years has China not been the strongest economic power in the world. The Anglo-Saxon elite is threatened and that is why the reaction against advanced technologies and military penetration into the cosmos, the mobilization of Europe against China, the blocking of cooperation between Germany and Russia, the blocking of energy sources and markets. *Kriegssozialismus* (war socialism), and the lack and "endangerment of democracy", for the last 80 years of human civilization, are recipes for war escalation (Korea turned into two; Vietnam: North and South, one again, Laos,

Cambodia, Burma, Greece, Cyprus, Egypt, Palestine, Sudan, Ethiopia, Congo, Bangladesh, Chile, Argentina, Falklands, Afghanistan, Kuwait, Iraq, Yugoslavia, Libya, Syria, Cuba, Brazil, Soviet Union, etc.). In the development scenario of the West for 80 years, there is a general attitude of "continuous maintenance of the conflict situation". In the theory of development, conflict is a condition for the emergence and confirmation or elimination of change as a state of process and/or progress. In Western philosophy, conflict is a condition for survival and duration. Production and mobilization of all kinds of resources, especially propaganda, is the main output. Crises have a cyclical character and two main forms: Kondratjev cycles and hegemonic cycles (Todosijević & Todosijević, 2020). The cycles of Kondratyev arise, last, disappear and reappear, the latter do not stop timelessly. They are guided by the logic of capital, as the cause of all social and world inequalities, which was written about not only by Thomas Piketty... All around us in the cycle of time, events are eternally unfolding. In an unbroken sequence, as Marx says, "the consciousness of the buried generations rules the heads of the living." Disappearing generations give way to emerging generations. Development will continue and take place in proportion to the mass of knowledge left to us by the previous generation. It is the legacy of the departure and the starting position of the performance. The future and its construction require wisdom, not illusions. "I don't try to predict the future, I try to anticipate it", once wrote Ray Bradbury, then rector of the University of Chicago.
George Orwell 1984 probably had in mind the relationship: Moscow-Paris-London, building on the thought of Napoleon and Says: "every stroke of the ball-point pen is a calculated lie" (Orwel, 1984, p. 167).
Long before, Napoleon and France harbored a hatred of the English: "When united, the French nation was never defeated; but our neighbors, corrupt and calculated, abused the openness and loyalty of our being, they constantly sowed rebellion in our ranks, from which all the misfortunes of that time arose, but also all the failures in our history."
In 1804, the English helped the Turks, not Karadjordja. In 1804, Russian Emperor Alexander I gave instructions to his ambassador in London, Novosilchev, in negotiations with the English government for an alliance against Napoleon, where it is said:
"The most powerful weapon that the French have used so far, and with which they still threaten all countries, is the general opinion, which they managed to spread in the world, that their cause is at the same time a matter of the freedom and well-being of the people... The well-being of humanity, true The interests of the national authorities and the success of the enterprise which our two powers are trying to achieve, require us to wrest this terrible weapon from the hands of the French, to appropriate it for ourselves and to use it against the French themselves. We emphasize again: while the truth finds its way, the lie travels around the world".
Norbert Viener (1972), the creator of cybernetics, a pacifist, stated in his chapter: "The decisive factor in the development of activities that led to the development of cyberspace was war." (Viener, 1972, p. 3). Wiener and Julian Biglow, based on the theory of prediction, set the goal of solving the problem of automatic guidance of anti-aircraft batteries by constructing a curve of the most probable future movement of the aircraft." Viener, 1972, p. 3). This is an attempt to automate, until then, purely intellectual functions. The intellectual climate was favorable to the development of cybernetics, but it also caused sharp schematic collisions of an interdisciplinary character. The war research group from 1943 in America, which led by Dr. Warren Weaver, published a paper, first secret, by Wiener and Byglow on prediction devices in wavelet filters (Viener, 1972, p. 3).
No one can resist progress, because the greater the resistance to changes and progress, the stronger the destructive power of progress. We have already delivered the message: we need to meet progress, selectively in relation to its breakthrough and effect, but also in relation to the ability to master it.
Crises caused by epidemics happened periodically, but they had the greatest impact on the mobilization of knowledge and learning in the function of protection. Vaccines were introduced in 1943, polio in the 1950s, rubella and others in the 1970s. Researchers are not resting, but neither are pharmaceutical companies. There are also cyberists and mind deviations !? Could all the hungry on earth be fed? And it would overtake the profit. Marx is right, "because those who work in it (society) do not gain anything, and those who gain in it do not work" (Marx & Engels, 1979, p. 58).
In irregular conditions, the regional economy and the revival of the significance of the location form a symbiosis. Regardless of the fact that the new macroeconomics affirms the strategy of supply, the cyber balance between supply and demand must not be deepened, and even then, the strength of supply, even in stocks, seems encouraging.
Wiener foresaw the creation of the most powerful weapon of today. (Concentration of media powers) and Robert Cooper (2003) states that "postmodern states function among themselves on the basis of law and open collaborative security Cooper, 2003, pp. 123-125). But when it comes to the more old-fashioned forms of the state outside the postmodern borders, Europeans must return to the cruder methods of the older age, force, first strike, deception... In the jungle, everyone must use the laws of the jungle."!? (Cooper, 2003, pp. 123-125). There is no human response to attitudes without cover. In the First World War, all British soldiers wore the same uniforms, but when it was time for breakfast, lunch,... on one side, there were white soldiers and colored soldiers on the other. And the quality of the food was different. Serbian soldiers shared part of their ranks with colored British soldiers. And now what!? Human rights!?.
Results of Le Billon's study (2001) showed the linkages between natural resources and armed conflicts had criminal character of their inclusion in international primary commodity markets responds to an exclusionary form of globalisation.

DIVERSIFICATION OF BUSINESS ACTIVITIES AS A RESPONSE TO THE CHANGE

The reallocation of economic and overall social resources, that is, their structural rearrangement, is a necessary reaction to almost every type of identified instability and destructive effect of the causes of change. As a rule, the output schedule will follow a set of objectives. The explanatory variable, a necessarily derived category, as a result of the specification of econometric relationships, requires, not only in the form of net present value, but also a series of previously deferred values, to construct as goals the pace of redirection of distribution and input and output in favor of forced diversifications (Pierce, 2005, p. 74).

The results of analysis of the literature in domain of the evolutionary economic geography pointed to various factors as well as diversification processes as a driver of economic growth (Pylak & Kogler, 2021). The case study of Poland in period 1931 to 2000 had been analysis by Pylak & Kogler (2021). The results revealed that diversification based on knowledge-intensive-related industries were conducive to growth.

Typification appears as a form of assortment selection, but not its impoverishment, in favor of sharpening one's own capacity profile and production profile. The process of regional narrowing is carried out, and the more complex the product category, the more difficult the narrowing process is, especially in terms of geographical space. The regional aspect in unstable conditions comes to the fore. As location factors lost their importance with the penetration of digitization, irregular events (wars, floods, fires, epidemics) reaffirm them. The narrower location and concentration of problem-oriented resources are especially important in the creation of a new, autonomous, even challenged, desirable, quick-reacting economic structure. The European value system (!?), without the value matrix is a familiar phraseology.

We have a war in the neighborhood, but it is not a surprise, because careful analysts could have overlooked it. This was followed by a rapid realignment in terms of supplies, overnight proclaimed strategic resources, whether they are on the input side or the output side. The first reaction is the creation of stocks and then savings, and targeted distribution. Without the state, nothing happens. Inequalities are reinforced and follow the politics of priority as a cause of disruption. There is a need for an efficient inventory management policy and a changed economic structure, because inventory contradicts economic efficiency.

Observing the technical and technological achievements, the pace of development and the intensity of application, unprecedented in the processes of economic development, the derived dynamics show us that the time from discovery to mass application is significantly shortened. It took 112 years for photography, 56 years for radio, 6 years for television, and only a week for maser. New applications on computers, tablets and mobile phones experience affirmation with each new model almost immediately. Increasing the capacity of the broadcaster's offer requires the appropriate capacity of the receiver (telephone), which means that technological improvements themselves devalue and promote innovative achievements. It is a matter of combinations and interactions of various technological improvements. Through computers, robotics, digitalism, information technology, energy, telecommunications and environmental technologies, a dominant influence on society is achieved. Networks are an aid. There are sets of innovations and sets of changes happening. The most important thing is to meet them and that's the challenge for diversification. Compass strategies define new landmarks. Irregular conditions, which are assumed to last, lead to a reduction and narrowing of complementary capacities. Then there is a break in the spatial environment with accompanying other capacities and on the basis of the capacity profile and especially on the basis of the production profile. If diversification in the processes of creation led to the process of increasing the industrial structure first, and the increase in concentration also resulted in regional expansion as a form of approach to locational factors, which created opportunities for additional acquisition and distribution of resources, in irregular conditions we have the reverse process and strengthening of control . Diversification at the regional level is also aimed at expansion as a form of stabilization and creation of conditions for increasing the level of employment. Depending on the level of duration of instability, regional, sectoral, directed or autonomous diversification is confirmed or challenged in relation to the strength of the resistance acting on it.

With turns in production profiling, diversification is carried out at the company level, while investments follow capacity profiling as a degree of own technical roundness. Based on the level of independence, further forms and breadth of production and business cooperation are decided. (We list only some innovative achievements from the recent past: Internet - created in 1969 as Arpanet - military communication network; Mobile phone, Skype, Viber, WhatsAppo, and countless accompanying applications... PC - revolution and miniaturization processes; Optical fiber - fiber phone calls have become cheap wherever you call; E-mail; GPS device; Laptop; CD/DVD; Digital camera; RFID; Microelectromechanical systems; DNA printing; Air bag; ATM; Advanced batteries; Hybrid car; Display panels; High definition TV ; Nanotechnology; Spacecraft; Flash memory, Voice messages; Hearing aids; HF radio of low range, and others.

The technological boom and the achievements of science play an increasingly important role in the processes of economic and social development. Evolutionary economics and digital Darwinism have brought with them exponential growth and progress, which has already passed into the daily routine, and corresponds to the law of exponential growth of science and the necessary transition to logistics.

Do scientific and technical technological achievements contribute and lead to diversification, especially in industrial enterprises. The answer is certainly yes to both, with the necessity of controlling all the changes occurring. We state this because of the fact that innovation processes and achievements of technical progress ignore the fact of their destructive

characteristics. It is a question of the degree of evaluation of the contribution of their performances in relation to the existing ones and to the overall quality of the output.
Diversified risk is a category derived from the functional degree of functioning of existing economic data. This requires the diversification of the business portfolio of the organization and the system in general.
Management by means of an exception allows activities on “standoff” (Todosijević, 2010, pp. 14-15); and requires continuous monitoring of the information system so that a false sense of security is not gained as a result of the absence of reporting. Management by exception appears as normal objectivity in conditions of irregularity, either creative or destructive of changes coming from the environment. Then crisis management is also possible.
A prescriptive approach in strategy development proves to be necessary and not only in wartime conditions. Long-term monitoring is necessary and requires the following algorithmic steps: environmental analysis; defining vision, mission and goals; development of options; rational selection; identification of the strategic way forward; realization in space and time; control of the functioning of the organization. “We emphasize that complex concepts are not built from simple concepts, but simple concepts are abstracted from complex concepts. Logical positivists are wrong when they try to unify science in such a way as to logically reconstruct it from the units into which it was broken down. Views that our knowledge related to the complex develop from our knowledge about the simple are simply not correct, because inference based on induction is not possible” (Todosijević, 2010, p. 305).
In irregular situations, goals are redefined. Then the emphasis is on synthesis of goals and concentration of efforts. A prerequisite for a "new" strategy is a way of thinking that directs us only towards achieving results. Profit is not mentioned. However, as a rule, there are achievements in organizational, group and individual advancement. Due to the turbulence in the environment, which can be the result of the effect of technical progress, competition or crises of varying intensity, the company’s position and environmental factors are relativized (Todosijević Lazović, 2015).
More recent research on behavior in the conditions of the emerging and current crisis shows that the presence of danger, as an opportunity for forecasting, and even the prognostic judgments themselves, did not lead to changes in the behavior of companies (Todosijević, 1995, pp. 307-315).
Reactions occurred after the facts, even in the conditions of the existence of reliable forecasts. competition and other irregular conditions: war, floods, fires, pandemics, etc.), must be integrated into the organizational structure and into the flow of the organization's goals.
In wartime conditions, diversification in industrial enterprises and primary activities in general are, as a rule, a forced category. There are changes in the criteria of demand, a necessary reaction on the side of motivation is coming. This is especially true for agriculture, the food industry, dedicated (military) production and a range of related production activities and services. The protection of the energy, telecommunications sector and the overall infrastructure, which enables the efficient functioning of all activities, must be at the level of generally functioning mobility. Everything is placed and concentrated in the function of satisfactory certainty. Communication means and connection systems are given particular importance.
The atomic bomb, the “Manhattan” program, Los Alamos, the concentration of politically eligible scientists, the introduction of unprecedented spending on the financing of nuclear programs is both an innovation and an event. The first results of a destructive character are over 100,000 dead in Hiroshima and Nagasaki, the first victims of Japanese cities.
Flu vaccines, ballpoint pen, Penicillin, Jet engines, Blood plasma transfusion, Electronic computers, Radar, scanner, magnetic resonance, ultrasound devices, etc. Cosmos is a new economic spatial destination - artificial satellites, spacecraft and stations. Great achievements. It seems to us that the greatest discovery is Cybernetics and man's effort to create and master artificial intelligence on the basis of medical cybernetics - the way of biological functioning of living beings, and the theory of prediction. Strategic management as a generic sum of knowledge, at the head of management technologies as the oldest in order: mechanical, energy and information technology, finds its biggest support in cybernetics as its corrective factor. We happened upon a chip and a biosensor. We are on the threshold of the discovery of the bio chip and the quantum computer. An unexpected “acceleration rate of acceleration rate” occurs, the fourth derivative of the velocity vector. Mastering achievements is an obligation so that they do not turn into their opposite. There is also optronics - converting photon light into electricity, solar power plants, seas and oceans as strategic sources of supplementary resources. Deuterium, heavy hydrogen, which is abundant at the bottom of the ocean, with a controlled thermonuclear reaction, would provide abundant energy. The sun sends more energy to the earth in a fraction of a second, greater than the total production of the earth. The problem: it is not concentrated - it is scattered.
Ceramic diesel engine, new composite materials, miniaturization of production technological processes and substitution of raw resources, progress in agriculture and food industry.
The intellectualization of services and the secondary and tertiary sectors forced the diversification of “benefits”. War and irregular conditions impose diversification of obligations. Command strategies are emerging. “Stability is one of the most important features of system behavior and is a fundamental concept used in physics, biology, technology, economics, and cybernetics. The concept of stability is used to justify the permanence of some characteristic of the system's behavior.” (Lerner, 1975, p. 61).
With each innovation, regardless of the area of affiliation, a new algorithm of their achievements is projected, including the elements of desirable dispersion.
We list only some of the innovative achievements that we can remember: Walkie Talkie; Duct Tape - Duct Tape; Microwaves; Cargo Pants; Aviator Glasses; GPS; EpiPen; Meteor radar; Jeep; Ambulance and First Aid System; Blood Bank and Transfusion; Quartz watch; Orlon, Perlon Krylon, Nylon, Penicillin; Canned Food; Super glue; Digital

photography; 3D printer; Microbattery; smart technology; Canister; Television cameras that can record contents invisible to the eye; RC (Radio Control) – Remote control; Computer. Artificial intelligence has its own analogy in performance. Biology is the basis for constructing artificial intelligence products based on the principle of the human brain. "Living systems are macroscopic, multimolecular formations, within which an intensive exchange of information takes place, where the transfer of information from one stable system to another in the process of evolution (hereditary information) is characteristic". (Parin & Bajevski, 1966, pp. 67-68)

We cited the previous quote, because even in the development process of economic systems, existing products, including technique and technology as a product, represent the basis for innovation in their areas, so that we follow the evolutionary processes of the biological world. Everything else, as a form of events and exchange of information, are derived categories, which correspond to each other, including the forms of "disorganized development" - diversification, which is usually dictated by the degree of complexity of the final product and geopolitic events and the strategies caused by them. The results of empirical study showed that management support will be a key factor of faster economic renewal of Serbian companies thought corporate entrepreneurship strategies (Kontic et al., 2022).

Many companies restructure their operations, either on the basis of successful or unsuccessful diversification, in order to concentrate on the core links of their own value chain while the less important ones are organized outside the system. Broadly diversified firms often consider reengineering strategies to focus on core business areas. Business position is the result of business attractiveness. If the company knows the goal, the algorithm can always be set.

CONCLUSION

Homeostaticity and development, complete or structurally chosen, in the cybernetic and evolutionary sense of duration and survival, are the main characteristics of the organizational system. This is especially true for the main producers of value creation and increase. Changes in conditions in the external environment, the degree of openness and the dynamics of the environment relativize the existing state and cause changes when a reaction necessarily follows. Reaction to turbulent situations is actually a form of adaptation and active feedback of companies and organizational systems in general. At the same time, it is also a type of intelligence of the system itself, which determines the ability to choose goals. Strategies are derived as well as imposed categories. The system strives for survival and duration.

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УТИЦАЈ ОРГАНИЗАЦИОНЕ СТРУКТУРЕ НА ИНОВАТИВНОСТ ПРЕДУЗЕЋА

Апстракт: Способност једне организације да иновира детерминисана је дејством бројних фактора из интерног и екстерног окружења. Сврха овог рада је да се анализира утицај организационе структуре као елемента интерног окружења и њених димензија на иновативну способност предузећа. Циљ рада је идентификовање организационе форме која подржава креативност, иновативну активност и поспешује имплементацију иновативних решења у предузећу. Налази у раду указују на значајан утицај појединих димензија организационе структуре на иновационе способности, као и на чињеницу да поједине организационе форме не представљају адекватно решење за организације које настоје да унапреде иновационе перформансе. У раду је примењена *desk-research* метода, при чему су као извори података примарно коришћени радови и публикације из научних часописа и друга стручна литература.

Кључне речи: иновација, организациона структура, формализација, комуникација, централизација, организациона култура

THE INFLUENCE OF THE ORGANIZATIONAL STRUCTURE ON COMPANIES' INNOVATIVE ACTIVITY

Abstract: Numerous external and internal factors determine an organization's ability to innovate. This paper aims to analyze the impact of the organizational structure as an element of the internal environment and its dimensions on companies' innovative ability. The goal is to identify an organizational form that supports creativity, innovative activity, and the implementation of innovative solutions in the company. The findings indicate a significant influence of certain dimensions of the organizational structure on companies' innovation capabilities and the fact that some organizational forms do not represent an adequate solution for organizations that strive to improve innovation performance. The desk-research method was applied, where the primary data sources are papers and publications from scientific journals and other professional literature.

Keywords: innovation, organizational structure, formalization, communication, centralization, organizational culture

1.УВОД

Организације данас послују у изузетно турбулентном и динамичном окружењу. То окружење карактеришу брзе технолошке промене, променљиви захтеви и потребе потрошача, глобализација и хиперконкуренција. У неизвесним условима пословања способност предузећа да се константно прилагођава променама које диктира окружење постаје основни услов за опстанак, раст и развој, а иновација базични извор конкурентске предности (Porter, 1985).

У стручној литератури заступљена су различита тумачења појма иновација. Не улазећи у детаље различитих приступа у овом раду се полази од става да иновације могу значити успостављање нових начина производње, набавке и дистрибуције, као и увођење новина у процес управљања, организациону структуру и културу, вештине и знање запослених. Најједноставније речено иновације су активности, подухвати и мере којима се подстиче квалитет и унапређује продуктивност и конкурентност (Лазаревић-Моравчевић et al., 2022).

Способност да се иновира детерминисана је дејством бројних фактора који делују у интерном и екстерном окружењу. Један од тих фактора је и организациона структура. Организациона структура може бити дизајнирана на начин да подржава, али и да ограничава иновативне активности организације. Уважавајући речено аутори рада полазе од претпоставке да сви модели организационе структуре нису једнако стимулативни за настанак, развој и имплементацију иновативних решења. Вертикалне организационе структуре са израженом хијерархијом и централизацијом не поседују адекватан ниво флексибилности, те стога не могу бити ефикасно решење за савремене организације. У динамичним условима пословања фокус се ставља на флексибилност као битну детерминанту која одређује способност предузећа да прихвати и да се прилагоди променама и да на њих одговори на креативан и иновативан начин. Ту способност могу имати искључиво организације у којима доминирају обележја органских (адаптивних) система.

2. ДИЗАЈНИРАЊЕ ОРГАНИЗАЦИОНЕ СТРУКТУРЕ

Организациона структура се најједноставније може објаснити као формална подела послова унутар организације (Robbins & Coulter, 2005). Она одређује извршну, менаџерску и административну организованост фирме и указује на одговорности, хијерархијске односе и везе (Dess et al., 2007). Организационом структуром се одређује начин на који су контролисане, делегиране и координиране улоге и моћи, као и токови информација. За организациону структуру може се рећи да представља расподелу улога и административних механизама којима се олакшава контрола и интегришу организационе активности (Hall & Saies, 1980), односно она може обухватати „систем задатака, радних токова, односа одлучивања, извештавања и комуникационих канала који у организацији повезују различите појединце и групе у заједничким напорима да се остваре организациони циљеви (Ерић, 2013, стр. 352)“. Битна детерминанта организационе структуре је организациона култура (Мицић, 2012). Између ова два елемента интерног окружења владају односи међузависности (Драгнић et al., 2003), што указује на чињеницу да одређени тип организационе културе може утицати на избор и примену одређеног модела организационе структуре, али и да промена одређеног модела структуре условљава прилагођавање организационе културе (Јанићијевић, 2012).

Дизајнирање организационе структуре је под утицајем великог броја фактора који делују у интерном и екстерном окружењу. Mintzberg (1979) истиче да креирање организационе структуре детерминишу власништво, величина и старост предузећа, технологија коју предузеће користи, стратегија и окружење. Окружење и стратегија имају значајне импликације на организациони дизајн. У савременим условима пословања запажање да структура прати стратегију (Chandler, 1979) еволуирао је у став о међусобном утицају стратегије и структуре, као и њиховој зависности од окружења у коме се предузеће налази (Петковић et al., 2008). Под утицајем бројних фактора из екстерног окружења организације су приморане да константно преиспитују постојеће моделе пословања, модификују стратегије и новом стратешком опредељењу прилагођавају организациону структуру. Такође, одређене појаве у организацији могу указати на потребу за променама организационог дизајна: 1) Споро реаговање на дешавања у окружењу; 2) Неефикасан процес одлучивања; 3) Недостатак вештина и знања; 4) Непостојање јасне поделе рада и нејасна улога појединца; 5) Неконзистентна, нејасна и неефикасна комуникација; 6) Интензивна појава дисфункционалних конфликата; 6) Низак ниво морала и мотивисаности запослених (Ерић & Стошић, 2013).

Значајан утицај на дизајнирање организационе структуре има и савремена технологија. Улогу информационо-комуникационе технологије (ИКТ) потврдила су и дешавања изазвана појавом пандемије корона вируса, када су предузећа била принуђена да проналазе нове начине и приступе за стабилизацију пословања и да се више него обично ослоне на савремена технолошка решења (Лазаревић-Моравчевић et al., 2021). Комуникациона технологија утиче на све димензије организационе структуре (Лукић, 2016). Њено увођење условило је аутоматизацију одређених послова и активности, ефикасније учење, размену информација и знања. Усвајањем ИКТ стичу се услови за креирање плићих структура, са мањим бројем хијерархијских нивоа, ширим распоном контроле и ефикаснијом комуникацијом.

Аутор Mintzberg (1979) истиче да дизајнирање организационе структуре подразумева доношење одлука које се односе на одређивање нивоа специјализације и формализације, груписање јединица, одређивање система планирања и контроле, повезивања, нивоа вертикалне и хоризонталне децентрализације (Mintzberg, 1979). На сличан начин процес дизајнирања објашњавају и аутори Robbins и Coulter. Њихово мишљење је да организациону структуру чине следећи елементи: специјализација, департментализација, распон контроле, ланац командовања, централизација/децентрализација, формализација (Robbins & Coulter, 2005).

Специјализација показује степен до кога су задаци у једној организацији подељени у посебне послове. Са једне стране она условљава раст продуктивности на појединачном и на нивоу организације, са друге може резултирати и супротним ефектом. Обављање истог задатка, који је по природи једноставан и монотон, код запослених изазива стрес, досаду, умор што за последицу често има смањење продуктивности. Недостаци високог нивоа специјализације могу се отклонити периодичним премештањем запослених са једног на друго радно место (ротација посла), увођењем различитих задатака које радник обавља на радном месту (повећање посла), делегирањем ауторитета и контроле за обављање посла (обогаћивање посла) и тимским радом (Stoner et al., 1997). **Департментализација** је основа по којој су послови груписани у организацији и она подразумева поделу рада и радника у посебне организационе јединице одговорне за извршење одређених задатака (Williams, 2010). Пет уобичајених форми департментализације су: функционална департментализација, производна департментализација, географска департментализација, департментализација према купцима и матрична департментализација. **Ланац командовања** је линија ауторитета која полази од горњих организационих нивоа ка нижим нивоима и јасно показује ко је према коме одговоран. Према принципу јединства команде појединац је одговоран једном менаџеру. **Централизација и децентрализација** показују колико је аутономија доношења одлука у организацији концентрисана или распршена (Damanpour & Gopalakrishnan, 1998). Уколико је у организацији највећи део надлежности, односно ауторитета задржано на вишим нивоима, одлучивање је централизовано. Са друге стране, уколико је у организацији присутан висок степен делегирања ауторитета, односно преношења надлежности и одговорности на ниже нивое, одлучивање је децентрализовано. Организације никада нису у потпуности централизоване или децентрализоване. Пракса је показала да је виши ниво централизације заступљен у великим системима који послују у стабилним окружењима. Такође, централизованом одлучивању се прибегава у кризним ситуацијама, када су одлуке изузетно битне или их треба донети у кратком периоду, али и у ситуацијама када менаџери на нижим нивоима не желе одговорност или не поседују довољно знања и искуства. **Распон контроле** показује број запослених које један менаџер може ефикасно да контролише. Ширину распона контроле одређују бројни фактори: комплексност и сложеност послова, способност запослених, физичка близина запослених, ниво стандардизације и формализације. Ужи распон контроле подразумева већи број хијерархијских нивоа, док шири распон условљава плићу организациону структуру (Каменковић & Лазаревић-Моравчевић, 2018). Тренд је да све већи број организација настоји да имплементира равну организациону структуру са ширим распоном контроле (Петковић et al., 2008). **Формализација** наглашава значај поштовања правила и процедура у вођењу организационих активности (Damanpour & Gopalakrishnan, 1998), односно она показује меру у којој су послови прописани и стриктно одређени. Формализација је уско повезана са стандардизацијом.

У зависности да ли је одлучивање централизовано или децентрализовано, да ли је распон контроле шири или ужи, до ког нивоа се спроводи подела рада и специјализација, све организације се могу класификовати у механистичке (бирократске) и органске (адаптивне) системе. Механистичке моделе организационих структура карактерише висок ниво специјализације, крута департментализација, ужи распон контроле, централизација, висока формализација и нефлексибилност (Robbins & Coulter, 2005; Dess et al., 2007). Са друге стране, органски модел организационе структуре подразумева шири распон контроле, делегирање ауторитета, слободан проток информација и низак ниво формализације. Реч је о структурама које су децентрализоване и усмерене ка променама, организационом учењу, креативности и тимском раду. У поређењу са бирократским системима ове структуре карактерише висок ниво флексибилности, односно могућност бржег и једноставнијег прилагођавања променама у окружењу. Уважавајући речено може се констатовати да што је окружење динамичније неопходно је да структура буде више органска, а мање механистичка. Наведеним ставом могуће је објаснити чињеницу зашто су организационе структуре предузећа које послују у одређеним брзорастућим секторима (нпр. електроника и биотехнологија) дизајниране тако да поседују више карактеристика органског дизајна, док организације које послују у старим индустријским гранама имају обележја бирократских система (Мосуровић Ружичић, 2012).

Табела 1: Карактеристике механистичких и органских структура

Механистичка	Органска
Висока специјализација	Унакрсно – функционални тимови
Крута департментализација	Унакрсно – хијерархијски тимови
Јасан ланац командовања	Слободан проток информација
Уски распон контроле	Широки распон контроле

Извор: Robbins & Coulter, 2005.

Организационе структуре углавном варирају између крутих, односно бирократских до изузетно флексибилних. Према мишљењу ауторке Петковић (2003) најуспешније су управо оне организације које проналазе баланс између механистичких и органских структура, а већина организација представља њихову комбинацију. То су организационе структуре које уживају карактеристике органских и механистичких система, истовремено су динамичне, али и стабилне, подстичу ефективност и ефикасност.

Табела 2: Уобичајене форме организационих структура и њихове карактеристике

Проста организациона структура	**Функционална организациона структура**
- Присутна у малим организацијама - Уобичајена форма у почетним фазама развоја организације - Централизовано одлучивање - Јасан систем контроле - Низак ниво специјализације, формализације и департментализације - Не постоји формални систем евалуације и награђивања - Подржава креативност и иновативност - Ограничава могућност напредовања - Нејасна подела рада може условити конфликте и неразумевања између запослених	- Заступљена у малим и средњим предузећима - Настаје груписањем послова по основу сродности - Јасна подела рада и висок ниво специјализације - Ефикасно коришћење ресурса и постизање ефеката економије обима - Централизовано одлучивање (испоштован принцип јединства командовања) - Јасна и директна контрола - Ефикасна комуникација унутар функција - Ниска флексибилност - Отежана координација, сукоб интереса између различитих функција - Отежано мерење доприноса појединих функција у укупном резултату организације
Дивизиона организациона структура	**Матрична организациона структура**
- Заступљена у великим пословним системима које карактерише просторна дислоцираност и диверсификован производни програм - Децентрализовано одлучивање (дивизије имају статус релативно аутономних јединица) - Раздвајање стратегијског и оперативног управљања - Ефикасно реаговање на захтеве тржишта - Отежана координација између дивизија - Дуплирање активности и ресурса што утиче на раст трошкова и смањење ефикасности - Тешкоће у координацији и контроли од стране топ менаџмента	- Настаје комбинацијом функционалне и дивизионе (пројектне) структуре - Ефикасно коришћење ресурса - Децентрализовано одлучивање - Ефикасно решавање комплексних проблема - Висок ниво флексибилности - Подржава развој вештина, креативност и иновативност - Дуална одговорност (нарушен принцип јединства командовања)

Извор: аутори на основу Robbins & Coulter, 2005., Dess et al., 2007., Ерић, 2000., Williams, 2010.

3. КАРАКТЕРИСТИКЕ ОРГАНИЗАЦИОНЕ СТРУКТУРЕ КОЈА ПОДРЖАВА ИНОВАТИВНОСТ

У стручној литератури заступљена су различита гледишта о утицају организационе структуре на иновативност. Бројна истраживања која су спроведена са циљем да се прецизирају карактеристике организационе структуре за коју се може рећи да представља најприхватљивије решење за иновативна предузећа произвела су различите, а често и недоследне резултате. Одређене варијације у резултатима настале су услед чињенице да се наведена проблематика разматрала из различитих углова, односно да су истраживања била фокусирана на различите димензије структуре и њихов утицај на иновативност. У стручној јавности постигнута је сагласност да не постоји стандардно или универзално решење, односно да избор организационог дизајна којим се подстиче иновативност варира у зависности од типа иновација, величине предузећа и делатности којом се предузеће бави.

Механистичке организационе структуре услед недостатка флексибилности нису у могућности да одговоре на захтеве променљивог окружења, стога не могу подржати иновативне подухвате. Делујући попут машина, механистичке организације нису подложне променама и усвајању иновативних решења. Ове организације делују под крутим правилима заснованим на формалним односима између запослених и централизованим одлучивањем. Организацијама које настоје да креирају и уводе иновативна решења потребни су елементи органског дизајна, односно ефикасна комуникација, децентрализовано и неформално доношење одлука, као и флексибилност у процесима и процедурама (Özsomer, 1997). Заправо, чврстим организационим структурама

обезбеђује се спровођење стратешког плана, док лабаве структуре омогућавају кретање идеја од нижих нивоа и подстичу иновативне приступе у решавању проблема (Dyduch, 2019).

Аутори Hage и Aiken (1967) проналазе позитивну везу између децентрализације и иновација, као и негативну између централизације и иновативних активности (Hage & Aiken, 1967). Органска структура коју карактерише отворена комуникација, децентрализација, јасно дефинисана визија и стратешки правци, погодује развоју иновација и подстиче предузетништво запослених (Ерић et al., 2019). Управо аутор Dedahanov (2017) указује на чињеницу да је иновативно понашање запослених повезано са иновационим учинком организације. Исти аутор емпиријским истраживањем доказује негативна утицај централизације и формализације на иновативно понашање запослених. Уколико запослени нису укључени у процес доношења одлука или су претерано оптерећени процедурама, они не показују превише интересовања за генерисање нових идеја, што може значајно ограничити иновациони учинак организације (Dedahanov et al., 2017). Такође, аутор Hassan (2014) напомиње да и специјализација има негативан ефекат на креативност, али и да је тај утицај мањег интензитета у односу на централизацију и формализацију (Hassan et al., 2014). Према резултатима одређених истраживања обука запослених повећава капацитет организације за иновације, док директна контрола негативно утиче на иновативну активност. Стога, креирањем организационе структуре коју карактерише плански приступ у развоју запослених уз минимизирање директног надзора и стриктног усмеравања, могу се ојачати иновациони капацитети организације (Dekoulou & Trivellas, 2017).
У стручној литератури заступљено је мишљење да органска структура и децентрализација подстичу настанак идеја и почетне фазе иновационог процеса, док усвајање и имплементација идеја захтевају одређени ниво формализације и централизације (Pierce & Delbecq, 1997). Наведену тезу у својим истраживањима потврђује и аутор Agbim (2013) који сматра да органска структура има значајан утицај на генерисање идеја, док механистичка позитивно утиче на њихову имплементацију (Agbim, 2013). Да висока сложеност, ниска формализација и децентрализација олакшавају покретање иновација, док ниска сложеност, висока формализација и висока централизација омогућавају имплементацију иновација у својим истраживањима 1988. године доказали су и аутори Damanpour и Gopalakrishnan. Наведени аутори напомињу да је модел организационе структуре којим се подстиче иновација детерминисан и врстом иновација. Низак професионализам запослених, висока централизација и формализација олакшавају процес административних иновација одозго према доле, док висок професионализам, ниска централизација и формализација олакшавају процес техничких иновација (Damanpour & Gopalakrishnan, 1998). Једноставније речено структура у којој доминирају елементи органског дизајна више погодује имплементацији техничких иновација, док механистички модели организационе структуре олакшавају имплементацију административних иновација (Ostos Mariño et al., 2019).
Одређена истраживања указују и на чињеницу да формализација има негативан, али и изузетно мали утицај на иновативност, стављајући при томе нагласак на утицај других фактора, посебно на комуникацију у смислу отклањања препрека у комуникационим токовима и размени информација и знања (Szczepańska-Woszczyna, 2018). Са друге стране, истраживања која су спроведена над узорком кога чине средња и велика предузећа која послују у сектору производње указују на позитиван утицај формализације, специјализације, неформалних односа и механизама повезивања на иновативну способност предузећа. Децентрализација се не истиче као фактор који значајно детерминише иновативност, али се указује на улогу и значај формализације у смислу усмеравања понашања запослених ка одређеним активностима (Iranmanesh et al., 2021).
Autori Cosh и Huges (2012) проналазе да је органска, децентрализована и неформална структура супериорна у смислу склоности ка иновацијама за младе и високотехнолошке фирме. У другим ситуацијама у сектору високе технологије као најефикасније решење намеће се децентрализована и формална структура. Мишљење наведених аутора је да организације које су одабрале децентрализовану и формализовану структуру показују већу тенденцију ка увођењу иновација (Cosh & Hughes, 2012). Централизоване и бирократске структуре могу бити ефикасна решења за велике организације са сложеним одељењима за истраживање и развој. Такве структуре углавном генеришу инкрементaлне и системске иновације (DeSanctis et al., 2002), док неформалне и флексибилне структуре могу бити извор радикалних иновација (Ettlie et al., 1984).
Динамично и турбулентно окружење диктира потребу за креирањем флексибилних организационих структура, односно модела који подржавају проактиван однос према дешавањима у окружењу и прихватање ризика. У фокусу савремених модела организационих структура су флексибилност, знање, учење и иновација. Према мишљењу аутора Мицић (2015) савремене структуре су углавном хибридне и за разлику од бирократских структура оне промовишу „отворене иновације“. Нове и флексибилне структуре усмерене су на децентрализацију, шири распон контроле, низак ниво стандардизације процеса и специјализације запослених, тимски рад, добре међуљудске односе, континуирано учење и развој иновација (Вујичић et al., 2022). Имплементацијом нових форми организационих структура, попут мрежних, виртуелних, модуларних, не доводе се у питање постојеће структуре, већ оне добијају карактеристике органског дизајна (Травар et al., 2014).

Табела 3: Карактеристике нових организационих форми

Мрежна структура - Мрежа независних организација које су физички дислоциране - Висок ниво флексибилности уз задржавање одређеног нивоа формализације - Смањење трошкова (посебно административних) - Одсуство директне контроле
Модуларна структура - Препуштање активности у којима се не могу остварити конкурентске предности другим организацијама (спољним сарадницима) уз садржавање стратегијске контроле - Спољни специјализовани сарадници се изостављају и укључују према потреби са намером да се искористи њихово знање и стручност - Успех детерминисан избором поузданих сарадника - Циљ је постизање првокласног учинка у сваком сегменту ланца вредности уз смањење укупних трошкова - Поспешује размену информација и убрзава процес учења
Виртуелна структура - Мрежа организација која се константно развија и коју чине независне организације (добављачи, потрошачи, конкуренти) - Организације које чине мрежу географски могу бити удаљене, али су повезане на основу информационе и комуникационе технологије - Захтеви за физичким облицима активе су минимални - Омогућава дељење ризика, трошкова и вештина и подстиче размену знања

Извор: аутори на основу Robbins & Coulter, 2005., Dess et al., 2007., Ерић, 2000., Ерић и Стошић, 2013., Williams, 2010.

У савременим условима пословања флексибилност постаје најпожељнија карактеристика пословних система. Она има значајан и позитиван ефекат на иновациону активност предузећа и конкурентску предност (Gala-Vela´squez et al., 2023). Аутор Марковић (2012) наглашава да потенцијал за креирање флексибилне организације не би требало искључиво проналазити у организационој структури, већ и у другим димензијама организационог дизајна: стратегији, организационој култури, лидерству и систему награђивања. Управо, променама наведених фактора крути (механистички) модели организационе структуре могу се учинити флексибилним и способним да одговоре на захтеве динамичног окружења. Исти аутори наглашавају да се флексибилност организације подстиче креативним и иновативним понашањем руководилаца и запослених (Марковић et al., 2022).

У турбулентним и динамичним условима пословања, када иновација преузима улогу кључног извора конкурентске предности, основни задатак менаџера је креирање организационог дизајна који ће бити довољно стимулативан за настанак и развој нових идеја. Од менаџера се очекује да креира радно окружење у коме се подстиче тимски рад и креативност. Такво окружење би требало да карактеришу отворена комуникација, толеранција, позитиван став према променама, прихватање ризика, оријентација на проблеме и проналажење иновативних приступа у њиховом решавању. У креирању флексибилних и ка иновацијама оријентисаних предузећа значајну улогу има стил лидерства који менаџер примењује. У условима промена најпожељнији вид лидерства је трансформационо лидерство. Трансформациони лидери стварају окружење у коме се следбеници осећају слободним и овлашћеним да проналазе иновативне приступе у решавању проблема (Jung et al., 2003). Реч је о лидерима који подстичу запослене да се прилагођавају променама, односно који мотивишу „на нов начин размишљања, рушећи постојеће парадигме и креирајући нове (Савовић, 2012, стр.198)“.

4. ЗАКЉУЧАК

Способност предузећа да иновира одређена је бројним факторима који делују у екстерном и интерном окружењу. Један од њих је и организациона структура. Као елемент интерног окружења организациона структура може бити креирана тако да подстиче иновацију, али може и значајно ометати иновативну активност предузећа. Евидентно је да структуре у којима су доминантни елементи бирократских система, а посебно висок ниво централизације и формализације, не обезбеђују неопходни ниво флексибилности, те стога и не могу бити адекватно решење за савремене организације које настоје да буду иновативне.

Допринос рада огледа се у истицању нових сазнања о утицају организационе структуре и њених димензија на креирање амбијента које би било подстицајно и погодно за развој и имплементацију иновација. Истраживањем које је спроведено у раду долази се до закључка да не постоји универзално решење за модел организационе структуре који се може сматрати прикладном опцијом за иновативне организације. Утицај појединих димензија организационе структуре варира у зависности од типа иновација, величине предузећа и делатности којом се предузеће бави.

Аутори полазе од става да организације које за циљ имају унапређење капацитета у домену иновативне активности напуштају постојеће праксе дизајнирања структура и настоје да имплементирају моделе у којима до изражаја долазе димензије органског дизајна. Нове форме обично не подразумевају традиционално хијерархијски постављен ланац управљања, већ радно окружење засновано на тимском раду, директној комуникацији и интеракцији која се базира на сарадњи и поверењу. Такође, ове структуре карактерише децентрализација, јака технолошка подршка, конзистентна и јасна комуникација и виши ниво аутономије, одговорности и слободе у доношењу одлука, као и одређени нивоу флексибилности у процесима и процедурама. Утицај централизације и формализације на иновативност варира у зависности од величине и делатности предузећа, као и врсте иновација и може бити позитиван све док не угрожава флексибилност.

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СОЦИЈАЛНЕ КОМПЕТЕНЦИЈЕ ЛИДЕРА КАО КЉУЧНИ ФАКТОР РАДНЕ АНГАЖОВАНОСТИ ЗАПОСЛЕНИХ У ПЕРИОДУ КРИЗЕ

Апстракт: Радно ангажовани запослени представљају један од кључних фактора на којима организације граде конкурентску предност, а лидери имају значајну улогу у подстицању и одржавању високог степена радне ангажованости посебно у кризном периоду. Предмет рада је анализа и приказ концепата радне ангажованости и социјалних компетенција лидера, као и њихових специфичности у периоду кризе. Циљ рада је да испита да ли социјалне компетенције лидера доприносе расту радне ангажованости. Истраживање је спроведено на узорку од 100 запослених из неколико организација средње величине које послују на територији АП Војводине. Коришћени су стандардизовани упитници као што су ESCI 360 (Emotional and Social Competency Inventory), али само питања која се односе на социјалне компетенције и UWES (Utrecht Work Engagement Scale) мерење радне ангажованости запослених. За обраду података коришћен је софтвер СПСС 25.0. Резултати истраживања су потврдили да постоји статистички значајна позитивна веза између социјалних компетенција лидера и радне ангажованости запослених. Значај социјалних компетенција лидера и њихов допринос радној ангажованости није довољно истражен у нашем пословном амбијенту, посебно када је реч о кризном периоду. Дакле, резултати овог истраживања и закључак рада истичу горе наведено и требало би да подстакну више истраживања у овој области.

Кључне речи: лидерство, социјалне компетенције, радна ангажованост запослених**,** криза

SOCIAL COMPETENCIES OF LEADERS AS KEY FACTOR OF EMPLOYEE WORK ENGAGEMENT DURING THE CRISIS

Abstract: Work-engaged employees are one of the key factors on which organizations build a competitive advantage, and leaders have a significant role in encouraging and maintaining a high level of work engagement, especially in a crisis period. The subject of the work is the analysis of the concepts of work engagement of employees and social competencies of leaders, as well as their specificities in the period of crisis. The aim of the present study is to examine whether social competencies of leaders contribute to subordinates' work engagement. A sample of 100 employees was selected from several middle-sized organisation operating in private sector in AP Vojvodina. Standardized questionnaires such as ESCI 360 (Emotional and SocialCompetency Inventory), only questions for measuring social competencies and the UWES-9 (Utrecht Work Engagement Scale) for measuring work engagement, was used. SPSS

25.0 software was used for data processing. The research results confirmed that there were statistically significant relationship between managers' social competencies and employees' work engagement. The importance of social competencies of leaders and their contribution to work engagnement has not been sufficiently explored in our business environment, especially in crisis period. Thus, results of this research and conclusion of paper emphasise above mentioned and should encourage more research in this field.

Keywords: leadership, social competencies, employee work engagement, crisis

1. УВОДНА РАЗМАТРАЊА

Свет се суочава са значајним променама које приморавају лидере да усвоје отпорнији и агилнији начин како би омогућили организацијама да буду успешне и преброде период кризе. Способност да се адекватно реагује на промене је неопходност која карактерише успешне организације, а агилност постаје имепратив опстанка (Harraf et al., 2015). Кључну улогу у агилном приступу имају лидери и то лидери који, између осталог, интегришу елементе емоционалне интелигенције у своју лидерску праксу, што је одлика ефетивних лидера (Batool, 2013). Имајући у виду да је запосленима потребно више подршке и емпатије током кризе (Derue et al., 2011), улога емоциоанлно интелгиентних лидера постаје кључна у одржавању и подстицању радне ангажованости у овом периоду (AlZgool et al., 2020). Наведено представља мотив за истраживање концепата социјалних компетенција, као компетенција емоционалне интелигенције и радне ангажованости запослених и њихову повезаност.
Радна ангажованост може да се објасни као вешта интеграција позитивних емоција и јаке мотивације на радном месту и схвати као један од кључних фактора која може да ослоби организацију ситуационог притиска и да јој помогне да стекне и одржава конкрентску предност (Yan et al., 2021; Guo & Huo, 2022). Радна ангажованост може бити кључни покретач пословног успеха (Choi et al., 2015; Strom et al., 2014) Имајући у виду наведено, јасно је зашто су радно ангажовани запослени један од фактора који може значајно да утиче на одрживост организације, посебно у време кризе. Раст радне ангажованости може бити подстакнут на различите начине, а једну од најбитнијих улога у томе имају лидери (Coxen et al., 2016; Heyns & Rothmann, 2018). Лидери могу да подстакну раст радне ангажованости кроз промену радних услова, али много бољи ефекат могу постићи директно кроз инспирисање, јачање и повезивање са својим запосленима (Schaufeli, 2015).
Предмет рада је анализа и приказ концепата радне ангажованости и социјалних компетенција лидера. Циљ рада је да испита да ли социјалне компетенције лидера доприносе расту радне ангажованости. На основу постављеног циља и предмета истраживања, као и на бази владајућих ставова из ове области и резултата досадашњих истраживања постављена је следећа хипотеза:

X1: *Постоји позитивна веза између социјалних компетенција лидера и радне ангажованости запослених.*

За анализу података и тестирање хипотезе коришћена је Сприманова корелација, а за додатнне анализе утврђивања разлике у нивоу радне ангажованости и социјалних компетенција лидера између приватног и јавног сектора коришћен је т-тест независних узорака. За обраду података коришћен је софтвер СПСС 25.0.

2. ТЕОРИЈСКИ ОКВИР

Емоционална интелигенција може да се посматра на више начина и током деценија истраживања она је на различите начине дефинисана. Постоје различити приступи и модели овом концепту, али најпотпунији и највише коришћен у менаџменту и лидерству јесте мештовити модел емоционалне интелигенције који емоционалну интелигенцију посматра као скуп емоционалних и социјалних компетенција, што представља и полазну основу за овај рад**.** Емоционална интелигенција постоји „када особа демонстрира компетенције које чине самосвест, самоуправљање, социјална свест и социјалне вештине у одговарајуће време и на одговарајући начин“ (Boyatzis et al., 2000. стр. 344; Бјекић, 2021). У наставку пажња ће бити усмерена на социјалне компетенције, с обзиром на то да је циљ рада утврђивање повезаности социјалних компетенција лидера и радне ангажованости запослених.
Појединац који поседује социјалне компетенције способан је да разуме друге, њихова осећања, размишљања, понашања, да схвати друштвене интеракције, зна како да утиче на друге и да их води на начин да сви буду задовољни (Frankovský & Birknerová, 2014). Социјалне компетенције се групишу у два кластера: друштвена свест и управљање односима. У оквиру првог кластера налазе се две компетенције: емпатија и свест о организацији. Други кластер се састоји од пет компетенција: управљање конфликтима, усавршавање других, утицај, инспиративно лидерство и тимски рад (Boyatzis, 2011). Кластер друштвене свести односи се на способност особе да препозна невербалне знакове, као што су тон гласа, изрази лица и гестови, који откривају скривене емоције, бриге и потребе, а кластер управљања односима укључује социјалне вештине која

подразумевају способност прилагођавања другима и успостављања адекватних односа и утицаја (Strugar Jelača et al., 2022). Важност социјалних компетенција за лидера је неминовна и данас се лидери све више улажу енергију у развој квалитетних међуљудских односа са својим запосленима (Strukan et al., 2019), што представља један до кључних предуслова за подстицање и стални раст радне ангажованости запослених. Лидери који поседују социјалне компетенције се разликују у односу на друге лидере. Они свој утицај остварују тако што кроз разумевање запослених, њихових потреба, тежњи, осећања и реакција, проналазе различите начине да комуницирају са њима, преговарају на обострано задовољство, усмеравајући енергију ка стварању пријатне радне атмосфере, сарадње, узајамног помагања и подршке (Бјекић, 2021).

Концепт радне ангажованости се може најбоље схватити кроз приказ најшире прихваћене дефиниције радне ангажованости коју су дали Schaufeli & Bakker (2004) а по којој радну ангажованост карактеришу енергичност, посвећеност и апсорпција, при чему је енергичност физичка компонента, посвећеност емоционална и апсорпција когнитивна компонента радне ангажованости (Geldenhuys et al., 2014). Енергичност се повезује са менталном отпорношћу и високим нивоом енергије коју појединац улаже у свој посао, посвећеност се повезује са осећајем инспирације, поноса и ентузијазма, а апсорпција подразумева потпуну концентрацију током рада, усредсређеност на послу и уживање у истом (Torrente et al., 2012; Decuypere & Schaufeli, 2020). За запослене који су радно ангажовани сматра се да су физички укључени, когнитивно будни и повезани са другим људима са којима раде (Kahn, 1990). Повећање радне ангажованости запослених је један од императива опстанка и развоја организације, а бројни аутори истичу су управо радно ангажовани запослени критичан фактор успеха савремених организација (du Plessis & Boshoff, 2018, Maximo et al., 2019).

Досадашња истраживања нису у великој мери имали у фокусу повезаност социјалних компетенција лидера и радне ангажованости запослених, али постоје они који су указали на постојање веза између одређених делова наведених концепата. Бјекић (2021) је на узорку од 300 запослених из 80 организација које послују у пословном амбијенту Републике Србије доказала позитивну везу између емоционалне интелигенције лидера и радне ангажованости запослених. Поједини аутори истичу да оне организације које улажу у развој тренерских и менторских вештина менаџера могу значајно да повећају радну ангажованост запослених (Ladyshewsky & Taplin, 2018), што указује да постоји веза између усавршавање других као социјална компетенција лидера и радне ангажованости запослених. Bonau (2017) истиче да већи степен посвећености и ангажованости показују запослени који имају лидера који зна да их инпирише што је у складу са резултатима истраживања које је спроведено на узорку од 50000 лидера (Zenger & Folkman, 2014).

3. МЕТОДОЛОГИЈА

За потребе истраживања коришћена су два стандардизована упитника. За мерење социјалних компетенција лидера коришћен је ESCI 360 (Emotional and Social Competency Inventory) који је развила консалтинг агенција Hay Group у сарадњи са Goleman-om и Boyatzis-om (Hay Group, 2011). Из наведеног упитника коришћена су само питања која се односе на социјалне компетенције. Упитник се састоји од 38 питања који се односи на 7 компетенција груписаних у два кластера: друштвена свест (емпатија и свест о организацији) и управљање односим (управљање конфликтима, усавршавање других, утицај, инспиративно лидерство и тимски рад). Неки од примера ставки за мерење социјалних компетенција из кластера друштвене свести су: „Разуме мотивацију других“, *„Разуме друге тако што се ставља у њихову позицију“,„Разуме неписана правила тима и организације“*. Неки од примера ставки за мерење социјалних компетенција из кластера – управљање односима су: *„Покушава да реши сукобе отвореним разговорима о неслагањима са онима који су укључени“*, *„Улаже време и труд у развој других“, „Води запослене тако што дефинише уверљиву визију*“. За мерење радне ангажованости запослених коришћен је UWES-9 (The Utrecht Work Engagement Scale) упитник (Schaufeli et al., 2006). Упитник се састоји од 9 питања која се односе на 3 димензије радне ангажованости: енергичност, посвећеност и апсорпцију. Примери ставки из упитника за мерење радне ангажованости су: *„Осећам да пуцам од енергије на послу“, „Мој посао ме инспирише“* (Бјекић, 2021).

Поред наведених ставки упитник обухвата и питања која се односе пол, године старости и ниво образовања испитаника (демографске карактеристике), као и на величину организације, затим ли је организација у приватном или државном власништву и којом се делатношћу бави (организационе карактеристике). За оцењивање свих ставки из упитника коришћена је петостепена Ликертова скала (1 – уопште се не слажем, 5 – слажем се у потпуности).

Истраживање је спроведено на узорку од 100 запослених од којих је 67 испитаника мушког пола, а 33 женског пола. Када је реч о старости испитаника, највећи број, њих 37 има између 35 и 44 године. Мали број испитаника има испод 25 година и преко 55 година, у првој групи је укупно 4, а у другој 9 испитаника. Двадесет испитаника има измешу 45-55 година, а њих 30 између 25-34 године. Дистрибуција испитаника према нивоу образовања је следећа: средња школа (25), трогодишње струковне студије (20), четворогодишње академске студије (40), мастер (13) и магистар (2). Од укупног броја испитаних, њих 48 је запослено у јавном сектору, а 52 у приватном сектору. Дистрибуција узорка према делатности организације указује да је највећи број испитаника, њих 36, запослено у организацијама које припадају сектору "Д" (снабдевање електричном енергијом, гасом, паром и климатизација), затим у организацијама које припадају сектору "Ц" (прерађивачка индустрија) је запослено 25

испитаника, њих 22 је запослено у организацијама које припадају сектору "Г" (трговина на велико, трговина на мало, поправка моторних возила и мотоцикала), 12 испитаника ради у организацијама које припадају сектору "Е" (снабдевање водом, управљање отпадним водама, контролисање процеса уклањања отпада и сличне активности) и свега њих 5 је запослено у организацијама које припадају сектору „С“ (остале услужне делатности).
За потребе анализе прикупљених података коришћена је Спирманова корелација како би се утврдило да ли постоји повезаност између социјалних компетенција лидера као независне променљиве и радне ангажованости запослених као зависне променљиве. Коришћен је Т-тест независних узорака како би се утврдило да ли постоји разлика у нивоу радне ангажованости запослених у приватном и јавном сектору, као и у нивоу перципираних социјалних компетенција лидера од стране запослених.

4. РЕЗУЛТАТИ И ДИСКУСИЈА

Прво је извршена анализа поузданости мерних скала које су коришћене у истраживању, на основу чега је утврђено да на овом специфичном узорку Cronbach alpha износ 0.967 (социјалне компетенције) и 0.847 (радна ангажованост) што указује на висок ниво конзистентности и поузданост мерних скала. Cronbach alpha је најчешће коришћен индикатор поузданости мерних скала и доња граница прихватљивости је 0.70 (Hair et al. 1998; Slavić et al., 2022).

Табела 1. Повезаност социјалних компетенција лидера и радне ангажованости запослених (N=100)

		M	SD	Социјалне компетенције лидера	Радна ангажованост запослених
Социјалне компетенције лидера	rho	3.9664	.73748	1.000	**.599****
	p			-	**.000**
Радна ангажованост запослених	rho	4.0049	.61787	**.599****	1.000
	p			**.000**	-

**. Correlation is significant at the 0.01 level (2-tailed).

Извор: калкулација аутора

На основу резултата приказаних у табели 1, може се закључити да постоји статистички значајна јака позитивна веза између социјалних компетенција лидера и радне ангажованости запослених (rho=0.599, p=0.000). До сада, предмет истраживања великог броја аутора била је веза између емоционалне интелигенције лидера и радне ангажованости запослених, без посебног осврта на везу између социјалних компетенција и радне ангажованости, с обзиром на то да емоционална интелигенција схваћена као скуп компетенција обухвата емоционалне и социјалне компетенције (Boyatzis, 2011), може се рећи да су добијени резултати у сагласности са резултатима досадашњих истраживања (Ravichandran et al., 2011; Бјекић, 2021).
У табели 2 приказани су резултати корелационе анализе између појединачних социјалних компетенција лидера и укупне радне ангажованости запослених. Резултати су показали да постоји статистички значајна веза између свих социјалних компетенција лидера и радне ангажованости запослених, при чему је најјача веза уочена између тимског рада и радне ангажованости запослених (rho=0.612; p=0.000). Емпатија следи одмах иза тимског рада као значајно повезана са радном ангажованошћу (rho=0.595; p=0.000), затим инспиративно лидерство (rho=0.569; p=0.000) и усавршавање других (rho=0.556; p=0.000). Средње јака повезаност уочена је између свести о организацији и радне ангажованости (rho=0.475; p=0.000), као и између утицаја и радне ангажованости запослених (rho=0.470; p=0.000). Најслабију везу од свих социјалних компетенција са радном ангажованошћу има управљања конфликтима (rho=0.385; p=0.000). Као критеријум јачине везе коришћено је тумачење Cohen (1988, стр. 79-81). На основу приказаних резултата може се закључити да лидери који промовишу тимски рад, подстичу сарадњу, разумеју размишљања својих запослених и посматрају ствари и из њиховог угла могу да подстакну да запослени улажу више енергије у обављање свог посла, да имају више ентузијазма и да буду више посвећени свом послу. Такође, лидери који знају да управљају конфликтима, затим знају да препознају развојне потребе запослених и да подстичу јачање њихових способности умеју да подстакну већи степен радне ангажованости. Добијени резултати су делимично у сагласности са неким досадашњим истраживањима (Ladyshewsky & Taplin, 2018; Bonau, 2017).

Табела 2. Повезаност социјалних димензија (појединачно) са радном ангажованошћу (N=100)

		M	SD	Емпатија	Свест о организацији	Управљање конфликтима	Усавршавање других	Утицај	Инспиративно лидерство	Тимски рад	Радна ангажованост
Емпатија	rho	3.9000	.86310	1.000	.726**	.676**	.853**	.557**	.818**	.906**	**.596****
	p			.	.000	.000	.000	.000	.000	.000	**.000**
Свест о организацији	rho	4.0200	.76597	.726**	1.000	.623**	.679**	.608**	.675**	.834**	**.475****
	p			.000		.000	.000	.000	.000	.000	**.000**
Управљање конфликтима	rho	4.1425	.85077	.676**	.623**	1.000	.779**	.421**	.640**	.772**	**.385****
	p			.000	.000	.	.000	.000	.000	.000	**.000**
Усавршавање других	rho	3.856	.9757	.853**	.679**	.779**	1.000	.548**	.805**	.892**	**.556****
	p			.000	.000	.000	.	.000	.000	.000	**.000**
Утицај	rho	3.9567	.7304	.557**	.608**	.421**	.548**	1.000	.533**	.676**	**.470****
	p			.000	.000	.000	.000	.	.000	.000	**.000**
Инспиративно лидерство	rho	3.9700	.9212	.818**	.675**	.640**	.805**	.533**	1.000	.857**	**.569****
	p			.000	.000	.000	.000	.000	.	.000	**.000**
Тимски рад	rho	3.9426	.7256	.906**	.834**	.772**	.892**	.676**	.857**	1.000	**.612****
	p			.000	.000	.000	.000	.000	.000	.	**.000**
Радна ангажованост	rho	4.0049	.61787	**.596****	**.475****	**.385****	**.556****	**.470****	**.569****	**.612****	**1.000**
	p			**.000**	**.000**	**.000**	**.000**	**.000**	**.000**	**.000**	**.**

**. Correlation is significant at the 0.01 level (2-tailed).

Извор: калкулација аутора

Т-тест аутори су користили како би испитали да ли постоји разлика у нивоу радне ангажованости запослених у организацијама које послују у приватном и јавном сектору, као и да ли постоји разлика у перципираном нивоу социјалних компетенција лидера од стране запослених у приватном и јавном сектору.

Табела 3. Разлике у нивоу радне ангажованоти запослених у организацијама у приватном и јавном сектору (Т-тест)

Сектор	M	SD	F	t	Sig (2-tailed)
Јавни	3.7806	.62748	1.294	2.660	**0.009**
Приватни	4.1204	.64769			

Извор: калкулација аутора

Применом Т-теста утврђено је да постоји статистички значајна разлика у нивоу радне ангажованости између запослених који раде у организацијама које послују у приватном и јавном сектору. Резултати истраживања су показали да је ниво радне ангжованости запослених већи у организацијама које послују у приватном сектору (M=4.1204; SD=0.64769) у односу на оргнизације које послују у јавном сектору (M=3.7806; SD=0.62748); t=2.660; p=0.009. Резултати истраживања су у сагласности ра досадашњим истраживањима (Agyemang & Ofei, 2013).

Табела 4. Разлике у нивоу социјалних компетенција лидера у организацијама у приватном и јавном сектору (Т-тест)

Сектор	M	SD	F	t	Sig (2-tailed)
Јавни	3.6446	.80288	7.398	3.686	0.000
Приватни	4.1488	.52430			

Извор: калкулација аутора

Приказани резултати истраживања указују на то да постоји статистички значајна разлика у перципираном нивоу социјалних компетенција лидера од стране запослених у организацијама које послују у приватном и јавном сектору. Лидери у организацијама у приватном сектору имају виши ниво социјалних компетенција (M=4.1488; SD=0.52430) у односу на лидере организација које послују у јавном сектору (M=3.6446; SD=0.80288), t=3.686; p=0.000.

На основу приказаних резултата истраживања може се закључити да је постављена постављене хипотеза потврђена. А додатним анализама утврђено је да постоји разлика у нивоу радне ангажованости запослених и нивоу социјалних компетенција лидера у односу на сектор ком орагнизација припада. Разлике у нивоу радне ангажованости и нивоу социјалних компетенција лидера када су у питању пол, година старости, ниво образовања и делатности организације, на овом узроку, нису статистички значајне.

5. ЗАКЉУЧНА РАЗМАТРАЊА

Приступ лидера према запосленима у периоду кризе захтева виши ниво емоционалне укључености на свакодневном нивоу како би одржали ниво радне ангажованости запослених као пре кризе и додатну енергију како би подстакли њен даљи раст. У условима кризе различите емоционалне реакције су очекиване, како од стране запослених тако и од стране менаџера, што може негативно да утиче на радну ангажованост и на перформансе појединца. У овим условима неопходно је да лидер комуницира са запосленима, пружи подршку и разумевање, како би се превазишао осећај угрожености и страха који запослени осећају током кризних периода. Наведено указује да социјалне компетенције лидера имају једну од кључних улога у подстицању радне ангажованости запослених током кризе. На бази спроведеног истраживања, аутори су доказали наведену везу и истакли да лидери који су усмерени ка подстицању синергије у тиму, препознавању и решавању несугласица, менторисање и тренинг могу да допринесу расту радне ангжованости запослених. Поред наведеног истакнутно је да лидери који се саосећају са својим запосленима, разумеју њихова осећања и бриге, као и развојне потребе могу значајно да подстакну ентузијазам запослених, затим да запослени буду истрајнији, да улажу додатни напор и више енергије, да буду инспирисани и срећни и посвећени радним задацима. На основу наведеног може се закључити да организације које имају емоционално интлигентне лидере са изражених социјалним компетенцијама имају и радно ангажовану радну снагу, што представља један од кључних фактора опстанка у перидима кризе и даљег развоја организације након кризе.

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Утицај фактора талент менаџмента на задовољство запослених у банкарском сектору Србије

Апстракт: Актуелна геополитичка ситуација како на светском, тако и на националном нивоу, колико год компаније биле отпорне на ризике, на неки начин угрожава њихово пословање. У домену банкарства, односно банака које послују на тржишту Републике Србије овај утицај огледа пре свега се у порасту референтне каматне стопе Народне банке Србије, са 1,5% колико је износила у априлу 2022. године на чак 5,25% колико износи тренутно. Већа референтна каматна стопа значи веће каматне стопе на кредите које банке пласирају грађанима и привреди, и аналогно томе мању тражњу за истим. У банкарству као и у другим привредним гранама, убрзани темпо процеса глобализације избрисао је границе на тржишту рада тј. уместо бројних националних, створио јединствено, интернационално тржиште радне снаге и довео до тога да су неки од највећих изазова са којима се банке суочавају у пословању обезбеђивање адекватних нових и задржавање постојећих запослених. Истовремено, у условима потенцијално нижег обима пружених услуга, банке су принуђене да своје пословне стратегије прилагоде новонасталим околностима, односно да пронађу начин да остваре уштеду у трошковима пословања. Највећи удео у укупним трошковима пословања банака имају управо трошкови који се односе на запослене. Један део ових трошкова свакако се односи и на трошкове проналажења и ангажовања нових запослених, односно трошкове који настају приликом попуњавања упражњених радних места, али и на трошкове обуке и усавршавања постојећих запослених и трошкове унапређења пакета компензација који се нуди запосленима у циљу њиховог задржавања. Један од основних предуслова задржавања запослених јесте обезбеђење њиховог задовољства послом. Стога би банке које послују широм света, али пре свега банке које послују на нашем тржишту, које се убрзано развија у свим својим сегментима , требало да преиспитају своје досадашње приступе управљању људским ресурсима. Један од таквих, иновативних приступа менаџменту људских ресурса је управо талент менаџмент. Концепт талент менаџмента интригира академску заједницу, више од 3 деценије, али је његова практична примена у самом зачетку. Стога, овим радом се жели указати на значај талент менаџмента као концепта који доноси заокрет у процесу управљања људским ресурима и приближити идеја имплементације овакве праксе у ХР стратегије банкарских организација у Србији. Рад има за циљ да упозна доносиоце одлука у банкарском сектору Србије са концептом талент менаџмента, као и да утврди да ли постоји или не постоји позитивна веза између различитих фактора, односно компонената талент менаџмента и задовољства запослених у банкарском сектору Србије. Истраживачке хипотезе емпиријске се проверавају путем анкете која се у овом тренутку спроводи на територији Републике Србије.

Кључне речи: талент менаџмент, задовољство запослених, банкарство, фактори талент менаџмента, регрутација и селекција, привлачење и задржавање, обука и развој, унапређење

THE INFLUENCE OF TALENT MANAGEMENT FACTORS ON EMPLOYEE SATISFACTION IN THE BANKING SECTOR OF SERBIA

Abstract: The current global, as well as national geopolitical situation, somehow threatens companies‘ business operations, no matter how risk-resistant they are. In the case of Serbian banking industry, this impact is primarly reflected in the increase of the reference interest rate of the National Bank of Serbia, from 1,5% in April,2022 to even 5,25%, which is currently rate. A higher reference interest rate causes growth of interest rates on loans that banks offer to citizens and companies, but also a lower demand for loans. In the banking sector, as well as in other industries, accelerated pace of the globalization process has erased the borders on the labor market, and created a single, international labor market, instead of numerous national ones. As a result of that process, some of the biggest challenge in banks‘ business operations are providing new and retaining existing employees. At the same time, in conditions of a potentially lower volume of provided services, banks are forced to adapt their business strategies to the new circumstances, that is, to find a way to achieve savings in business costs. The largest share in the total operating costs of banks is precisely the costs related to employees. A part of these costs certainly refers to the costs of finding and hiring new employees, i.e. the costs that arise when filling vacant positions, but also the costs of training and improving existing employees and the costs of improving the compensation package offered to employees in order to retain them. One of the basic conditions for retaining employees is ensuring their job satisfaction. Therefore, banks that operate around the world, but above all banks that operate in our market, which is rapidly developing in all its segments, should reconsider their previous approaches to human resource management. One of such innovative approaches to human resources management is precisely talent management. The concept of talent management has intrigued the academic community for more than 3 decades, but its practical application is in its infancy. Therefore, this paper aims to point out the importance of talent management as a concept that brings a turnover in the process of human resources management and bring closer the idea of implementing this practice in the HR strategy of banking organizations in Serbia. The aim of the paper is to familiarize decision makers in the banking sector of Serbia with the concept of talent management, as well as to determine whether or not there is a positive relationship between various factors, i.e. components of talent management and employee satisfaction in the banking sector of Serbia. Research hypotheses are empirically verified through a survey that is currently being conducted on the territory of the Republic of Serbia.

Keywords: talent management, employee satisfaction, banking, talent management factors, recruitment and selection, attraction and retention, training and development, promotion

1. ТАЛЕНТ МЕНАЏМЕНТ И ЗАДОВОЉСТВО ЗАПОСЛЕНИХ

1.1 Концепт талент менаџмента

Термин „талент менаџмент“ у научно-истраживачким круговима први пут је представљен у књизи „Рат за таленте“ компаније McKinsey, интернационално познате по пружању консултантских услуга из области менаџмента (Orlova et.al, 2015). Од 90их година прошлог века, предмет је интересовања менаџера и других запослених у привреди, консултаната и истраживача (Shaemi, Allemah & Bajgerani,2011; King, 2015). Талент менаџмент (управљање талентима) може се дефинисати као: „привлачење, регрутовање, ангажовање, развој и задржавање људи који поседују потенцијал и стварају вредност за организацију и себе“ или „Свестан и промишљен приступ предузет да би се привукли, развили и задржали људи са склоностима и способностима да задовоље тренутне и будуће организационе потребе“ (Akar & Sharma, 2018, 76 стр). У науци, али И у привредној пракси, преовлађује став да управљање талентима представља нов начин размишљања И нов приступ у оквиру менаџмента људских ресурса (Славић & Бербер, 2022). Чини се да је, његов све већи значај, заснован на претпоставци је талент менаџмент кључни извор конкурентске предности. Дакле, потенцијални раст организација широм света, зависи од њихове способности да обезбеде да су прави људи са правим вештинама буду на правом месту у право време и фокусирани на праве активности (Fowler, 2016). Ова претпоставка, у комбинацији са демограсфким променама које наступају широм света, а које узрокују дефицит талената, представља кључну покретачку снагу интересовања за талент менаџмент (Tarique and Schuler, 2010). Према студији коју је спровела компанија McKinsey таленат постаје најважнији ресурс и корпоративни „рат“ за таленте наставиће се и у наредних 20 година, јер је то ресурс којег нема довољно. Како би ХР менаџери преживели „рат за таленте“ морају се борити против ограниченог и све мањег броја квалификованих расположивих запослених кандидата, погодних за замену тренутно ангажованих, квалитетних и квалификованих запослених, када оду. Пред ХР менаџерима у свим организацијама је изазов, да привуку, мотивишу и задрже најбоље запослене у својој организацији (Pinto & Dhulla , 2012).

1.1.1 Компоненте талент менаџмента

Као компоненте или другим речима праксе талент менаџмента, у литератури се обично наводе привлачење и селекција, развој и задржавање талената (Rawashdeh 2018; Rabbi et al, 2015). Привлачење или аквизиција талената дефинише се као процес проналажења и обезбеђивања радне снаге са посебним квалификацијама и вештинама у циљу испуњавања организационих потреба (Alashmawy & Yazdanifard, 2019). Аквизиција талената је функција која се посматра одвојено од традиционалне функције људких ресурса, и која се фокусира на дугорочно планирање и проналажење кандидата за позиције које захтевају посебан и специфичан скуп вештина (Recruiter, 2019; Jobvite, 2017). Она обухвата следеће активности: регрутовање и селекцију, брендирање послодавца и изградњу репутације „послодавца по мери“ (employer of choice) као и изградњу јединственог сета бенефиција које талентовани запослени добијају као компензацију за своје вештине, способности и искуство које доносе компанији (Kim et al, 2014).

Развој талената сматра се једном од значајнијих фаза процеса управљања талентима (Mathimaran & Kumar, 2017). Развој талената фокусира се на планирање, одабир и имплементацију развојне стратегије за читав фонд талената, како би се организацији обезбедила понуда талената која задовољава и тренутне и будуће потребе, и омогућава остваривање стратешких циљева (Garavan, Carberu & Rock,2012). Под развојем талената подразумева се процес сталног учења и унапређења вештина и ставова запослених, стицања и одржавања њихових перформанси, без којег у динамичној и компетитивној бизнис ери није могуће успети. (Rabbi et al, 2015, п211). Развој талената позитивно утиче на атрактивност компаније као послодавца и скраћује време потребно за проналажење новог запосленог, нарочито када је реч о кључним менаџерским позицијама (Juoti & Rani, 2014).

Задржавање талената је процес очувања талентованих запослених у организацији дужи временски период. Одлазак талентованих запослених из организације веома је штетно, јер са једне стране узрокује пад продуктивности организације као и пораст трошкова за формирање новог фонда талената. (Rabbi et al, 2015, п211). Задржавање талената са потенцијалом за висок учинак захтева:

- креирање програма за препознавање постигнућа запослених и на основу тога адекватно награђивање;
- креирање могућности за напредовање и развој каријере;
- осмишљавање занимљивих и изазовних радних задатака;
- обезбеђивање погодне радне климе, равнотеже између посла и приватног живота;
- пружање могућности учешћа у доношењу одлука;
- изградњу поверења у руководство и сл. (Silbert, 2005).

Ове активности никако не би требале да буду препуштене само ХР менаџерима, већ би у њих требало да се укључе и директни супервизори запослених али и највиши руководиоци у виду подршке и менторства. Без очувања своје базе талената, организације врло тешко могу да стекну и одрже своју конкурентску предност. (Ott,Tolentino & Michailova, 2018)

1.2 Концепт задовољства запослених

Задовољство запослених послом дефинише се као комбинација психолошких и физиолошких околности, као и околности окружења које доводе до тога да запослени каже: “Ја сам задовољан својим послом” (Hoppock 1935, према Wright, 2006). Уколико је радник задовољан оним што ради, тада он свој посао више доживљава као нешто у чему ужива а мање као напор. Задовољство послом може утицати на ниво посвећености организацији, на флуктуацију и финансијску добит организације, али и на ниво перформанси, на спремност радника да се укључи у активности које су усмерене ка решавању проблема, те на интензитет напора које радник улаже у обављање посла (Јањић & Илић, 2019, п55). Појединци процењују колико су задовољни својим послом на основу фактора за које сматрају да су важни. Ова процена представља заправо емоционалну реакцију на њихов посао, која може варирати током времена проведеног на одређеном радном месту од позитивне ка негативној (Вукоњански et al, 2014). У проучавању задовољства послом, као једне од најкомплекснијих и најактуелнијих тема из области управљања људским ресурсима, уобичајено се користе два приступа: холистички и адитивни приступ. Холистички приступ, задовољство послом сматра једнодимензионалном појавом. У оквиру овог приступа, говори се да је задовољство послом заправо став особе према послу, односно јединствено осећање у вези се послом, које се не дели на појединачне аспекте. (Јањић & Илић, 2019). Други приступ је адитивни, или како се још назива фацентни приступ. Према овом приступу, задовољство послом сматра се вишедимензионалним феноменом. Укупно задовољство послом зависи од задовољства појединачним аспектима посла као што су плата, начин руковођења, однос са сарадницима, могућност напредовања и слично (Мирковић & Чекрлија, 2015). У оквиру адитивног или фацентног приступа, најприхваћеније је Спекторово одређење задовољства послом. Спектор је идентификовао девет аспеката посла значајних за задовољство запослених: плата, могућност напредовања, надређени, бенефиције, награђивање по учинку, радне процедуре, сарадници, природа посла и комуникација (Oshagbemi, 1999). Већ на основу прегледа литературе из две области, талент менаџмента и задовољства послом, може се закључити да је реч о сва феномена која су итекако повезана. Заједнички именитељи компоненти односно фактора талент менаџмента и аспеката задовољства послом су свакако: компензације и бенефиције запосленима, тренинзи, обуке, учење и унапређење вештина, организациона култура, привлачно радно окружење, напредовање и развој каријере и сл.

1.3 Талент менаџмент и задовољство запослених у банкарству (истраживачке хипотезе)

Увођење „управљања талентима“ само по себи није циљ, већ квалитетно средство за достизање циљева организације које побољшава продуктивност и утиче на квалитет лидерства и тимског рада у организацији (Elia, Ghazzawi & Arnaout, 2017). Банкама се саветује да у циљу борбе са променама у пословном окружењу и задржавања конкурентске позиције развијају механизме привлачења и задржавања талената, нарочито механизме награђивања (Rawashdeh 2018). Показало се да што су могућности за обуку и развој запослених у банкама веће, виши ће бити и ниво мотивације за проналажење ефикаснијих начина обављања посла и развој каријере. (Dixit & Arrawatia, 2018). Примена талент менаџмента позитивно је повезана са радним ставовима запослених о задовољству послом и доприноси њиховој већој посвећености, кроз процес поистовећивања са организацијом (Mensah, Bawole, & Wedchauanon, 2016). Аутори су утврдили да су обука и развој фактор талент менаџмента који има највећи утицај на задовољство запослених у банкарском сектору у поређењу са другим факторима управљања талентима (Akar & Sharma, 2018).. Након тога, следи фактор задржавања талената, који игра главну улогу у мотивисању запослених да остану у организацији што дуже (Almomani, Sweis & Obeidat, 2022).
На основу ових запажања студија предвиђа следеће хипотезе:
Главна хипотеза: Фактори талент менаџмента позитивно утичу на задовољство запослених у банкарском сектору Србије
Помоћне хипотезе: X1: Регрутација и селекција запослених као фактор талент менаџмента позитивно утиче на задовољство запослених у банкарском сектору Србије
X2: Привлачење и задржавање запослених као фактор талент менаџмента позитивно утиче на задовољство запослених у банкарском сектору Србије
X3: Унапређење као фактор талент менаџмента позитивно утиче на задовољство запослених у банкарском сектору Србије
X4: Обука и развој као фактор талент менаџмента позитивно утиче на задовољство запослених у банкарском сектору Србије

2. ИДЕНТИФИКАЦИЈА КОМПОНЕНТИ ПРОЦЕСА УПРАВЉАЊА ТАЛЕНТИМА У БАНКАРСКОМ СЕКТОРУ СРБИЈЕ (МЕТОДОЛОГИЈА ИСТРАЖИВАЊА)

2.1 Опис упитника и процедуре истраживања

У процесу израде овог истраживачког рада а у сврху испитивања утицаја фактора односно компоненти талент менаџмента на задовољство запослених у банкарском сектору Србије коришћен је упитник који се састоји из неколико компоненти. Испитаници су на постављена питања у свим деловима упитника, (сем у првом делу који се односи на демографске податке о испитанику) одговарали бирањем једног од понуђених одговора испод сваког питања. Понуђени одговори у упитнику означени су бројевима од 1 до 5, према оригиналној Likert-овој (1932) скали, при чему је:
1 – у потпуности се не слажем
2 – делимично се не слажем
3 – нити се слажем нити се не слажем (нисам сигуран)
4 – делимично се слажем
5 – слажем се у потпуности.
Ликерт-ова скала развијена је управо за потребе квалитативних истраживања, како би се превазишли проблеми који су постојали приликом испитивања ставова, карактерних и личних особина (Boone & Boone, 2012). Истраживање је спроведено у форми анонимног онлине упитника, посредством Google Forms платформе и било је намењено запосленима у банкама које послују на територији Републике Србије. Упитник је попуњен од стране 103 испитаника широм Републике Србије. Прикупљање података одвијало се у периоду од новембра 2022. године до јануара 2023. године. Упитник који је коришћен за прикупљање података, састојао се из два дела. Први део упитника чини скуп контролних питања која се односе на: пол испитаника, године старости, ниво образовања, као и радно искуство испитаника у банкарском сектору. Други део упитника обухвата питања која се односе на факторе односно компоненте талент менаџмента, као и задовољство послом. Фактори (компоненте) талент менаџмента идентификовани су коришћењем сета питања приказаног и коришћеног у раду аутора Akar & Sharma (2018). Овај сет обухвата укупно 24 питања, која покривају 4 фактора односно компоненте талент менаџмента: Регрутација и селекција (6 питања), Привлачење и задржавање запослених (10 питања), Унапређење (5 питања) и Обука и развој (3 питања). Од испитаника се тражило да истакну, у којој мери се слажу са исказима (питањима) када је у питању банкарска организација у којој раде а која се односе на различите компоненте талент менаџмента . Задовољство послом тестирано је коришћењем следећа 3 питања, презентована у раду аутора Tymon, Stumpf & Doh(2010):

1. Посматрајући све аспекте, задовољан сам својим тренутним послом у банци и мојом организацијом као послодавцем;
2. Очекујем да ћу бити део ове организације најмање наредне две године;
3. Препоручио/препоручила бих моју банку мојим пријатељима и колегама као одлично место за рад.

Од запослених у банкама се тражило да назначе у којој мери се слажу са сваком од наведених изјава.

2.2 Приказ узорка на коме је вршено истраживање

Табела број 1: Приказ дескриптивних карактеристика узорка

Пол	**Број**	**Проценат**
Мушки	46	44.7
Женски	57	55.3
Укупно	**103**	**100**
Године старости	**Број**	**Проценат**
Испод 25	2	1.9
25-34	26	25.2
35-44	51	49.5
45-54	19	18.4
Преко 55	5	4.9
Укупно	**103**	**100**
Ниво образовања	**Број**	**Проценат**
Средња школа	16	15.5
Трогодишње струковне студије	18	17.5
Четворогодишње академске студије	50	48.5
Мастер студије	17	16.5
Магистар	2	1.9
Укупно	**103**	**100**
Радно искуство	**Број**	**Проценат**
До 1 године	3	2.9
1-5 година	18	17.5
5-10 година	11	10.7
11-20 година	60	58.3
Преко 20 година	11	10.7
Укупно	**103**	**100**

Извор: Калкулација аутора

Посматрајући податке приказане у табели број 8, може се утврдити да је узорак обухватио нешто више испитаница женског (55.3%) у односу на испитанике мушког пола (44.7%). У погледу старосне структуре, највише је испитаника у старосној групи од 35 до 44 година (49.5%), следи 25% њих старости од 25 до 34 година, петина испитаника има од 45 до 54 година, 5% преко 55 година, а само 2% је млађе од 25 година. Половина испитаника обухваћених узорком има диплому четворогодишњих академских студија, а подједнак број – око 17% диплому средње школе, трогодишњих струковних студија или мастер студија. Само 2% испитаника има диплому магистра. Највећи број испитаника (60%) има од 11 до 20 година радног искуства у банкарском сектору, 18% њих од 1 до 5 година искуства, а сваки десети од 5 до 10 или преко 20 година ради у сектору банкарства. Најмањи је број оних који су приправници (3%), тј. раде мање од 1 године у банкарству.

3. УЛОГА ТАЛЕНТ МЕНАЏМЕНТА У ОБЕЗБЕЂЕЊУ ЗАДОВОЉСТВА ЗАПОСЛЕНИХ У БАНКАРСКОМ СЕКТОРУ СРБИЈЕ (РЕЗУЛТАТИ ИСТРАЖИВАЊА)

У наставку ће бити приказани резултати емпирисјког истраживања утицаја фактора талент менаџмента на задовољство запослених у банкарском сектору Србије. За обраду података је коришћен програм SPSS for Windows 20. Ради провере поузданости упитника, примењен је Chronbac‘s Alpha коефицијент поузданости. У циљу испитивања повезаности између фактора талент менаџмента и задовољства запослених у банкарском сектору, коришћен је Пирсонов коефицијент корелације. У циљу предвиђања задовољства запослених на основу фактора талент менаџмента, примењена је вишеструка регресиона анализа.

Поузданост инстумената

У циљу испитивања интерне конзистентности упитника, израчунат је Chronbac‘ s Alpha коефицијент поузданости. Овај коефицијент пружа информације о томе у којој мери ставке у инструменту на сличан начин мере одређену карактеристику. Величина коефицијента говори да ли све ставке једног инструмента мере исти конструкт.

Табела број 2: Приказ коефицијената поузданости фактора упитника

Фактор	**Cronbach's Alpha**	**Број ставки**
Регрутација и селекција	.641	6
Привлачење и задржавање	.811	10
Унапређење	.816	5
Обука и развој	.698	3
Задовољство запослених	.795	3

Извор: Калкулација аутора

Уколико је коефицијент поузданости изнад 0.7, сматра се прихватљивим (задовољавајућим), изнад 0.8 пожељним, а изнад 0.9 указује на високу поузданост. Фактори талент менаџмента Привлачење и задржавање и Унапређење имају пожељну поузданост, док фактори Задовољство запослених и Обука и развој имају задовољавајућу поузданост. Једино фактор Регрутација и селекција нема задовољавајућу поузданост, будући да је његов коефицијент испод 0.7.

Корелација

За испитивање повезаности између различитих фактора талент менаџмента (регрутација и селекција, привлачење и задржавање, унапређење, обука и развој) и задовољства запослених, коришћен је Пирсонов коефицијент корелације.

Табела број 3. Повезаност између фактора талент менаџмента и задовољства запослених

		Скор РС	**Скор ПЗ**	**Скор У**	**Скор ОР**	**Скор ЗЗ**
Скор РС	**Pearson Correlation**	1				
	Sig. (2-tailed)					
	N	103				
Скор ПЗ	**Pearson Correlation**	.605**	1			
	Sig. (2-tailed)	<.001				
	N	103	103			
Скор У	**Pearson Correlation**	.452**	.792**	1		
	Sig. (2-tailed)	<.001	<.001			
	N	103	103	103		
Скор ОР	**Pearson Correlation**	.430**	.547**	.561**	1	
	Sig. (2-tailed)	<.001	<.001	<.001		
	N	103	103	103	103	
Скор ЗЗ	**Pearson Correlation**	.478**	.720**	.692**	.436**	1
	Sig. (2-tailed)	<.001	<.001	<.001	<.001	
	N	103	103	103	103	103

Извор: Калкулација аутора

Резултати корелационе анализе указују на то да између скора на фактору Привлачење и задржавање и Регрутација и селекција постоји статистички значајна повезаност ($r(101) = .605$, $p < .001$)). Добијена повезаност је висока и позитивна, што значи да, што је виши скор на једном фактору, виши је и на другом. Такође, утврђена је статистички значајна умерена повезаност између скора на фактору Унапређење и Регрутација и селекција ($r(101) =.452$, $p < .001$)) и висока повезаност са скором на фактору Привлачење и задржавање ($r(101) =.792$, $p < .001$). Повезаност је позитивна, што значи да је виши скор на Унапређењу праћен вишим скоровима на поменута два фактора. Утврђена је статистички значајна повезаност између скора на фактору Обука и развој са скоровима на фактору Регрутација и селекција ($r(101) =.430$, $p < .001$)), Привлачење и задржавање ($r(101) =.547$, $p < .001$)) и Унапређење ($r(101) =.561$, $p < .001$)). Све повезаности су умерене и позитивне, што указује да су виши скорови на Обуци и развоју праћени вишим скоровима на осталим факторима. Скор на скали Задовољство запослених је позитивно повезан са скоровима на свим осталим факторима – Регрутација и селекција ($r(101) =.478$, $p < .001$)), Привлачење и задржавање ($r(101) =.720$, $p < .001$)), Унапређење ($r(101) =.692$, $p< .001$)) и Обука и развој ($r(101) =.436$, $p < .001$)). Са факторима Регрутација и селекција и Обука и развој постоји умерена повезаност, док са остала два фактора бележи високу повезаност.

Стандардна вишеструка регресија

Да би се утврдио утицај предикаторских варијабли на задовољство запослених примењена је стандардна вишеструка регресија (све независне варијабле су истовремено унете у модел). Циљ је утврдити предиктивну моћ сваке независне променљиве, тј. колики део варијансе зависне променљиве (задовољство запослених) објашњава свака од независних променљивих (тј. сваки од фактора талент менаџмента) појединачно.

Као и у већини других статистичких техника, неопходно је проверити испуњеност одређених претпоставки за спровођење анализе. Једна од претпоставки се односи на величину узорка у односу на број укључених предиктора (независних варијабли) у модел. Узорак је велики у односу на број предиктора, тако да је овај услов задовољен. Други услов за спровођење ове методе јесте одсуство мултиколинеарности (јаке везе између предикторских варијабли). Утврђено је да предикторске варијабле не корелирају међусобно високо, и он је испуњен. Коначни модел садржи четири независне променљиве (регрутација и селекција, привлачење и задржавање, унапређење и обука и развој). Једна од претпоставки је и да висина корелације независних варијабли са зависном буде већа од 0.3 и она је испуњена.

Критеријумска (зависна) варијабла: задовољство запослених

Предикторске (независне) варијабле: фактори талент менаџмента

Табела број 4: Сумарни модел

Модел	R	R^2	Кориговани R^2	Стандардна грешка процене
1	0.750	0.562	0.545	2.14204

Извор: Калкулација аутора

Табела Сумарни Модел показује да коефицијент детерминације износи 0.562, што значи да од укупног варијабилитета критеријумске варијабле (задовољства запослених), 56.2% варијабилитета можемо објаснити на основу индивидуалних разлика међу испитаницима у погледу предикторских варијабли укључених у модел (фактора талент менаџмента).

Табела број 5: ANOVA

Модел		Сума квадрата	df	Просечни квадрат	F	Sig.
1	Регресија	578.090	4	144.523	31.498	< .001
	Резидуали	449.657	98	4.588		
	Укупно	1027.748	102			

Извор: Калкулација аутора

ANOVA табела показује да је Ф = 31.498 и да је статистички значајан (п < .001). Ово указује да комбинација независних варијабли (фактора талент менаџмента) статистички значајно доприноси предикцији степена задовољства запослених у банкарском сектору. Дакле, између скупа предикатора (фактора талент менаџмента) са једне стране и критеријумске варијабле (задовољства запослених) са друге стране, постоји линеарна повезаност. Постојање ове линеарне повезаности значи да одређени проценат разлика међу запосленима у погледу задовољства можемо објаснити на основу тога што се они разликују у погледу предикторских варијабли укључених у модел.

Табела број 6: Регресиони коефицијенти

Модел		Нестандардизовани коефицијенти		Стандардизовани коефицијенти	t	Sig.
		B	SE	β		
1	Константа	-.504	1.164		-.433	.666
	Регрутација и селекција	.063	.064	.084	.991	.324
	Привлачење и задржавање	.175	.053	.407	3.297	.001
	Унапређење	.221	.074	.339	2.985	.004
	Обука и развој	-.013	.084	-.013	-.157	.875

Извор: Калкулација аутора

Једна од најзначајних табела је табела коефицијената. Она нам показује стандардизоване бета коефицијенте, који се тумаче као коефицијенти корелације. Т тест и Сиг. За сваку независну варијаблу, односно за сваки од фактора талент менаџмента указују да ли она статистички значајно доприноси предвиђању задовољства запослених. Бета коефицијенти представљају јединствен допринос сваке од независних варијабли, након што се статистички уклоне утицаји преклапања са другим независним варијаблама. На основу ефеката парцијалних доприноса фактора (β коефицијенти који показују величину ефеката предикције зависне варијабле за сваки потенцијални фактор) може се уочити да само две предикторске варијабле - Привлачење и задржавање (β = 0.41, т = 3.297, п = .001) и Унапређивање (β = 0.34, т = 2.985, п = .004) статистички значајно предвиђају разлике у задовољству запослених, односно дају статистички значајан допринос, када су све предикторске варијабле заједно укључене у модел, јер је код ове две варијабле вредност у колони Сиг мања од 0.05). Дакле, регресиони модел објашњава значајан проценат варијансе зависне варијабле. Имајући у виду приказане резултате може се закључити следеће:- На основу резултата корелационе анализе, Главна хипотеза као и помоћне хипотезе X1, X2, X3 и X4 потврђене су и прихватају се. Повезаност између Задовољства послом као зависне и фактора

талент менаџмента (Регрутација и Селекција, Привлачење и Задржавање, Унапређење и Обука и развој) као независних варијабли креће се од умерене до високе. Овакав налаз у складу је са резултатима до којих су дошли аутори (Bethke-Langenegger, Mahler & Staffelbach, 2011; Akar & Sharma, 2018; Dixit & Arrawatia, 2018;) чије студије су такође утврдиле постојање статистички значајне везе између фактора талент менаџмента и задовољства послом запослених у сектору банкарства.

- Хипотезе Х2 и Х3 додатно потврђују и налази регресионе анализе. Наиме када су све независне варијабле (фактори талент менаџмента) заједно укључене у модел, Привлачење и задржавање и Унапређење су фактори који статистички значајно предвиђају задовољство запослених. Овакав истраживачки налаз у складу је резултатима студије аутора Almomani, Sweis & Obeidat, (2022) који су регресионом анализом такође утврдили да је задржавање талената (у које спадају и могућности за унапређење) фактор који у значајној мери утиче на задовољство послом запослених у сектору банкарства.

4. ДИСКУСИЈА И ЗАКЉУЧЦИ

Данашње банкарско тржиште располаже мање-више истим банкарским производима/услугама тако да се компетитивна предност банке, заправо налази у начину и квалитету пружене услуге. Начин пружања банкарске услуге који подразумева изградњу личног односа и дугорочне везе са комитентима и клијентима битан је елемент квалитета, а квалитет је једно од најјачих маркетинг оружја у конкурентској борби међу банкама (Зеленовић, 2015). Због услужне природе банкарског сектора клијенти су високо повезани са запосленима у банкама у испуњавању својих финансијских потреба, па је брига о квалификованом кадру неопходна да би се стекао или осигурао напредак у односу на конкуренцију (Wickramaaeatchi et al, 2020). И поред примене савремених информационих технологија, банкарство је на првом месту, посао запослених (Зеленовић, 2015, стр 87). Упркос присуству других фактора, учинак запослених, посматран кроз став и понашање сваког банкарског службеника, сматра се кључним фактором у остваривању успеха банкарске организације (Alsafadi & Altahat, 2021). Верује се да је незадовољство један од главних фактора који демотивише и деморалише запослене на радном месту, што може довести до ниже продуктивности и на тај начин утицати на укупни учинак организације (Inuwa, 2016). Насупрот томе, задовољство послом може утицати на ниво посвећености организацији, на флуктуацију и финансијску добит организације, али и на ниво перформанси, на спремност запосленог да се укључи у активности које су усмерене ка решавању проблема, те на интензитет напора које запослени улаже у обављање посла (Јањић & Илић, 2019). Бројне користи, како за фирму тако и за њене запослене, основни су разлог настојања организација да успоставе задовољство запослених (Almomani et al, 2022). Користећи праксе управљања талентима, менаџерима се омогућава да поставе квалификоване људе са правим вештинама, на кључне позиције за постизање циљева и извршавање стратегија организације уз генерисање задовољства послом кроз идентификацију, оптимизацију и јачање талентованог запосленог (Tetik, 2017). Подизање свести доносилаца одлука у банкарском сектору Србије о значају имплементирања концепта талент менаџмента у ХР стратегије банака, је и била сврха спровођења овог истраживања. Ауторка је имала за циљ да укаже на важност примене овог концепта у изградњи задовољних запослених, и на тој основи постизању већих перформанси банака. Фокус истраживања био је на доказивању постојања позитивне, статистички значајне везе између фактора талент менаџмента и задовољства запослених у банкарству Србије.Резултати истраживања показују да фактори талент менаџмента (Регрутација и Селекција, Привлачење и Задржавање, Унапређење и Обука и развој) значајно доприносе побољшању задовољства запослених у банкарском сектору Републике Србије, тј. ХР стратегије банака у које су имплементирани елементи односно фактори талент менаџмента доприносе већем задовољству запослених у тим банкама, у односу на задовољство запослених у банкама чије ХР стратегије нису проткане талент менаџментом. Талент менаџмент укључује позиционирање правих људи на правим пословима ради конкурентске предности (Karuri, 2015). Закључак до којег се дошло након спроведеног истраживања, у складу је са налазима до којих су дошли аутори сличних студија. Банке би, на основу емпиријски проверених резултата требало да своје стратегије управљања људским ресурсима ажурирају у складу са принципима управљања талентима што подразумева најпре редизајнирање стратегија регрутације и селекције у правцу таргетирања талената са специфичним скупом знања и вештина чиме се скраћује време и снижавају трошкови спровођења процеса проналажења адекватних запослених. Не треба заборавити ни маркетинг аспект, тј. могућност брендирања банке као организације која регрутује, задржава и развија таленте. Регрутовањем и стипендирањем талената још за време студија, банке доприносе свом имицу „друштвене одговорности“. Након тога, када се талентовани појединац регрутује, треба га ту и задржати, како би најбоље од себе могао дати организацији, што се постиже обезбеђењем одговарајућег благостања, тј сета компензација и пружањем прилике да своја знања и способности даље унапређују и развијају кроз стимулативне програме тренинга и обука. Успостављањем односно унапређењем система талент менаџмента банке у Србији остварили би двоструку корист, будући да би са једне стране изградиле чврст тим састављен од квалификованих, талентованих појединаца који су задовољни својим послом, а са друге стране кроз позитиван утицај задовољства послом на индивидуални учинак запослених, подигле учинак целокупне организације као и квалтет пружених услуга. Неопходно је истаћи да је ово истраживање имало одређена ограничења. Једно од ограничења односи се на величину узорка, односно број испитаника. Услед веома строгих

правила банака које послују на територији Републике Србије у погледу заштите података, обим добијених одговора на анкету био је мањи у односу на број послатих упита за учешће у анкету. У обзир треба узети и да су налази засновани на информацијама које су дали запослени у банкама, који могу бити пристрасни. Осим тога, ограничење лежи у чињеници да је истраживање спроведено само у једном тренутку, што отежава утврђивање трендова овог феномена. Такође, висина коефицијент детерминације у моделу (R2) показује да и неки други фактори осим елемената талент менаџмента одређују задовољство запослених у банкарском сектору Србије , а које је могуће истражити, као предмет неких наредних студија.

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ДЕТЕРМИНАНТЕ ПРЕДУЗЕТНИКА ИЗ ОБЛАСТИ ЛОГИСТИКЕ У ЗЕМЉАМА ЕВРОПЕ

Апстракт: Предмет анализе овог рада су фактори који утичу на одлуку предузетника да изаберу каријеру у области логистике у раним фазама развоја предузетничких подухвата у Европи. Истраживањем су идентификовани демографски фактори (радни статус, старост и величина домаћинства), раст и интернационализација пословања. За анализу је коришћена Global Entrepreneurship Monitor (GEM) база података. Узорак сачињава 4130 предузетника Европе у раним фазама развоја њихових подухвата, у оквиру којих је 205 логистичких предузетника. Софтверски пакет SPSS је коришћен за емпиријску анализу података. Резултати су показали да категорија запослених на пуно радно време (укључујући и самозапослене), представља категорију из које највише долазе логистички предузетници. Већи број чланова домаћинства и више година старости карактеришу предузетнике из сектора логистике. Ови предузетници, према резултатима су усмерени на раст свог пословања. Уз то, своје пословање у великој мери обављају ван граница националне економије, где генеришу и један део својих прихода.

Кључне речи: Логистика, предузетништво, раст, интернационализација.

DETERMINANTS OF LOGISTICS ENTREPRENEURS IN EUROPEAN COUNTRIES

Abstract: The subject of this paper's analysis are the factors that influence the decision of entrepreneurs to choose a career in the field of logistics in the early stages of the development of entrepreneurial ventures in Europe. The research identified demographic factors (employment status, age and household size), growth and internationalization of business. The Global Entrepreneurship Monitor (GEM) database was used for the analysis. The sample consists of 4130 European entrepreneurs in the early stages of the development of their ventures, including 205 logistics entrepreneurs. The SPSS software package was used for empirical data analysis. The results showed that the category of full-time employees (including the self-employed) represents the category from which most logistics entrepreneurs come. A larger number of household members and older age characterize entrepreneurs from the logistics sector. These entrepreneurs, according to the results, are focused on the growth of their business. In addition, they conduct their business to a large extent outside the borders of the national economy, where they also generate a part of their income.

Keywords: Logistics, entrepreneurship, growth, internationalization.

1. УВОД

Прича о логистици је увек актуелна и привлачи доста пажње истраживачима, чему сведочи мноштво истраживања и писања у овој области. Оштра конкуренција на глобалном тржишту, скраћивање животног циклуса производа, технолошке иновације, дигитализација пословања, промена очекивања купаца, усмеравају пажњу на логистички сектор. Логистика подразумева све активности које омогућавају купцима да добију праве производе, у одговарајућој количини и у право време (Kasilingam, 1998). Harrison, Skipworth, van Hoek и Aitken (2019) логистику виде као подскуп ланца снабдевања. Истичу да је логистички задатак управљање протоком физичке робе и информација унутар ланца снабдевања. Council of Logistics Management логистику дефинише као процес планирања, имплементације и контроле ефикасности, тока и складиштења добара, услуга и сродних информација, од места порекла до места потрошње у циљу усаглашавања са захтевима купаца. Успешно управљање логистичким активностима захтева фокус на сваки објекат који утиче на процес усклађивања производа са захтевима купаца. Квалитет логистичких услуга је један од кључних фактора пословног окружења који дугорочно побољшава однос између провајдера логистичких услуга и купаца (Nedeliaková, Sekulová, Nedeliak и Ľoch, 2014). Поред тога, логистичке активности треба да буду исплативе за цео систем. То значи минимизирање системских трошкова, које чине трошкови транспорта, дистрибуције и складиштења. Нагласак није на једноставном минимизирању ових трошкова, већ на системској примени менаџмент логике. Провајдери логистичких услуга су приморани да прилагоде своје стратегије и донесу иновације, како би обезбедили јефтину услугу и испоруку према захтевима и очекивањима купаца. Прича о иновацијама у логистици води углавном до логистичких предузетника (Sousa-Zomer и Miguel, 2018). Предузетници много лакше мењају своје стратегије, брже реагују на промене и проналазе решења за нове изазове. Они ће створити иновативније производе, чиме ће побољшати коришћење ресурса и допринети унапређењу обављања логистичких активности. Разумевање укључености малих предузетника у логистички сектор је у фокусу овог истраживања. Циљ је идентификовати детерминанте које одлучујуће утичу на одлуку избора каријере логистичког предузетника. У структури рада је првенствено извршена теоријска анализа литературе из ове области. Сагледан је утицај демографских фактора на избор каријере логистичког предузетника. Поред тога, у фокусу су и фактори раста и интернационализације пословања, као битне детерминанте предузетника из области логистике. За анализу су коришћени подаци Global Entrepreneurship Monitor (GEM) базе података. У наставку су представљени методологија и резултати. Задатак је обухватио утврђивање заједничких карактеристика насцентних предузетника и предузетника чији се подухват налази у периоду инкубације, са простора Европе. На крају следе дискусија и закључне поруке.

2. ТЕОРИЈСКА АНАЛИЗА

Логистика је велика реч за велики изазов (Harrison и сар., 2019). Предузетници су у великој мери допринели развоју и трансформацији логистике, пошто предузетништво у сектору транспорта и ланца снабдевања може имати директан и значајан утицај на све активности (Negrutiu, Vasiliu и Enache, 2020). Marshall, McCarthy, McGrath и Claudy (2015) у свом раду аргументују снагу везе између предузетништва и одрживости ланца снабдевања. Допринос предузетништва у логистичком пословању потврђују и Chienwattanasook Wattanapongphasuk, Prianto и Jermsittiparsert (2019). Предузетнички подухвати се не покрећу случајно и резултат су неког планског понашања (Ajzen, 1991). Аутори полазе од претпоставке да је могуће издвојити кључне детерминанте, које карактеришу предузетника из ове области. Разумевање укључености предузетника у сектор логистике, намеће потребу разумевања фактора који опредељујуће утичу на избор тог сектора. У фокусу истраживања су демографски фактори, фактори раста и фактори интернационализације пословања.

2.1 Демографски фактори

Демографске одреднице обухватају старост, пол, образовање, радни статус, брачни статус, величину домаћинства и друго. Демографске варијабле могу да објасне предузетничке намере (Arafat и Saleem, 2017). Javalgi и Grossman (2016) истичу да демографске карактеристике заслужне за оријентацију предузетника и тражење нових могућности. Различите студије дају мешовиту слику утицаја старости на предузетничке намере. Старији људи карактерише много већи ниво одговорности, распрострањене мреже познанстава, више знања и искуства, док су млађи предузетници ближи новим технологијама, енергичнији су, имају већи потенцијал за развој и унапређење јер не познају своје границе. Старење се обично посматра у негативном односу са намерама за покретање предузетничких подухвата (Janssen, 2003; Brixy и Hessels, 2010), јер се старост везује за мањак креативности и иновативности, већу аверзију према ризику и жељу за сигурним послом. Код логистичких предузетника је ситуација другачија. Обављање послова у области логистике захтева искуство и знање из ове области, финансијска средства, транспортна средства, грађевинске објекте и широку мрежу познанстава. За ово је потребно време и све то се стиче годинама, па је мала вероватноћа да ће млада особа створити ове предуслове и започети свој подухват у сектору логистике. Због тога се у раду очекује позитивна

веза између година старости и намере за покретање подухвата у области логистике (Pindado Tapia и Sánchez García, 2017; Zagata и Sutherland, 2015). Радни статус је фактор који се разматра статистички значајан за предузетничке намере (Startiene и Remeikiene, 2009). Претпоставка је да категорија запослених на пуно радно време у односу на друге категорије, носи највећу вероватноћу за покретање подухвата у овом сектору. Аутори у анализу узимају и величину домаћинства као битну детерминанту логистичких предузетника. Литература на двосмислен начин представља ефекат величине породице на предузетнике. На једној страни су они који тврде да ће веће породице утицати на то да особу одврате од предузетничког ангажовања, пошто се налазе стално у ситуацији да зарад посла морају жртвују време проведено са породицом (Shelton и John, 1996). Са друге стране, каже се да ће већи број чланова домаћинства позитивно утицати на раст предузетничких подухвата. Већи број чланова домаћинства представља извор радне снаге, која може допринети подухвату. Поред тога више чланова може означити и веће финансијско обезбеђење породице, што даје већу слободу за ризик и улазак у предузетничке воде (Raijman, 2001). Прва хипотеза се поставља на основу извршене анализе:

X1: Демографске карактеристике (старосна доб, радни статус и величина домаћинства) утичу на ране предузетнике у Европи да бирају каријеру у сектору логистике.

2.2 Фактори раста

Утицај предузетничких подухвата на привредни развој земаља остварује се путем његовог раста у виду креирања нових радних места, развоја иновација и наступа на страним тржиштима. Предузетници својом улогом различито доприносе привредном развоју земаља. Неки од њих желе да развијају нове производе и понуде их тржишту, поједини настоје да увећају пословање и врше додатна запошљавања у складу са потребама предузећа, док неки своју шансу виде у наступу на другим тржиштима. Ово уједно представља и основни разлог укључивања ових елемената у оквиру истраживања од стране Global Entrepreneurship Monitor-а. Значај анализе наведених елемената посебно се истиче током ране фазе предузетничког процеса, обухватајући предузетнике, власнике чији подухвати још увек нису навршили континуираних 42 месеца исплаћених зарада. Тежња ка расту предузетничког подухвата представља јасну спону између предузетништва и једног од најважнијих циљева Влада свих земаља истакнутог у виду креирања нових радних места (Oyelola, Ajiboshin, Raimi, Raheem и Igwe, 2013). Интересовање за истраживање раста предузетничког подухвата разумљива је из разлога идентификације различитих утицаја предузетништва на привреду земаља, поготово у области потенцијала за креирање нових радних места, која у кризним периодима, у условима пада привредне активности и стопе запослености представља извор података за усклађивање доношења и усвајања различитих стратегија, мера и политика од стране Влада појединих земаља. Предузетништво као дисциплина постало је веома интересантан предмет изучавања и разматрања од стране бројних истраживача (Khan, Khan и Alam, 2005; Stam, Bosma, Van Witteloostuijn, De Jong, Bogaert, Edwards и Jaspers, 2012; Estrin, Korosteleva и Mickiewicz, 2022). Интересовање за истраживања у овој области као и активне промоције, предузетништво црпи из бројних чињеница. Предузетништво представља основу привредних активности развијених земаља, развијена предузетничка иницијатива карактеристика је привреда високо развијених земаља, оно утиче на економски развој, утиче на повећање стопе запослености путем генерисања нових радних места итд. Креирање нових радних места резултат је тежње предузетника за остваривањем раста предузетничког подухвата (Karadeniz и Özçam, 2010). У питању је велики допринос економском развоју земаља из разлога што велики број новооснованих предузећа располажу завидним потенцијалом за раст подухвата и креирање нових радних места. Литература из области предузетништва препознаје два извора економског раста путем развоја предузетништва. Први представљају већ постојећа, развијена, успешна мала, средња и велика предузећа проистекла на бази предузетничких подухвата. Док је као други извор препознат у виду нових и растућих предузећа, предузетника који се налазе у раним фазама предузетничког процеса. Ова група предузетника према GEM методологији идентификована је у виду индивидуалаца који су лично укључени у креирање новог предузетничког подухвата. Они су истовремено власници/менаџери предузећа које није старије од 48 месеци. Сагласно претходно реченом, поставља се следећа хипотеза:

X2: Фактори раста имају директан позитиван утицај на предузетничке намере у сектору логистике у Европи.

2.3 Фактори интернационализације

Предузетници као носиоци предузетничког процеса, заснованог на уочавању и профитабилној експлоатацији идентификованих шанси, често могућности за раст свог подухвата проналазе изван граница своје земље. Упоредо са јачањем процеса глобализације светске привреде, у претходној деценији јавља се и интересовање за интернационализацију предузетничких подухвата (Časas и Dambrauskaitė, 2011). Интернационализација пословања није везана само за наступ мултинационалних компанија већ је доступна и новооснованим предузетничким подухватима који уз помоћ доступних технологија, иновативних производа/услуга и доступних тржишта своју шансу за раст проналазе изван оквира националних економија (Alves, Galina, Macini, Cagica

Carvalho и Costa., 2017). Једна од битних детерминанти од утицаја на доношења одлуке о наступу на страним тржиштима исказана је кроз величину домаћег тржишта.
Интернационализација пословања као процес идентификовања и експлоатације шанси изван националних оквира може се посматрати са два нивоа. Са аспекта предузетника који идентификује и доноси одлуке о експлоатацији уочене шансе, и са аспекта предузећа које предузетнику омогућава профитабилну експлоатацију уочених шанси. У данашњем времену глобализације пословања и у условима евидентне тржишне либерализације, предузетници и њихови подухвати морали би искористити све олакшане услове за наступ на другим тржиштима (Castaño, Méndez и Galindo, 2016). Могућност приступа другим тржиштима, кројење пословне понуде према захтевима потрошача, представљају могућност за остваривање раста предузећа, која се понекад у оквиру националних граница чини недостижном. Интернационализација пословања не само да утиче на раст пословања предузећа већ она неминовно утиче и на развој иновација производа/услуга или процеса. Интернационализација пословања предузећа пружа контакт са другим предузећима из иностранства, са конкуренцијом, потрошачима, добављачима што представља основу за развој отворених иновација. Успешан развој иновација представљаће потенцијал за раст пословања предузећа услед успешнијег наступа на домаћем и међународном тржишту што у крајњој инстанци доводи предузетнички подухват у зрелије фазе предузетничког процеса. На основу анализиране литературе

X3: Интернационализација има директан позитиван утицај на предузетничке намере у сектору логистике у Европи.

3. МЕТОДОЛОГИЈА ИСТРАЖИВАЊА

Предмет истраживања овог рада је идентификовање детерминанти које утичу на предузетнике у Европи да се баве логистиком. За потребе истраживања је коришћена Global Entrepreneurship Monitor (GEM) база података из 2018. године. Из базе је филтрирано 4130 предузетника, од којих је 205 оних који се баве логистиком. Статистичка анализа је обављена коришћењем софтверског пакета SPSS. Као зависна варијабла је одабрана TEA: Industry ISIC version 4, 1-digit code која одражава индустријски сектор предузетничког подухвата. Истраживачким узорком су обухваћени предузетници који се налазе у раној фази предузетничке активности (TEA). Извршено је рекодирање ове варијабле са намером креирања варијабле категоријског типа. У једну групу су издвојени предузетници који се баве логистиком, док су у другој групи предузетници из осталих делатности. Независне варијабле су груписане у три категорије фактора: демографски фактори: *радни статус, величина домаћинства, старост*; фактори раста и фактори интернационализације.

4. РЕЗУЛТАТИ И ДИСКУСИЈА

Испитивање утицаја детерминанти на одлуку за бављење предузетништвом у подручју логистике, одрађено је путем бинарне логистичке регресије. Пошто Omnibus Tests of Model Coefficients узима у обзир независне варијабле, на основу података (Sig.=0.000), ($p<0.0005$) боље предвиђа резултате, него у ситуацији где се предвиђа да се сви предузетници баве логистиком. Hi-квадрат износи 65,92 , уз 11 степени слободе. Према Hosmer-Lemeshov тесту hi-квадрат износи 4,96 уз значајност 0,762, што показује да је подржан модел. Nagelkerke R Square се користи као надградња Cox & Snell R Square, па се извештава на основу њега. Тиме је модел објаснио 4,8 % варијансе о детерминантама предузетника логистике, а тачно је класификовао 95,3% случајева.

Table 1: Variables in Equation

Variables in Equation							
		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1a	GEMWORK. GEM harmonized work status			17,841	5	0,004	
	GEMWORK. GEM harmonized work status (1)	0,733	0,424	2,241	1	0,244	2,080
	GEMWORK. GEM harmonized work status (2)	-1,205	0,363	7,778	1	0,009	3,337
	GEMWORK. GEM harmonized work status (3)	-1,222	0,421	7,855	1	0,002	3,395
	GEMWORK. GEM harmonized work status (4)	-0,401	0,541	0,574	1	0,344	0,670
	GEMWORK. GEM harmonized work status (5)	0,198	0,365	0,311	1	0,628	1,219

	E. How many members make up your permanent household, including you?	-0,245	0,038	21,643	1	0,000	0,783
	B. What is your current age (in years)?	-0,023	0,008	2,714	1	0,079	0,977
	TEA: expects more than 5 employees in next five years(1)	0,402	0,190	5,147	1	0,018	0,669
	TEA: weak international orientation (more than 1% of revenue from outside country)(1)	0,313	0,142	5,639	1	0,013	0,731
	Constant	4,130	0,345	135,709	1	0,000	62,172
a. Variable(s) entered on step 1: GEMWORK. GEM harmonized work status, B. What is your current age (in years)?, TEA: expects more than 5 employees in next five years, TEA: weak international orientation (more than 1% of revenue from outside country).							

Source: Analiza autora, 2023.

Анализа резултата почиње сагледавањем променљивих које су статистички значајне за модел. То су детерминанте које опредељујуће утичу на то да ли ће особа започети предузетнички подухват у сфери логистике. Радни статус и број чланова домаћинства су статистички значајне варијабле у оквиру демографских варијабли. Фактори раста и фактори интернационализације су статистички значајне детерминанте за предузетнике у области логистике.

Вероватноћа да се особа бави предузетништвом у области логистике је 3,337 пута мања за особе које су запослене на скраћено радно време у односу на оне који су запослени на пуно радно време (укључујући и самозапослене), када су сви остали фактори једнаки. Вероватноћа да се особа бави предузетништвом у области логистике је 3,395 пута мања за особе које су пензионисане и инвалиди у односу на оне који су запослени на пуно радно време (укључујући и самозапослене), када су сви остали фактори једнаки. Овим је потврђено то што и сама литература каже (Carter, Gartner, Shaver и Gatewood, 2003; Nair и Pandey, 2006). Највећу вероватноћу за бављење логистичким предузетништвом имају особе које су у статусу запослења са пуним радним временом (укључујући и самозапослене). Кључно је то што ова категорија узима у обзир самозапослене, што значи да су то предузетници. Поред тога део запослених на пуно радно време има веће шансе за покретање подухвата у овом сектору. Разлог може бити накупљено искуство и уско знање у области логистике, препознавање шансе у области, познавање потенцијалних сарадника и слично.

Вероватноћа да се особа бави предузетништвом у области логистике је 0,783 пута мања за оне који имају мањи број чланова домаћинства, када су сви остали фактори једнаки. Већи број чланова породице, значи и већу вероватноћу да ће предузетник бити из логистичког сектора, што се поклапа са другим погледом литературе, када је у питању утицај броја чланова домаћинства на предузетничке намере (Raijman, 2001). Разлог за то се може видети у томе што логистичке фирме обично настају и развијају се као породичне фирме, у којима раде сви чланови породице и заједно доприносе бизнису. То је веома карактеристично за фирме које се баве транспортом.

Вероватноћа да се особа бави предузетништвом у области логистике је 0,977 пута мања за млађе у односу на старије, када су сви остали фактори једнаки. Претходна два закључка иду у прилог овом трећем, а то је да ће логистички предузетници бити старије особе, са већим домаћинством, који су временом стекли неопходно искуство и знање, партнере са којима сарађују, финансијска средства, транспортна средства и осталу инфраструктуру потребну за бављење овом врстом посла. Претходна анализа резултата нас доводи до тога да је прва хипотеза у потпуности потврђена.

Вероватноћа да се особа бави предузетништвом у области логистике је 0,669 пута већа за оне који очекују да ће им се број запослених повећати за више од 5 запослених у наредних 5 година, када су сви остали фактори једнаки. Бављење логистиком значи и улазак у велику конкурентску борбу. Опстанак је готово немогућ за оне који стагнирају и не желе развој. Самим тим, повећање броја запослених је неминовност (Karadeniz и Özçam, 2010). На основу тога је јасно да су логистички предузетници усмерени на раст и да очекују раст, јер је то једини начин да опстану у конкурентској трци. Развој трговине, све већи број трансакција им ствара шансе за посао, а раст им само може отворити нова врата за веће и уносније послове. Овим је потврђена и друга хипотеза.

Вероватноћа да се особа бави предузетништвом у области логистике је 0,731 пута већа за оне који генеришу више од 1% прихода изван своје земље, када су сви остали фактори једнаки. Ова ситуација је сасвим очекивана када су у питању предузетници из области логистике. Њихово пословање се у великој мери везује за преко граничне послове. Чак и када се посматрају логистички предузетници који су у раним фазама развоја свог подухвата, очекује се да ће одређени део својих прихода генерисати из иностранства (Ajzen, 1991; Alves и сар., 2017). Трећа хипотеза се потврђује овим резултатом.

5. ЗАКЉУЧАК

Развој логистике омогућава да се убрза оптимизација и прилагођавање индустријске структуре, остваривање економског раста, а самим тим и бржи економски развој. Предузетништво и иновације су алати који омогућавају развој логистике. Сагледавање детерминанти логистичких предузетника је потреба, како би се дошло до извора предузетничких подухвата у овој области, што може имати вишеструког значаја. То је био циљ нашег истраживања, за које је коришћена Global Entrepreneurship Monitor (GEM) база података из 2018. године. У оквиру ње су филтрирани одговори 4130 предузетника у раним фазама развоја њихових подухвата, од којих је 205 оних који се баве логистиком.

Три групе детерминанти су коришћене за анализу предузетничких намера логистичких предузетника. Демографски фактори чине прву групу. У питању су старост, радни статус и величина домаћинства. Сви фактори су се показали статистички значајни. Резултати су показали да се на покретање предузетничких подухвата у сектору логистике пре одлучују старије особе. Већи број чланова породице, повећава и вероватноћу предузетника да започне подухват у овој области. Што се тиче радног статуса, резултати говоре да запослени на пуно радно време (укључујући и самозапослене) имају највећу вероватноћу да буду логистички предузетници. Даља анализа је показала да су предузетници из логистичког сектора усмерени на раст њиховог пословања. Поред тога, резултати сведоче да је ова категорија предузетника окренута интернационализацији пословања.

Рад доприноси увећању литературе и у области логистике и области предузетништва. Даје базу за наредна истраживања у овој области. Истиче кључне детерминанте логистичких предузетника, што креаторима политике ставља до знања где треба да траже извор мотивације за подухвате у овој области, када желе да их стимулишу или редукују.

Рад садржи неколико ограничења. Наслов рада говори да се истражују детерминанте логистичких предузетника у Европи. Међутим, GEM база не обухвата све земље Европе, пошто поједине земље немају GEM национални тим који спроводи и финансира ова истраживања. База резултата је из 2018. године, што не значи да нема актуелне резултате, али их не гарантује. Одговори логистичких предузетника су филтрирани из базе, што доводи до тога да упитник није наменски формиран за ово истраживање. Детаљнији упитник би можда дао и детаљније резултате, уврстио још неку детерминанту и дао бољу слику предузетника из сектора логистике.

Наредна истраживања би могла да иду у смеру креирања упитника који је баш намењен за утврђивање детерминанти логистичких предузетника. Анализа детерминанти би се могла извршити по годинама и тако дати временски преглед и вршити поређења. Укључивање других детерминанти би могло довести до нових закључака. Поред тога, тражење конкретних препорука за унапређења од логистичких предузетника, могло би имати вишеструке користи за многе заинтересоване стране.

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IMPACT OF FINANCIAL STRESS ON WORK ENGAGEMENT AND JOB PERFORMANCES OF THE EMPLOYEES IN THE REPUBLIC OF SERBIA: PILOT STUDY

Abstract: Contemporary living conditions are challenging from many points of view. The COVID-19 pandemic still generates uncertainty and produces health and financial stress for many people. The current energetic crisis, by influencing inflation, also generates financial stress for many of them. On the other hand, organizations are under the pressure to be profitable and maintain productivity through workers' engagement. Based on the above, the subject of this paper is an investigation of the impact of financial stress on work engagement and job performance of employees in the Republic of Serbia. The aims of the paper are as follows: to find out whether financial stress influences work engagement and job performance of the employees in the Republic of Serbia, as well as to suggest the measures that employers could implement to reduce the financial stress of their employees. For this paper, a pilot study was conducted. The results of the study showed that financial stress significantly negatively influences two of three aspects of work engagement, further that dedication as one of the work engagement aspects significantly positively influence employees` performance, and finally, that financial stress does not have an influence on employees' performance, but mediated by dedication as one of work engagement aspect, has a negative influence on employees' performances. The contribution of the paper is twofold: it contributes to domestic literature through the empirical investigation of the impact of financial stress on the above-mentioned variables, and second, it draws attention to the employers on the importance of financial wellness programs for employees in the attempt to prevent or minimize the negative influence of financial stress on their performances.

Keywords: financial stress, work engagement, employee performance, financial wellness programs.

1. INTRODUCTION

Stress is an integral part of everybody's life. People are exposed to stress at work, in traffic on the way home from work, in private life etc. (Davis & Mantler, 2004). Many people are also exposed to stress in their attempt to survive due to natural disasters or wars. One of the specific forms of stress to which people are exposed nowadays is financial stress as well. People face it trying to manage their finance, pay bills, scholarships and other costs of everyday life. This type of stress recently has been strongly influenced by the COVID-19 pandemic causing many people to lose their job or, in the best, to have unstable employment. In addition, energy source prices increasing due to the current energetic crisis caused inflation in many countries and decreased the relative value of employees` salaries. It caused many people additional difficulties to pay bills and other expenses.

Although financial stress is usually considered a private matter of a thing, many studies confirmed that it has an impact in working place as well. According to some research, financial stress causes distraction from work, absenteeism, reduced morale of employees, increased turnover etc. (Kim & Garman, 2003; Kim & 2004; Sabri & Aw, 2020). Some of the studies in the previous period focused on investigating how financial stress affects work engagement as well. In most of them, it was found that financial stress has a negative influence on it (Padula et al., 2012; Fiabane et al., 2013; Rahmi et al., 2020). Work engagement is, however, one of the most significant manifestations of employees' behaviour and attitudes

in a working place. As such, it has many important outcomes for organizations, such as organizational commitment, organizational citizenship behaviour, innovation, initiative, active learning behaviour, knowledge sharing, creativity, proactivity, adaptability, decision-making quality, safety behaviours etc. (Motyka, 2018). In short, the engagement of the employees is one of the key factors of an organization's success and competitiveness (Macey et al., 2009).

Financial stress also tends to influence employees' performance. In many studies, the negative impact was confirmed (Kim & Garman, 2003; Kim & Garman, 2004; Sabri & Aw, 2020). Consequently, financial stress tends to have a negative impact on organizational performance. As Qureshi et al. (2015) noted, if there is something that hinders employees' performance, that has a great potential to erode companies' profits. That put financial stress on employees as one of the significant issues of an organization to be dealt with.

Having in mind the importance of work engagement for employees' attitudes and behaviour, and hence organizational performances and success, as well as the fact that the current economic situation for many people in the Republic of Serbia (and worldwide) causes financial stress, the subject of the paper is defined. It is the investigation of the impact of financial stress on work engagement and job performance of the employees in the Republic of Serbia. The aims of the paper are as follows: to find out whether financial stress influences work engagement and job performance of the employees in the Republic of Serbia, as well as to suggest the measures that employers could implement to reduce the financial stress of their employees. For the purpose of the paper pilot study in which 112 respondents participated was conducted.

The paper consists of three parts. The first part of the paper contains a literature review on the concepts such as financial stress, work engagement and job performance as well as hypothesis development. The second part of the paper contains the results of the empirical study and their discussion, while the third part of the paper contains a suggestion for employers as well as concluding remarks.

2. LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

Financial stress. There are many definitions of stress, but this phenomenon generally could be defined as an „unpleasant feeling that one experiences when one perceives that something one values has been lost or is threatened" (Davis & Mantler, 2004, p. 2). These authors further state that the loss could be referred to as material things, social issues, symbolic issues or economic issues (job security, money etc.). People who experience stress are usually worried, have the sense that their life is controlled by external forces, are feared, and anxious, and demonstrate defensive attitudes and behaviour (Furnham, 1997).

Stress could have many sources. One that is the most influential is the stress derived from personal finances, i.e., financial stress. The reason for that is that many aspects of personal life and basic life activities are associated with personal financial resources (Bagwell, 2000).

Although the term „financial stress" is frequently used in everyday life and has extensive use in the literature, the generally accepted definitions still missing. According to some authors, financial stress is a subjective assessment of one's financial state, including the perceived ability to pay expenses, satisfaction with one's financial situation, amount of savings and investment, and debt anxiety (Kim & Garman, 2003). On the other side, Suprapto (2020) simply defined financial stress as that it is pressure derived from debt or the inability to meet an obligation. Although there are different definitions of financial stress (which in their foundation are more or less similar), the authors mostly agree that financial stress has a negative influence on many aspects of a person's life, such as health, financial well-being, psychological status etc. Financial stress can cause illnesses such as headaches, and high blood pressure (Choi, 2009), disturb financial status, i.e. financial well-being (Iramani & Lutfi, 2021), cause depression and anxiety (George & Kane, 2014) etc.

Many studies confirmed that the financial stress of employees has significant negative implications in the working place as well. In many studies it was found that financial stress causes distraction from work, absenteeism, reduced morale of employees, increased turnover etc. (Kim & Garman, 2003; Kim & Garman, 2004; Sabri & Aw, 2020).

Work engagement. Work engagement is a very important topic in the field of human resources, organizational psychology, work psychology, organizational behaviour, and many other areas, but also in business practice. One of the frequently cited definitions of work engagement in the literature is that it is "a positive, fulfilling, work-related state of mind that is characterized by vigour, dedication and absorption" (Schaufeli et al., 2006, p. 702). According to Schaufeli et al. (2002), a high level of vigour refers to the energy, mental resilience, and persistence of the employees. Dedication refers to the sense of significance, enthusiasm, inspiration, and pride in the job. Finally, absorption refers to working in a state of complete concentration on one's work.

As there are many definitions of this concept, there are also many classifications of the types of work engagement. According to some authors, there are intellectual, affective and social types of engagement of employees (Barkhuizen & Rothmann, 2006). Intellectual engagement refers to intensive thinking about work and how work can be done more efficiently and effectively. Affective engagement refers to the positive feeling that employees have while performing work, while social engagement refers to the active sharing of employees' opinions and attitudes with colleagues about possible improvements to work processes and activities. Saks (2006), for example, distinguishes two types of engagement: employee engagement, referring to the realization of professional activity, and organizational engagement, referring to the implementation of an organization member's role (Saks, 2006).

Many studies confirmed that work engagement has an impact on various types of employees' attitudes and behaviours. It was found that work engagement has a positive impact on job satisfaction, organizational commitment, work performance, financial returns, work-life balance etc. (Bakker et al., 2012; Albdour & Altarawneh, 2014; Yan et al., 2017, Wood et al. 2020). Motyka (2018), further, reported that according to various studies, work engagement has a positive impact on the initiative, active learning behaviour, knowledge sharing, creativity, proactivity, adaptability, decision-making quality, and safety behaviours of the employees.

Since work engagement has various positive influences on many individual and organizational outcomes, various mechanisms for its improvement are proposed in the literature. Stein et al. (2021), for example, suggest that organizations should try to make work less stressful and more enjoyable or reward employees with different kinds of financial and other rewards.

Job performances. Job performance is an important theme in the literature as well. This issue is important for both, employees and employers. Its importance for the employees stems from the fact that their performances influence many important issues in their professional life, such as job satisfaction, salary, promotion etc. The theme of job performance is important for employers as well since individual performance influences overall organizational performance.

Job performance is a complex concept as it is a multi-dimensional concept. In its essence job performances may be differentiated from the process and the outcome perspective (Sonnentag et al., 2008). Job performance from the process perspective refers to behaviour that employees demonstrate in performing their job. In other words that is the action itself (Campbell, et al., 1990). On the other side, job performance from the outcome perspective refers to the results of the employees' behaviour. However, the behavioural and outcome perspective are related, but not totally. Namely, in some cases, the employees' results are affected by determinants that are beyond their actions (Sonnentag et al., 2008).

A great deal of attention in the literature regarding job performances is paid to the distinction between task and contextual performances as well. It is noted that contextual performances are those activities that are comparable for almost all jobs, whereas task performance is job specific. Further, it is stressed that task performance depends mainly on employees' abilities, whereas contextual performances are mainly predicted by motivation and personality. Finally, the authors state that task performances are in-role behaviour and part of the formal job description, whereas contextual performances mostly refer to extra-role behaviour and are discretionary (Sonnentag et al., 2008).

For job performance measurement purposes various measures, and technics are developed so far. Those techniques range from rating scales, tests of job knowledge, and hands-on job samples, to checking the archive records (Campbell et al., 1990). However, performance ratings (i.e., peer ratings and supervisor ratings) are the most frequent way of measuring job performance (Viswesvaran et al., 1996).

All previous concepts are very important themes for academic researchers and practitioners. Therefore, many studies in this field were conducted so far.

A certain number of studies investigated how financial stress impacts employee engagement. In many of them, it was found that that impact is negative. For example, in the study conducted by ADP, LLC (2018) twenty-six per cent of the employees, ages 18 through 70, reported that their money issues (financial stress) hurt their engagement. In another study, it was found that 44% of employees with worsened financial health reported lower engagement (Birth Plan, 2021). In some earlier research it is reported that employees under high financial stress are distracted from their work and spend more time dealing with financial problems (Kim & Garman, 2004). Based on the above, the first hypothesis that we are going to test in the paper is:

H1: Financial stress has a negative impact on the work engagement of the employees in the Republic of Serbia.

Many studies in previous periods focused on the investigation of the relationship between work engagement and job performance. In most of them it was found that work engagement has a positive impact on in-role job performance (Schaufeli et al., 2006; Rich et al., 2010) as well as on productivity (Baumruk, 2004; Richman, 2006). Bakker and Bal (2010) similarly found that engaged teachers received higher ratings from their supervisors on their in-role performance. Yongxing et al. (2017) further, found that work engagement has a positive impact on job performance with the moderating effect of perceived organizational support. Based on the above, the second hypothesis that we are going to test in the paper is:

H2: Work engagement of the employees in the Republic of Serbia has a positive impact on their job performance.

Literature in the previous period also dealt with the relationship between financial stress and employees' performance. For example, it has been shown that financial stress promotes absenteeism (Kim & Garman, 2003). Kim and Garman (2004) also found that employees under high financial stress may be distracted from their work and would spend more time dealing with financial problems. More recently, Sabri and Aw (2020) found that financial stress has a negative impact on workplace productivity. Some investigations in previous periods have shown that the cost of financial stress to an employer is around $ 5.000 per employee per year (George & Kane, 2014). When it is about the influence of work engagement on job performance, as was elaborated above, that influence in many studies found to be positive (Macey et al., 2009; Motyka, 2018). Having in mind these facts, the third hypothesis that is going to be tested in the paper is:

H3: Work engagement mediates the influence of financial stress on the job performance of the employees in the Republic of Serbia.

3. METHODOLOGY OF RESEARCH

Sampling design and data collection. The data that was used for the purposes of the paper was collected using a self-reported questionnaire in the period from January to February 2023. They were collected by the students of the Faculty of Economics in Niš during their internship in the organizations where they realized it. The data on which the hypotheses were tested consisted of 112 questionnaires filed by the respondents who participated in the pilot study.
Measuring instruments. To collect data on personal financial stress, the questionnaire developed by Turner et al. (1995) was used. The referred questionnaire consists of three questions assessed on the five-point Likert scale (from 1 = totally disagree to 5 = totally agree). One of the questions used in the survey was: "I have too many debts/I owe too much money." When it comes to the work engagement measurement and the assessments of the work engagement facets such as vigour, dedication, and absorption, the shorter version of the questionnaire named "Utreht work engagement scale – UWES-9" was used. (Seppälä et al., 2009). This questionnaire is widely accepted and implemented by many authors. The level of work engagement of respondents was measured by nine questions divided into three segments and assessed on the 7-point Likert scale (from 1 = never to 7 = always). For example, the question that has been used was "I am proud of the work that I do". Lastly, the questions used for the detection of the self-reported level of employees' performances are derived from the questionnaire of Huey Yiing and Zaman Bin Ahmad (2009). Respondents ranked their job performance on the three scales depending on the question. The first question concerning the level of job performance was rated on a scale ranging from "does not meet the standard" to "exceeds standard". Furthermore, the employees' performance was assessed in comparison to others of the same rank from "low level" to "high level". Their job contributes to the organization in comparison to other members of the work unit was ranged from "less contribution" to "more contribution".
Data analysis procedure. The collected responses from respondents were analysed by the SPSS 23.0 software, the AMOS and the PROCESS macro extension developed by Hayes (2018). The analysis itself involved examinations of the respondents' demographics, the data's normality, the confirmatory factor analysis of the researched variables and the mediation research model constructed following the predetermined hypotheses. According to Hair et al. (2019), the cut-off points for Cronbach's alpha and average variance extracted (AVE) were 0.6 for the former and 0.5 for the latter. The presence of a relationship between research variables whose influence has been examined is indicated by bivariate correlation. Moreover, presumptions of regression analysis were tested. Following the recommendations of Hayes (2018), model 4 for parallel mediation was implemented. Bootstrapping procedure on 5000 observations and 95% confidence interval indicates an indirect effect of an independent variable through mediators on the dependent variable in the research model. Only a confidence interval that does not include zero was observed as evidence of the mediation effect.

4. RESEARCH RESULTS AND DISCUSSION

Research results. The following Table 1 indicated the structure of the sample. Of the 112 respondents, 72 were females. The dominant age cohort was between 36 and 45 years old and the majority of respondents held high school diplomas.

Table 1. The demographic structure of the sample

Item	Classification	N	% of the total sample
Gender	Male	40	35.7
	Female	72	64.3
Age	< 25	8	7.1
	26 - 35	16	14.3
	36-45	40	35.7
	46 - 55	38	33.9
	56-65	10	8.9
Education	High school	56	50.0
	Vocational education	28	25.0
	High education (BSc, MSc and PhD)	28	25.0

Source: Authors' calculations

In order to check the reliability and validity of the used scales, before the mediation analysis, a confirmatory factor analysis was conducted.

Table 2. Reliability of the variables

Variable		Factor loadings	Cronbach α
Financial stress	FS1	.928	.932
	FS2	.895	
	FS3	.942	
Work engagement - Vigor	VI1	.828	.854
	VI2	.804	
	VI3	.747	
Work engagement - Dedication	DE1	.815	.908
	DE2	.794	
	DE3	.827	
Work engagement - Absorption	AB1	.736	.889
	AB2	.837	
	AB3	.839	
Employee Performance	EP1	.909	.909
	EP2	.910	
	EP3	.838	

Source: Authors' calculations

In Table 2 the reliability in the form of factor loadings and Cronbach alpha values is presented. All items describing one latent variable have satisfactory levels of reliability and none of them is below the cut-off point of 0.6. Moreover, factor loadings ranged between 0.763 and 0.942 for latent variables thus indicating satisfactory reliability larger than 0.5.

Table 3 presents the analysis of composite reliability (CR), average variance extracted (AVE), square root of AVE and correlations between latent variables.

Table 3. Validity of the variables

Variable	Mean	SD	CR	AVE	1	2	3	4	5
1. Financial stress	2.250	1.190	.935	.909	.935				
2. Work engagement - Vigor	3.554	1.164	.860	.818	-,302*	.904			
3. Work engagement - Dedication	4.339	1.468	.909	.876.	- 354**	,489**	.936		
4. Work engagement - Absorption	4.006	1.516	.891	.854	-,118	,706**	,458**	.924	
5. Employee Performance	3.667	.860	.910	.878	-.032	,198	.522**	,290*	.937

Note: AVE – average variance extracted; On the diagonal square root of AVE as a measurement of discriminant validity of variables; ** correlation significant on the level of $p < .01$, * correlation significant on the level of $p < .05$.

Source: Authors' calculations

Data referring to testing the validity and correlations testing indicates that each construct's CR was more than 0.7 and varied from 0.860 to 0.935. The AVE for each latent variable, however, was more than 0.5 and ranged from 0.818 to 0.909. These findings demonstrated the measures' strong convergent validity. The measurements and confirmation of variables' discriminant validity were further examined through a comparison of correlations and the square root of AVE. According to data from Table 3, it can be concluded that between financial stress and work engagement facets – vigour and dedication – exists a negative relationship. On the other hand, all aspects of work engagement are positively correlated indicating that they are related to each. This could be explained by the fact that they are used for assessment of the similar aspects of work engagement. Data from Table 3 also show that dedication and absorption as work engagement aspects are positively related to the employees' performance meaning that when dedication and absorption increase, the employees' performance will also increase.

In order to test the hypothesis we created a model in which financial stress was used as an independent variable, three aspects of work engagement (vigour, dedication and absorption) were used as mediator variables, while employees' performance was used as a dependent variable. Table 4 presents the results of the parallel mediation analysis we further conducted.

Table 4. Results of the parallel mediation

Relations	R^2	F	B	SE	t	p	95% CI
path a_1 = FS → VI	.091	**6.716***	**-.295**	.114	-2.592	.012	[-.52; -.07]
path a_2 = FS → DE	.125	**8.979****	**-.437**	.146	-2.997	.004	[-.73; -.14]
path a_3 = FS → AB	.014	.960	-.151	.154	-.9800	.332	[-.46; .16]
path b_1 = VI → EP	.340	**8.373*****	-.103	.110	-.938	.353	[-.32; .12]
path b_2 = DE → EP			**.338**	.075	4.509	.000	[.19; .49]
path b_3 = AB → EP			.080	.094	.850	.340	[-.11; .27]
path *c'* = FS → EP (direct effect)			,106	,098	1,082	,284	[-.09; .30]
path *c* = FS → EP (total effect)	,001	,037	-,023	,119	-,192	,849	[-.26; .22]
path *ab* (indirect effect)			-.129	.070			[-.27; .01]
VI ab_1			.035	.049			[-.04 .13]
DE ab_2			**-.172**	.068			[-.26; -.03]
AB ab_3			-.014	.030			[-.09; .04]

Note: **significant on the level of p < .01, *significant on the level of p < .05.

Source: Authors' calculations

The parallel mediation analysis has revealed that financial stress significantly negatively influences two of three categories of work engagement. Therefore, we may conclude that the first hypothesis (H1) is mostly confirmed. The data from Table 4 also shows that the influence of financial stress is less strong on vigour (β = -.295, p < .05, 95% CI [-.52; -.07]) than on dedication (β = -.437, p < .05, 95% CI [-.73; -.14]).

The parallel mediation analysis has also revealed that when it comes to the effect of dedication as a work engagement manifestation on employee performance significant influence was also found (β = .338, p < .05, 95% CI [.19;.49]). However, no other significant influences of work engagement manifestations on employee performance are observed. Therefore, we may conclude that the second hypothesis (H2) is partially confirmed.

Finally, data from Table 4 show that the total mediation effect of financial stress on employee performance through three work engagement parts is not significant. Also, the direct effect of financial stress on employee performance is not significant. However, dedication emerged as a statistically significant mediator in the relationship between the independent and dependent variables in the model (β = -.172, 95% CI [-.26; -.03]). Therefore, we may conclude that the third research hypothesis (H3) is not confirmed when the total mediation effect is assessed, but it is partially confirmed since dedication emerged as a statistically significant mediator in the relationship between financial stress and employee performance.

Discussion. The previously presented research results were an attempt of the authors to show whether the financial stress of the employees in the Republic of Serbia negatively hits their engagement and performance. However, none of these effects was confirmed completely in the pilot study we conducted. However, since the survey is still ongoing, and the sample in the next step of the research will be bigger, the final results of this kind of research could be different. Hence, in the discussion part of the paper in this phase of the research, we put attention to finding supporting studies in the literature for our third hypothesis since it contains all variables that we used in the study. We found similar results as they are in our study in the study conducted by Junça Silva and Lopes (2021). Their research showed that when work engagement increases occupational stress decreases, but employees` performance increases. They also found that work engagement could be a mediator between the perceived organisational support predictor and employee performance even though the perceived organisational support predictor does not influence a dependent variable.

Implication for the employers. Since the financial stress of the employees tends to negatively influence employees performances by occupying their energy, time and focus, many employers started to implement Employee Financial Wellness Programs (EFWPs). This program aims to strengthen employees' financial well-being through services such as financial coaching, payroll advances and short-term instalment loans, credit counselling, debt management, and online financial management tools (Fox-Dichter et al., 2018). According to Fox-Dichter et al. (2018), a recent survey of employers found that many offered EFWPs to help their employees with financial struggles and also to improve their performance, increase retention, and decrease absenteeism. Although there are not many studies that investigated the influence of EFWPs so far, some of them confirmed that implementing wellness programs had a positive influence on employees' extrinsic and intrinsic job satisfaction levels within the organization (Marshall, 2020). Since job satisfaction has great potential to positively influence employees' performances, it is reasonable to believe that EFWPs have a positive influence on many outcomes important for employers.

5. CONCLUSION

Since many employees nowadays face financial stress due to job insecurity caused by the COVID-19 pandemic and inflation caused by the energetic crisis, this paper dealt with this category and its influence on work engagement and employee performance. After a theoretical review of these categories, the results of the empirical study were presented and analysed.

The empirical study conducted in the context of the Republic of Serbia had the form of a pilot study. However, some of the results are already indicative. For example, it was found that financial stress, when mediated by dedication as one of the aspects of work engagement, has a negative influence on employees' performance. Although the hypotheses in the research were not completely confirmed, this result encouraged authors to continue this research, so the survey is still ongoing.

The contribution of the paper is twofold. First, it full-fills the gap in the literature in the Republic of Serbia regarding the impact of financial stress on work engagement and job performance which, by the knowledge of the authors, has not been empirically investigated in this context. Further, this paper draws attention to the employer on the importance of EFWPs that could implement in their organizations to prevent or minimize the negative impact of financial stress on their employees and, consequently, on their performances.

However, this paper is not without limitations. This paper's primary weaknesses are the fact that it is based on the pilot study (and hence on a small sample of respondents) as well as on the convenience sampling method that was used in the empirical research. These facts prevent the generalization of the results of the study to the whole working population. Since the authors continued to carry out the empirical research, in the next phase more reliable empirical results are expected.

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Ефекти културалне интелигенције, националног идентитета и традиције на куповину глобалних брендова

Апстракт: Процес глобализације тржишта је довео до укидања протекционистичких трговинских мера и либерализовања спољнотрговинског промета роба и услуга. Мултинационалне компаније пласирају своје брендове на тржишта широм света, а одлука потрошача да купе одређени бренд је детерминисана бројним факторима. Полазећи од наведеног проблемског подручја, циљ истраживања је да се испита утицај културалне интелигенције (метакогнитивни, когнитивни, мотивациони, бихевиорални фактор), националног идентитета и традиције на куповину глобалних брендова. Културална интелигенција представља способност особе да функционише у окружењу које је мултикултурално, као и да обавља интеракције са људима који долазе из различитих културалних подручја. Национални идентитет представља степен повезаности појединца са нацијом, док традиција подразумева поштовање историје, обичаја и правила понашања која су карактеристична за одређену државу. Истраживање је спроведено методом анкете на територији Републике Србије (Крагујевац, Нови Сад). Величина узорка је 138 испитаника, а њихови одговори су обрађени путем статистичког софтвера SPSS. Резултати истраживања су показали да културална интелигенција остварује позитиван, а национални идентитет и традиција негативан утицај на куповину глобалних брендова, а наведени резултати могу бити корисни маркетарима приликом конципирања маркетинг стратегије.

Кључне речи: Културална интелигенција, Национални идентитет, Традиција, Глобални брендови

The effects of cultural intelligence, national identity and tradition on the purchase of global brands

Abstract: The process of market globalization has led to the abolition of protectionist trade measures and the liberalization of foreign trade in goods and services. Multinational companies place their brands to markets all over the world, and the consumer's decision to buy a particular brand is determined by a number of factors. Starting from the stated problem area, the goal of the research is to examine the influence of cultural intelligence (metacognitive, cognitive, motivational, behavioral factor), national identity and tradition on the purchase of global brands. Cultural intelligence represents a person's ability to function in a multicultural environment, as well as to interact with people from different cultural backgrounds. National identity represents the degree of connection of an individual with the nation, while tradition implies respect for history, customs and rules of behavior that are characteristic of a particular country. The research was conducted using the survey method on the territory of the Republic of Serbia (Kragujevac, Novi Sad). The sample size is 138 respondents, and their answers were processed using the statistical software SPSS. The results of the research showed that cultural intelligence has a positive, and national identity and tradition have a negative influence on the purchase of global brands, and the mentioned results can be useful to marketers when designing a marketing strategy.

Key words: Cultural intelligence, National identity, Tradition, Global brands

1. УВОД

Растући процес глобализације тржишта и либерализовање спољнотрговинског промета роба и услуга довели су до појаве великог броја мултинационалних компанија које своје брендове пласирају на тржишта широм света (Cleveland & Balakrishnan, 2019). Конкуренција на тржишту је веома изражена и потрошачи у процесу куповине имају на располагању велики број алтернативних брендова, тако да је за маркетаре мултинационалних компанија од круцијалног значаја да истраже тржите, односно да препознају које су жеље и потребе потрошача, а да након тога формулишу и имплементирају одговарајућу маркетинг стратегију која ће уважити захтеве потрошача и донети њиховој компанији остварење профита (Tasci, 2021). Компаније које су препознатљиве на светском тржишту (на пример Coca-cola) формулишу глобалну маркетинг стратегију и покушавају да на сваком тржишту на коме наступају пласирају идентични бренд и на тај начин користе предности његове глобалне препознатљивости (Hollensen, 2017). Једна група потрошача сматра да глобални брендови поседују изузетне техничке перформансе и висок степен квалитета и поузданости. Са друге стране, одређени број потрошача купује производе и услуге домаћег порекла јер сматрају да на тај начин пружају подршку стабилном функционисању домаће привреде, што ће довести до повећања животног стандарда грађана и економског благостања (Pentz, Terblanche & Boshoff, 2017).

На одлуку потрошача о избору производа и услуга у процесу куповине утичу бројне детерминанте. Циљ овог рада је да се кроз процес емпиријског истраживања спроведеног на територији Републике Србије испита утицај културалне интелигенције (метакогнитивни, когнитивни, мотивациони и бихевиорални фактор), националног идентитета и традиције на куповину глобалних брендова. Након уводног дела, у оквиру прегледа литературе ће бити дефинисане наведене варијабле, анализираће се њихова међусобна повезаност, као и утицај које остварују на одлуку потрошача да купе глобалне брендове. У оквиру овог дела ће бити дефинисане истраживачке хипотезе и представљен истраживачки модел студије. Трећи део студије се односи на демографску структуру испитаника из узорка и методологију истраживања, док ће у четвртом дели бити представљени добијени истраживачки резултати. У завршном делу ће бити наведене најважније теоријске и практичне импликације које могу бити корисне маркетарима мултинационалних компанија, као и ограничења истраживања и могући правци будућих студија на ову тему.

2. ПРЕГЛЕД ЛИТЕРАТУРЕ

Културална интелигенција се дефинише као скуп компетенција и способности појединца које му омогућавају да се прилагоди и буде ефикасан у ситуацијама које карактерише мултикултуралност (Presibtero, 2017). У оквиру мултинационалних компанија запослени долазе из различитих културалних средина. Веома је важно говорити стране језике, познавати историју, културно наслеђе, норме понашања које су карактеристичне за друге културе, јер наведене информације и способности доводе до лакшег разумевања и боље пословне сарадње између запослених. Циљ менаџмента компаније је да на комплементаран начин искористи различите мултикултуралне способности и вештине својих запослених, као и да их подстакне да дају своје предлоге и идеје које могу да унапреде ефикасност приликом обављања радних задатака (Cui et al., 2019). Такође, велики број студената у програмима размене путује у иностранство, упознаје друге културе и њихове вредности и завршава иностране школе, тако да је културална интелигенција веома важна и у академском свету (Bernadette & Diane, 2017). Културална интелигенција остварује значајне импликације и у области туризма. Процес глобализације, побољшање инфраструктуре и саобраћајних мрежа, као и појава авио компанија које на тржишту конкуришу ниском ценом карата, довели су до повећања туристичких путовања широм света. Висок степен културалне интелигенције омогућава особи да приликом путовања на једноставан начин успостави комуникацију са људима из локалне културе, као и да добије информације које ће јој боравак у иностраној земљи учинити комфорнијим, попут информација о систему вредности одређене иностране земље, о музејима и споменицима културе које треба обићи и слично (Zdravković & Peković, 2021a). Концепт културалне интелигенције се према ауторима Earley & Ang (2003) састоји од четири базична фактора: метакогнитивни, когнитивни, мотивациони и бихевиорални фактор:

Метакогнитивни процеси обухватају скуп способности које омогућавају особи да функционише у ситуацији која је мултикултуралне природе, да примени и развија своје културално знање и да упозна карактеристике других култура (Tuan, 2016). Ang & Van Dyne (2015) наводе да метакогнитивни фактор културалне интелигенције позитивно утиче на иновативност потрошача и њихову намеру да купе глобалне брендове. Когнитивни фактор се односи на познавање закона, прописа, историје, као и економског и правног система других држава (Vlajčić et al., 2019). Lorenz, Ramsey & Glenn Richey (2018) наводе да когнитивна културална интелигенција утиче на степен организационе иновативности у компанијама, као и на куповину брендова који су препознатљиви на светском тржишту од стране потрошача. Мотивациони фактор се односи на жељу и ентузијазам појединца да путује у иностранство, да упознаје културно наслеђе других држава и да оствари комуникацију са локалним становништвом (Chen, Liu & Portnoy, 2012). Особе које имају развијену мотивациону културалну интелигенцију често путују у иностранство и купују луксузне брендове (Frias-Jamilena

et al., 2018). Бихевиорална културална интелигенција обухвата скуп вербалних (акценат) и невербалних способности (говор тела) које помажу особи да се прилагоди током комуникације са људима који долазе из различитих културалних средина (Jyoti & Kour, 2015). Zdravković & Peković (2021b) наводе да бихевиорални фактор културалне интелигенције остварује позитиван утицај на куповину страних брендова. На основу свих наведених студија, могу се формулисати следеће истраживачке хипотезе:

X1а: *Метакогнитивни фактор културалне интелигенције остварује позитиван статистички значајан утицај на куповину глобалних брендова од стране потрошача.*

X1б: *Когнитивни фактор културалне интелигенције остварује позитиван статистички значајан утицај на куповину глобалних брендова од стране потрошача.*

X1ц: *Мотивациони фактор културалне интелигенције остварује позитиван статистички значајан утицај на куповину глобалних брендова од стране потрошача.*

X1д: *Бихевиорални фактор културалне интелигенције остварује позитиван статистички значајан утицај на куповину глобалних брендова од стране потрошача.*

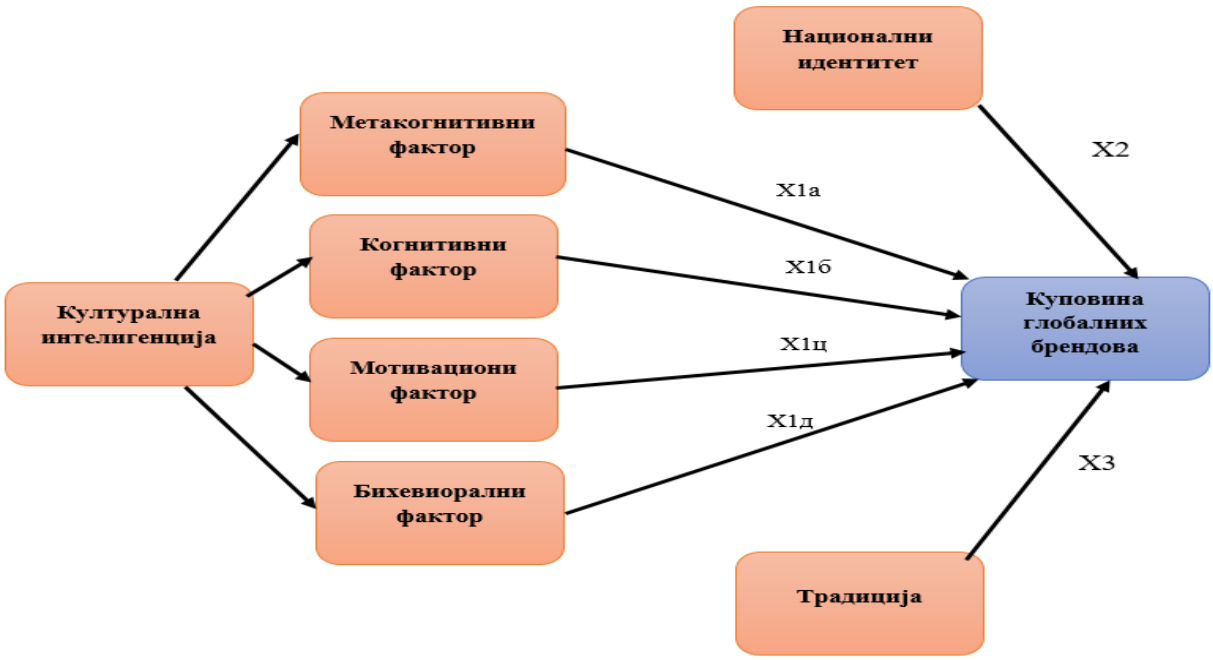
Национални идентитет се може дефинисати као прихваћен систем вредности у једном друштву, као и осећај бриге, повезаности и љубави коју појединац показује према својој нацији (Le, Thi Ngyen & Van Nguyen, 2013). Особе које имају изражен национални идентитет сматрају да је потребно заштитити националне интересе и обично купују производе и услуге домаћег порекла, како би национална привреда могла успешно да функционише и како би се подстакао раст стопе радне ангажованости становништва, као и животног стандарда грађана (Marinković, 2017). Социјалне кризе попут пандемије вируса Ковид-19 и рата у Украјини су изазвале одређене геополитичке тензије, тако да су неке државе донеле одлуку о одређеним протекционистичким мерама како би сачувале домаћу привреду (Здравковић & Гашевић, 2022). Такође, економска криза, несташица круцијалних енергената попут нафте и струје, доводе до пада индекса глобализације и раста протекционизма (Branicki, Sullivan-Taylor & Brammer (2021). На основу наведеног, потрошачи у процесу куповине имају мањи број страних брендова на располагању. Zdravković, Šapić & Filipović (2020) су утврдили да национални идентитет остварује позитиван утицај на куповину домаћих производа и услуга. На основу наведеног, може се формулисати следећа истраживачка хипотеза:

X2: *Национални идентитет остварује негативан статистички значајан утицај на куповину глобалних брендова од стране потрошача.*

Појам традиције подразумева поштовање историје једне државе, карактеристичних норми понашања, као и религијских и културалних обичаја (Vida, Dmitrović & Obadia, 2008). Традиционалне вредности су дубоко укорењене и представљају идентитет једног народа, споро се мењају, уче се и преносе се са генерације на генерацију. Елементи као што су државна химна, празници, обичаји, религија, култура, познате личности, историјски догађаји детерминишу традицију једног народа. Традиционалне вредности промовишу скромност као врлину, умереност у животу, као и конзервативистичка схватања (Shankarmahesh, 2006). Šapić (2017) на основу резултата своје студије наводи да традиција остварује позитиван утицај на намеру корисника да посећују домаће ресторане брзе хране, као и негативан утицај на намеру корисника да посећују стране ресторане брзе хране. На основу наведеног може се формулисати следећа истраживачка хипотеза:

X3: *Традиција остварује негативан статистички значајан утицај на куповину глобалних брендова од стране потрошача.*

На основу формулисаног циља као и хипотеза истраживања, креиран је истраживачки модел који је приказан на Слици 1 и представља основ за спровођење емпиријског истраживања.



Слика 1: Истраживачки модел
Извор: Аутори

3. Методологија истраживања

Емпиријско истраживање је спроведено методом анкете на територији Републике Србије (Крагујевац, Нови Сад). Укупан број испитаника који чине узорак је 138 и они су сегментирани према демографским карактеристикама пол, старост, образовање и статус. Преглед демографске структуре испитаника је представљен путем Табеле 1.

Табела 1: Демографска структура испитаника

		Број испитаника	Проценат испитаника
Пол	Женски	76	55.1%
	Мушки	62	44.9%
	Укупно	**138**	**100%**
Старост	До 20 година	19	13.8%
	21-30 година	52	37.7%
	31-40 година	22	15.9%
	41-50 година	26	18.8%
	51 година и више	19	13.8%
	Укупно	**138**	**100%**
Образовање	Основна школа	12	8.7%
	Средња школа	76	55.1%
	Факултет	50	36.2%
	Укупно	**138**	**100%**
Статус	Незапослен	25	18.1%
	Запослен	62	44.9%
	Студент	36	26.1%
	Пензионер	15	10.9%
	Укупно	**138**	**100%**

Извор: Аутори

У укупном узорку од 138 испитаника има 76 жена и 62 мушкарца. Највећи број испитаника у узорку чине особе старосне узрасти од 21-30 година, њих укупно 52 (37.7% узорка). Када је у питању образовање, 76 испитаника

има завршену средњу школу, док 50 испитаника има факултетско образовање. Што се тиче демографске карактеристике статус, у укупном узорку има највише запослених, а најмање пензионера.
Испитаници су давали одговоре на констатације из упитника путем Ликертове скале оценама од 1 до 7 (1- апсолутно се не слажем са наведеном констатацијом; 7- апсолутно се слажем са наведеном констатацијом). Констатације путем којих су мерене варијабле *културална интелигенција* (метакогнитивни, когнитивни, мотивациони, бихевиорални фактор), *национални идентитет* и *традиција*, су преузете из релевантних радова из области маркетинга који су се бавили сличном тематиком. Преглед констатација које су коришћене у упитнику је представљен путем Табеле 2.

Табела 2: Констатације које су коришћене за мерење истраживачких варијабли

Истраживачке варијабле		Констатације	Извори
Културална интелигенција	**Метакогнитивни фактор**	1.Покушавам да унапредим своје културално знање приликом комуникације са људима из других култура. 2.Покушавам да се адаптирам у ситуацијама које карактерише мултикултуралност. 3.Свестам сам да је културално знање веома корисно приликом путовања у иностранство.	**Ang et al. (2007)**
	Когнитивни фактор	1.Познајем норме понашања, обичаје, историју, правне и економске системе других земаља. 2.Познајем граматику и правопис других култура. 3.Познајем културални и религијски оквир других држава.	
	Мотивациони фактор	1.Мотивисан сам да путујем у иностранство и да упознајем културно наслеђе и историју других земаља. 2.Имам ентузијазам и жељу да остварим контакт са људима из других култура. 3.Упознавање других култура представља право богатство.	
	Бихевиорални фактор	1.Прилагођавам своје вербално понашање (акценат, јачина тона) приликом комуникације са људима који потичу из других култура. 2.Прилагођавам своје невербално понашање (изрази лица, говор тела) приликом комуникације са људима који потичу из других култура. 3.Самоуверен сам да могу да се прилагодим ситуацијама које су мултикултуралне по својој природи.	
Национални идентитет		1.Јако сам везан за Србију 2.Драго ми је што припадам српском народу. 3.Веома је важно бити повезан са нацијом и показати према њој бригу и љубав.	**Zdravković, Šapić & Filipović (2020)**
Традиција		1.Поштујем традиционалне вредности које су карактеристичне за Србију. 2.Породичне, културалне и религијске вредности су веома важне. 3.Поштујем културалне обичаје и државне празнике.	**Šapić (2017)**
Глобални брендови		1.Глобални брендови поседују изузетне техничке перформансе. 2.Глобални брендови имају висок степен техничке поузданости. 3.Генерално, глобални брендови имају висок ниво квалитета.	**Strizhakova & Coutler (2019)**

Извор: Аутори

У наредном делу рада ће бити представљени резултати који су добијени кроз процес емпиријског истраживања и на основу којих ће бити донете одлуке о потврђивању или одбацивању формулисаних истраживачких хипотеза.

4. Резултати истраживања

У истраживању је примењена анализа поузданости да би се испитало да ли су констатације које се користе за мерење истраживачких варијабли међусобно интерно конзистентне, а самим тим да би се испитала и релевантност постављеног истраживачког модела. Резултати анализе поузданости су представљени путем Табеле 3.

Табела 3: Анализа поузданости

Истраживачке варијабле	Cronbach's alpha coefficient
Метакогнитивни фактор културалне интелигенције	0.814
Когнитивни фактор културалне интелигенције	0.712
Мотивациони фактор културалне интелигенције	0.815
Бихевиорални фактор културалне интелигенције	0.721
Национални идентитет	0.825
Традиција	0.801
Глобални брендови	0.866

Извор: Аутори

На основу спроведене анализе поузданости може се закључити да је вредност *Cronbach's alpha coefficient* већа од прага 0.70, тако да се истраживачке варијабле мере путем адекватних констатација, а самим тим је и постављени истраживачки модел релевантан (Nunnally, 1978).
У истраживању је примењена вишеструка регресиона анализа путем које је сагледаван утицај културалне интелигенције (метакогнитивни, когнитивни, мотивациони, бихевиорални фактор), националног идентитета и традиције на куповину глобалних брендова. Резултати су представљени путем Табеле 4.

Табела 4: Вишеструка регресиона анализа (зависна варијабла: *Глобални брендови*)

Независне варијабле		Beta coefficient	t тест	Sig вредност	VIF coefficient
Културална интелигенција	**Метакогнитивни фактор**	0.227**	3.502	0.001	4.108
	Когнитивни фактор	0.261**	5.364	0.000	2.265
	Мотивациони фактор	0.326**	5.395	0.000	2.175
	Бихевиорални фактор	0.387**	6.826	0.000	4.906
Национални идентитет		-0.242**	-3.696	0.000	4.108
Традиција		-0.164**	-2.285	0.008	4.746

****- ниво сигнификантности 0.01; $R^2 = 0.495$**

Извор: Аутори

Коефицијент детерминације $R^2 = 0.495$ показује да је 49.5% варијабилитета зависне варијабле *куповина глобалних брендова* објашњено постављеним регресионим моделом. Вредност **VIF коефицијента** је код свих истраживачких варијабли мања од прага 5, тако да се у датом регресионом моделу не јавља проблем мултиколинеарности (Field, 2000). Културална интелигенција преко *метакогнитивног* (**β= 0.227; t тест= 3.502; Sig= 0.001**), *когнитивног* (**β= 0.261; t тест= 5.364; Sig= 0.000**), *мотивационог* (**β= 0.326; t тест= 5.395; Sig= 0.000**) и *бихевиоралног фактора* (**β= 0.387; t тест= 6.826; Sig= 0.000**) остварује позитиван статистички значајан утицај на куповину глобалних брендова од стране потрошача, тако да су потврђене **истраживачке хипотезе X1а, X1б, X1ц и X1д**. Са друге стране, *национални идентитет* (**β= -0.242; t тест= -3.696; Sig= 0.000**) и *традиција* (**β= -0.164; t тест= -2.285; Sig= 0.008**) остварују негативан статистички значајан утицај на куповину глобалних брендова од стране потрошача, тако да су потврђене и **истраживачке хипотезе X2 и X3**.

5. Закључак

Истраживање је спроведено са циљем да се испита утицај *културалне интелигенције* (метакогнитивни, когнитивни, мотивациони, бихевиорални фактор), *националног идентитета* и *традиције* на куповину глобалних брендова. Резултати су показали да културална интелигенција преко својих фактора остварује статистички значајан позитиван утицај на куповину глобалних брендова, док са друге стране национални идентитет и традиција остварују статистички значајан негативан утицај на куповину глобалних брендова од

стране потрошача, тако да су све три истраживачке хипотезе потврђене. **Теоријски допринос** се огледа у проширењу научног сазнања, као и у примени холистичког приступа и испитивању заједничког утицаја наведених варијабли на одлуку потрошача да купе глобалне брендове. **Практични допринос** се огледа у пружању информација маркетарима мултинационалних компанија, које им могу бити корисне приликом формулисања и имплементације адекватне маркетинг стратегије. Пандемија вируса Ковид-19, рат у Украјини, несташица важних енергената попут нафте и струје, као и економска криза померају тенденцију са глобализације ка деглобализацији, односно циљ сваке државе је да током кризних ситуација сачува националну привреду и омогући економску стабилност својим грађанима. Такође, грађани купују домаће производе и услуге како би помогли очувању и јачању домаће привреде. На основу резултата истраживања, може се закључити да би чак и мултинационалне компаније које су са својим брендовима препознатљиве на светском тржишту, требало у одређеној мери да модификују глобалну маркетинг стратегију и да је допуне комплементарним елементима који ће уважити потребе потрошача у зависности од локалног тржишта на коме се наступа, као што рецимо компанија McDonalds своје производе прави са посебним хлебом у Француској и са специфичним зачинима у Индији. **Ограничење истраживања** се огледа у релативно малој величини узорка (138 испитаника) и чињеници да је спроведено у само два града на територији Републике Србије (Крагујевац, Нови Сад). **Правци будућих истраживања** би могли да се заснивају на већем узорку и укључивању још неке варијабле која може имати значајан утицај на одлуку потрошача да купе глобалне брендове, попут потрошачког етноцентризма, космополитизма, имица земље порекла и осталих.

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RFM - CLV ПРИСТУП МЕРЕЊУ ВРЕДНОСТИ ПОТРОШАЧКИХ СЕГМЕНАТА

Апстракт: Мерење вредности потрошача представља ново подручје савремених маркетинг истраживања. У литератури из области маркетинга све више се наглашава неопходност пројекције будуће вредности тржишних сегмената и увођење финансијских калкулација у домен маркетинг аналитике. *RFM* је метод који се може успешно користити у циљу сегментације потрошача на основу три кључна критеријума: датума последње куповине – *R (recency); учесталости куповина - (frequency); просечног новчаног износа по куповини - M (monetary amount)*. RFM пружа могућност идентификације оних сегмената у којима постоји највиши степен интересовања за куповином новог производа. *CLV* (Customer Lifetime Value – вредност животног века потрошача) представља суму будућих токова профита који ће се према очекивањима остварити током читавог века сарадње предузећа са одређеном групом потрошача. RFM и CLV могу се комбиновано користити, тако што би се применом RFM метода формирали сегменти потрошача, а затим би се проценила вредност животног века посматраних сегмената. Тиме се идентификују потрошачки сегменти који су најатрактивнији за будућу сарадњу.

Кључне речи: вредност потрошача, сегментација потрошача, *RFM* метод, *CLV*.

RFM – CLV APPROACH FOR MEASURING THE VALUE OF CONSUMER SEGMENTS

Abstract: Measuring consumer value is a new field of contemporary marketing research. In the marketing literature, the necessity of projecting the future value of market segments and the introduction of financial calculations into the domain of marketing analytics is increasingly emphasized. RFM is a method that can be successfully used in order to group consumers based on three key criteria: the date of the last purchase - R (recency); frequency of purchases - (frequency); average monetary amount per purchase - M (monetary amount). RFM provides the ability to identify those segments which are interested in purchasing a new product. CLV (Customer Lifetime Value) represents the sum of future profit streams that are expected to be realized during the entire life of the company's cooperation with a certain group of consumers. RFM and CLV can be used in combination, by applying RFM methods to form consumer segments and then estimate the lifetime value of the observed segments. By implementing this procedure consumer segments that are the most attractive for future cooperation could be identified.

Keywords: consumer value, consumer segmentation, RFM method, CLV.

1. УВОД

Маркетинг истраживање представља процес прикупљања информација које служе менаџменту као важан инпут за доношење пословних одлука. Традиционално, маркетинг истраживање укључује екстерну и интерну анализу. При томе, у оквиру екстерне анализе евалуирају се општи економски, политичко-правни, технолошки, демографски, социолошки фактори на одређеном тржишту, као и кључни стејкхолдери попут потрошача, конкурената, дистрибутера и добављача. Очито, савремено маркетинг истраживање није усмерено само на страну тржишне тражње, него у свом фокусу има и разматрање понуде на одређеном тржишту. С друге стране, интерна анализа се најчешће односи на анализу маркетинг микса, али и на процену људских и технолошких ресурса предузећа.

Неке од најважнијих активности маркетинг истраживања су процена тржишног потенцијала, анализа текуће и пројекција будуће тражње, анализа добављача, анализа конкуренције, истраживање потрошача и истраживање инструмената маркетинг микса. Приметно је да се у оквиру маркетинг истраживања посебна пажња посвећује потрошачима. У том контексту, испитују се ставови, мотиви, навике и преференције потрошача, предвиђају се њихове намере у погледу будућих куповина, мери се степен њихове сатисфакције и лојалности (Aaker, Kumar, & Day, 2007). Вероватно најчешће коришћен квалитативни метод истраживања понашања потрошача су фокус групе, док у квантитативним теренским истраживањима доминантну улогу има метод анкете (Malhotra, 2020).

Међутим, у научним круговима приметне су и критике традиционалног маркетинга и маркетинг истраживања управо због чињенице да у њима нису у довољној мери, или нису уопште, присутне финансијске анализе којима се процењује профитабилност потрошачких сегмената. Наиме, ставови одређене групе еминентних аутора (Kumar & Reinartz, 2018; Gupta & Lehmann, 2006; Hughes, 2006; Kotler & Keller, 2009) указују да је неопходно да се у савременим маркетинг истраживањима посвети одговарајућа пажња управљању трошковима, пројекцији будућих новчаних токова, свођењу будуће на садашњу вредност, анализи стопе задржавања клијената. Једноставно, потребно је проценити вредност потрошачких сегмената или кључних клијената, што истовремено представља важну компоненту процене вредности предузећа. Овим путем се уводе финансијске калкулације у домен маркетинга и тиме се ствара мост који спаја маркетинг истраживања и пословне финансије. Тиме маркетинг добија нову финансијску димензију.

Потребно је да се у савременим маркетинг истраживањима примени интегрисани приступ истраживању понашања потрошача којим би се мерила њихова сатисфакција постојећом понудом предузећа која послују на одређеном тржишту, али би се затим процениле њихове будуће намере и вредност коју ће они донети одређеном предузећу током читавог животног века сарадње или током одређеног прецизираног временског периода. Тиме се путем анкета и фокус група мери сатисфакција потрошача, њихове навике и преференције везане за процес куповине, док се применом финансијских мерила процењује профитабилност потрошача.

Два важна индикатора пројекције вредности потрошача су: RFM (R – recency – датум последње куповине; F – frequency - учесталости куповина; M - monetary amount - просечни новчани износ по куповини) и CLV (Customer Lifetime Value – вредност животног века потрошача). Оба индикатора се могу користити за пројекцију будуће профитабилности тржишних сегмената, при чему се CLV често користи и за процену профитабилности кључних клијената на пословним тржиштима. С друге стране, RFM је користан инструмент сегментације потрошача на бази три кључна поменута критеријума који представљају компоненте овог мерила (Hughes, 2006). Свеобухватним разматрањем ова два концепта, може се констатовати да CLV даје прецизније резултате када је реч о пројекцијама будуће вредности, с обзиром на чињеницу да се његовом применом пројектују очекивани новчани токови и очекивани тршкови чиме се разматра протекло понашање које се екстраполира у будуће време и на крају своди на садашњу вредност, док се RFM анализа базира на историјским подацима (Kumar, 2006). Ипак, RFM је значајан идентификатор оних сегмената потрошача који су у старту спремни на куповину нових производа. Тиме се избегавају или барем умањују иницијални губици након увођења нових производа на тржиште.

Предмет рада је теоријска анализа CLV и RFM показатеља у функцији спровођења успешне сегментације и пројекције вредности сегмената. Циљ рада је да укаже на предности и недостатке ове две анализе али и на могућност њихове комбиноване примене. Тиме се прецизније таргетирају они сегменти који су атрактивни за дугорочну будућу сарадњу. Прегледом релевантне литературе приметан је још увек не тако велики број радова из ове области, нарочито када је реч о домаћој литератури. У том смислу, истраживачка мотивација рада огледа се у истицању значаја примене ова два индикатора и њиховог инкорпорирања у систем метрике савремених маркетинг истражицања. Рад се базира на теоријској анализи и он представља основу за будућа емпиријска истраживања у домену сегментације и финансијске пројекције вредности потрошача.

2. RFM СЕГМЕНТАЦИЈА И АНАЛИЗА ВРЕДНОСТИ ПОТРОШАЧА

RFM је користан метод који се може применити у поступку сегментације потрошача на бази три кључна критеријума: датума последње куповине, учесталости и просечног новчаног износа по куповини (Heldt, Silveira, & Luce, 2021). Такође, RFM се може успешно искористити и за предвиђање будућих реакција и вредности

потрошача. Према процедури примене RFM метода сви потрошачи се по основу сваке од поменуте три компоненте могу сврстати у 5 сегмената. Нпр. 20% потрошача који су на врху листе формиране на основу датума последње куповине чине сегмент 5R, док 20% потрошача са највећом фреквенцијом куповине чине сегмент 5F. Аналогно томе, 20% потрошача који у просеку издвајају највиши новчани износ за куповину сврставају се у сегмент 5M (McCarty & Hastak, 2007). Обрнута ситуација је са оних 20% потрошача који су на дну листе по сваком од поменутих критеријума (сегменти 1R; 1F; 1M). Резултати спроведених студија указују да се будуће понашање потрошача најбоље предвиђа сагледавањем резултата по основу R компоненте и самим тим потрошачи у сегментима 5R и 4R по правилу показују највиши степен спремности за куповином новог производа. F и M компонента су нешто слабији прогнозери будућег понашања и самим тим и будуће вредности потрошачких сегмената. Ово је нарочито случај са M компонентом која је прецизан прогнозер једино у ситуацијама када се предвиђа будућа продаја новог ексклузивног производа која се процењује на основу продаје сличних ексклузивних производа у прошлом периоду (Hughes, 2006).

Приступ са пет формираних сегмената по свакој компоненти захтевао би дефинисање укупно 125 сегмената што је превише захтевна процедура за многа предузећа управо због чињенице да она немају податке у бази о куповинама великог броја клијената. Због тога се често иде на приступ 3 x 3 x 3 који захтева укупно 27 сегмената. Осим наведеног, због мањег значаја M компоненте може се применити и приступ 3 x 3 x 2 који је сасвим реалан за примену и у случају предузећа са мањим бројем клијената будући да у овом случају је потребно груписати потрошаче у 18 сегмената. Уколико је реч о јефтинијим потрошним производима, у принципу се може искључити M компонента и може се применити приступ 4R x 3F или приступ 3R x 2F. Уколико истраживачи желе да се држе основних постулата RFM метода и да у анализу укључе све три компоненте и ако је реч о потреби формирања мањег броја сегмената може се ићи на примену 3 x 2 x 2 и дефинисање 12 сегмената, мада је као компромисно решење вероватно најбоље применити приступ 3 x 3 x 3 будући да се прецизније пројекције могу добити уколико је у анализу укључен већи број сегмената (Маринковић, 2012).

RFM је веома користан инструмент откривања оних сегмената који су на самом почетку спремни да купе одређени производ који се уводи на тржиште. Потрошачи се према регуларној и већ поменутој процедури сврставају у један од укупног броја одабраних сегмената (нпр. 3R2F2M или 1R2F1M) на основу историјских података о датумима и вредностима реализованих куповина сличних производа из прошлости. Затим се бира узорак потрошача (који може чинити 3% или 5% укупне популације клијената датог предузећа) након чега се промотивни флајери о новом производу шаљу потрошачима који су укључени у узорак путем поште. Генерално гледано, у случају оваквог вида промоције релативно мали број контактираних грађана уопште погледа дати флајер, а још мањи број њих се одлучи на куповину новог производа. Често су позитивне стопе одговора ниже од 2% због чега у почетној фази предузеће трпи губитак будући да профит од продаје је нижи од промотивних трошкова. Међутим, истраживање на основу узорка пружа могућност откривања профитабилних сегмената тако да се у другој фази примене RFM анализе флајери шаљу свим потрошачима унутар сегмената који су на основу истраживања узорка идентификовани као профитабилни и спремни за будућу куповину. Тиме се на основу истраживања узорка остварује мањи губитак али се уједно и идентификују профитабилни сегменти и слањем флајера само потрошачима из ових сегмената након примене RFM процедуре остварени профит покрива промотивне трошкове чиме се у старту остварује позитиван пословни резултат и поред чињенице да је реч о производу који је тек ушао на одређено тржиште (Sohrabi & Khanlari, 2007). Важно је поменути да се профитабилни сегменти идентификују на основу рација: *промотивни трошак по потрошачу / профит по јединици* и управо добијена вредност представља минимално потребну стопу одговора потрошача на понуду новог производа да би сегмент био профитабилан (Hughes, 2006). Примера ради, минимално потребна стопа одговора може износити 1.3% и само они сегменти у којима је на основу узорка реализована виша стопа одговора од 1.3% се карактеришу као профитабилни сегменти. Уколико се предузеће определи за приступ са 27 сегмената (3 x 3 x 3) број профитабилних сегмената може бити нпр. 12.

Потребно је истаћи да се главни недостатак примене RFM метода огледа у томе што се пројекција будуће вредности врши на основу анализе историјских података (Kumar, 2006). И поред тога, RFM је користан инструмент сегментације потрошача и може бити прецизан прогнозер будућих реакција и идентификације профитабилних сегмената у ситуацијама када нови производ не представља радикалну иновацију, већ има извесних сличности са постојећим производима и уколико није дошло до значајнијих промена у екстерном окружењу. Свакако се RFM метод може оценити као користан за потребе сегментације потрошача (Rahim et al., 2021) доприношења успешнијем иницијалном пласману новог производа и уочавању сегмената који поседују одговарајућу вредност за будућу сарадњу.

3. CLV ПРОЈЕКЦИЈА ПРОФИТАБИЛНОСТИ ПОТРОШАЧА

Вредност животног века потрошача представља нето садашњу вредност тока будућег профита који ће предузећу донети одређени потрошач током целокупног периода његове сарадње са датим предузећем (током животног века дате сарадње) (Kotler & Keller, 2009). У питању је укупна вредност садашњег и будућег профита који се очекује остварити од садашњих и будућих куповина. CLV се може израчунати на нивоу индивидуалног

потроша, као и на нивоу сегмената. Када је реч о пословним тржиштима где се предузећа налазе у улози купаца и где једно предузеће може имати неколико кључних клијената, смислено је да се CLV рачуна на индивидуалном нивоу. С друге стране, на тржиштима финалне потрошње, због огромног броја потрошача (физичких лица) логично је да се CLV рачуна на нивоу сегмената. Уколико постоје подаци, CLV се може израчунати за сваког финалног потрошача у сегменту (или за сваког потрошача у одабраном узорку), затим се дате вредости сабирају и деле са бројем потрошача чиме се добија просечни CLV за дати сегмент. Реалнија је ситуација да се, уз анализу претходних куповина, стопа задржавања из прошлости, процену различитих категорија трошкова и у складу са очекивањима о вредностима поменутих категорија у будућности, CLV процени по потрошачу на нивоу сваког сегмента. Овде је реч о израчунавању просечног CLV-а за сваки сегмент.

Кључне компоненте CLV-а су очекивани приходи, трошкови, стопа задржавања, дисконтна стопа (Gupta & Lehmann, 2006). CLV се у литератури сматра моћним мерилом за пројекцију вредности потрошача (или сегмената) будући да се поступак израчунавања животне вредности потрошача не базира само на историјским подацима, него и на будућим очекивањима (Keiningham, Aksoy, & Bejou, 2006). Бројне анализе указују да стопа ретенције представља најважнију компенту вредности животног века потрошача. Наиме, порастом стопе задржавања потрошача за 1%, може се очекивати раст вредности предузећа за око 5%. С друге стране, пораст профита који се остварује од куповине потрошача за 1% оријентационо у истом проценту повећава вредност предузећа, а слична али инверзна релација је присутна и у односу дисконтне стопе и вредности предузећа. Наиме, стабилизација услова на тржишту и смањење дисконтне стопе за 1% имплицира благи пораст вредности предузећа од око 0.9%. Важно је нагласити да смањење трошкова привлачења потрошача за 1% води ка расту вредности предузећа од око 0.1% и овај резултат јасно указује због чега маркетинг напори треба да се усмеравају превасходно ка задржавању, а не ка привлачењу потрошача. Генерално, пораст CLV-а јавља се и као резултат јачања интензитета лојалности потрошача, повећане фреквенције куповина и смањења стопе губитка потрошача (Von Mutius & Huchzermeier, 2021).

CLV доприноси порасту вредности предузећа кроз четири кључна потенцијала. Први је базни потенцијал који представља новчани ток који предузеће остварује продајом својих производа и услуга. Други је потенцијал раста који се односи на новчани ток остварен од унакрсних куповина које се очекују у будућности. Трећи потенцијал је потенцијал мреже који је резултат добити коју предузеће остварује од нових потрошача који су почели да купују његове производе захваљујући интерперсоналној комуникацији и коначно четврти је потенцијал учења који је резултат чињенице да запослени временом захваљујући побољшању својих вештина, знања и продајних способности доприносе порасту добити у будућности (Stahl, Matzler, & Hinterhuber, 2003).

Није нужно да се CLV процењује искључиво за укупан период сарадње потрошача и предузећа. Упркос називу „вредност животног века потрошача“ CLV се може пројектовати и за краћи, нпр. средњорочни период од 3 до 5 година и овакве пројекције су обично прецизније. Генерално гледано, CLV се лакше може проценити у случају зрелих компанија које послују на стабилним тржиштима. Знатно је теже урадити прецизну пројекцију будуће вредности потрошача у ситуацијама када је реч о новим предузећима, предузећима која уводе нове производе или улазе на нова тржишта. У оваквим ситуацијама, у почетним годинама пословања могући су губици или пословање са ниским стопама профита, али се касније из године у годину профит може повећавати по константној, опадајућој, или растућој стопи. У покушају да омогуће прецизно израчунавање вредности животног века потрошача и у оваквим ситуацијама, аутори су развили моделе који осим стандардних параметара за калкулацију CLV-а (очекивани приходи, различите категорије трошкова, стопа задржавања, дисконтна стопа) укључују и пројекцију минимално и максимално очекиваног профита, константну стопу раста профита и стопу промене профита од минималног ка максималном (Gupta & Lehmann, 2006).

ЗАКЉУЧАК

RFM метод може се сматрати корисним за потребе сегментације потрошача и идентификације оних сегмената који у иницијалној фази уласка новог производа на тржиште показују жељени ниво спремности за његовом куповином. Недостатак овог метода огледа се учињеници да он није окренут ка будућности и да се његовом применом пројекције спроводе на бази историјских података. Управо због тога се CLV сматра прецизнијим инструментом предвиђања будуће вредности потрошача, с обзиром на то да процедура израчунавања вредности животног века потрошача подразумева процену садашњег, као и будућег профита, стопе ретенције и дисконтне стопе. CLV је за разлику од RFM-а више окренут ка будућности.

Оба приступа се могу комбиновано користити. Наиме, у првој фази се може спровести RFM сегментација чиме се сви потрошачи деле у претходно дефинисани број RFM сегмената. Додатно, у почетној фази пласмана новог производа, идентификују се профитабилни сегменти. Затим се у дефинисаном временском периоду могу пратите куповине које се реализују у датим сегментима, да би се потом спровела CLV анализа и процена будуће вредности формираних сегмената. Тиме се идентификују сегменти који ће бити лојални и профитабилни у дужем будућем временском периоду.

Комбинована примена RFM и CLV мерила је могућа и у ситуацијама када се коришћењем CLV-а пројектује генерална исплативост увођења новог производа на тржиште, односно вредност потенцијалних клијената. Уколико резултати покажу да је оправдано да се производ уведе на тржиште, кроз RFM сегментацију се у иницијалној фази идентификују сегменти који су спемни на његову куповину у већем проценту. Тиме се у почетној фази избегавају губици, односно обезбеђује се од старта профитабилан пласман новог производа. Касније се, након стабилизације позиције производа на тржишту, може поново применити CLV анализа у функцији пројекције будуће вредности потрошачких сегмената.

На крају, важно је указати и на ограничења спроведене студије. Пре свега, важно је истаћи да се рад базира на теоријској анализи предности и недостатака RFM и CLV индикатора, међутим рад не садржи и оригинално емпиријско истраживање. Веома је важно да будући радови садрже и емпиријско истраживање у вези сегментације и пројекције будуће вредности потрошача уз комбиновану примену RFM и CLV индикатора. Додатно, рад у фокусу има пројекцију будуће вредности садашњих клијената, али он није усмерен и на пројекцију профитабилности потенцијалних потрошача. У будућим истраживањима посебна пажња се може посветити и примени портфолио анализе и формулисању стратегија развоја дугорочних односа са циљаним сегментима. У том контексту, могуће је спровести неколико портфолио анализа, а критеријуми формирања матрица 2 x 2 са четири сегмента или 3 x 3 са девет сегмената могу бити компоненте RFM метода, CLV, садашњи и будући профитни потенцијал, учешће у дохотку потрошача, вредност интерперсоналне комуникације.

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STRATEGIC MARKETING TRENDS OF 2023 IN HUNGARY SENSITIVITY, FLEXIBILITY, AND INTEGRATED SOLUTIONS ARE DESPERATELY NEEDED

Abstract: The classic tasks of functional strategies are, on the one hand, to support the achievement of company and business objectives with a professional toolkit, and on the other hand, to guide and coordinate the tools, actors, and stakeholders of the functional area. At first level, this study examines what effects and trends those working in the marketing and communication functional area could be identified in today's highly variable natural, economic, and social (more precisely consumer) environment and how all these affect the company's target system, the periodic goals of the functional area, and its activity and device system. The investigation fits into a series of research that is carried out regularly for years on, which the Hungarian Marketing Association (HMA) conducts by interviewing marketing and communication decision-makers representing domestic and international brands among its members of large corporation level. At the beginning of each calendar year, for the seventh year now, the professional organization assesses what defining trends the professional decision-makers experience in their field, based on which they update and fine-tune their functional strategy. The research is usually conducted with the help of a discussion group methodology based on a cognitive approach. In January of this year, a total of 12 marketing and communication organizational leaders discussed their opinions on the topic, along a pre-compiled guideline, which primarily aimed to identify and clarify the defining functional strategic trends of the Hungarian market. The participants represented the FMCG, gaming, telecommunication, retail, banking, and service markets, while half of them represented global market players operating in Hungary. The guideline was based on an extensive, current literature review and a preliminary gathering of trends. Based on the discussion, the following five focus areas were determined, which strongly effect the current strategic direction of marketing and communication functions: value-based business decisions, the priority role of inshore or offshore services, the responsible construction and management of data assets, the role of creativity in day-by-day solutions at different levels, and finally the stability of the company and brands. In addition to this, the decision-makers emphasized the strategic function of marketing, since the power of brand value and mental availability play an even more important role than before when consumers decide which products are included in and out of customer basket of offline or online channels. In addition to their immediate practical applicability, the results can also form the basis of further, more extensive, quantitative research, as well.

Keywords: functional strategy, marketing strategy, communication strategy, value creation, functions of marketing

1. INTRODUCTION: CHANGING ROLE OF MARKETING

The role of marketing has evolved very much over the times. According to Webster (1992), the new task of marketing is to “focus on managing strategic partnerships and positioning the firm between vendors and customers in the value chain with the aim of delivering superior value to customers”, that shows “customer relationships will be seen as the key strategic resource of the business” (p.1.). Later, Moorman and Rust (1999) claimed that the main task of marketing is to connect the production of the product or the provision of the service with the financial results of the company. Wirtz et al. (2014) on the other hand highlighted the importance of the relationship between the marketing orientation and the company's results in the case of businesses, and according to them, the main task of marketing can be shaping

the attitude itself. Kumar's (2018) definition also highlights the transformational ability of marketing, claiming that transformational marketing means “the confluence of a firm’s marketing activities, concepts, metrics, strategies, and programs that are in response to marketplace changes and future trends to leapfrog customers with superior value offerings over competition in exchange for profits for the firm and benefits to all stakeholders” (p. 2). All of this shows us a kind of balancing role between the customers, the firms, the governmental policies, and society. According to de Ruyter et al. (2022) the “key to successfully transforming marketing strategy is the creation of forward-looking intellectual frameworks, which can serve as springboards for future research that can inform creative and critical scholarship and practice” (p. 13.). Lim (2023) claims that marketing's new, transformative role can be experienced not only in the B2C but also in the B2B field. It is therefore clear that marketing, as an organizational function or unit, is expected to be capable of constant change and thus it is expected by them to offer solutions to the rapidly changing needs of the stakeholders, especially consumers.

2. RELATIONSHIP BETWEEN MARKETING AND STRATEGY

All this predicts the need for strategic approaches, since according to Fuertes et al. (2020) strategy define the efficiency by that an organization reaches its objectives while satisfying the needs of the customer, that requires crucial corporate and individual capabilities that enable organization to “assure the maintenance and successful growth of the competitive strengths of the companies in the long term” (p. 8). Connected to this, the task of the marketing area is to support the organization from the functional side in achieving its goals, and to assign tools and plan the use of resources for this (Dubey&Ali, 2011). Sharma and Fisher (1997) distinguished the following seven functional strategies: production strategies, innovation (R&D) strategies, marketing strategies, human resources strategies, technological strategies, organizational strategies, and financial strategies, from which production, technological and innovation strategy were chosen for the most crucial ones by the authors, based on an examination of producing industries. Business success demands a continuous adaptation of the company to its environment, to which the application of several strategic approaches can lead, adjusted to the desired future position of the organization. Fuertes et al. (2020) claim that the role of strategic management (SM) focuses precisely on "knowing and defining, based on internal and external diagnostics which are the most indicated strategies that allow to arrive at a competitive advantage over the competitors of the same branch" (p. 21). In accordance with this ‘marketing strategy is an organization’s integrated pattern of decisions that specify its crucial choices concerning products, markets, marketing activities and marketing resources in the creation, communication and/or delivery of products that offer value to customers in exchanges with the organization and thereby enables the organization to achieve specific objectives’ (Varadarajan, 2021, p. 119). Rivaldo and Amang (2022) examined the impact of the marketing strategy and pointed out that it has a significant effect on customer decision process, since trust play a crucial role on purchasing decisions via perceptions of service quality. At the same time, for the marketing strategy to provide meaningful answers to the challenges, it is necessary to continuously collect and evaluate the trends affecting marketing, and because of these, even the marketing itself is always in a dynamic change.

3. A HIGHLIGHT OF THE LATEST MARKETING TRENDS

Researching current trends, we see that that Deloitte (2023) identified the following as the main trends in the field of marketing for year 2023: (i) brands answer economic instability with marketing investments, (ii) Chief Marketing Officers (CMO) drive growth through internal sustainability efforts, (iii) creativity as a force for growth and finally (iv) rising technologies for marketers to watch. It is visible, that many trends are based around the topic of customer experience: since the customer becomes more knowledgeable, customer contact through marketing will have a vital role in the conversion (Singla et al., 2023), which directly highlights the importance of marketing in the field of customer experience, through building relationships with customers, offering and providing a variety of free and value added services at every touchpoints (Jaura&Sharma, 2023). The authors identified the following main marketing trends: (i) influencer marketing, (ii) advancement of video content, (iii) social media as customer service channel, (iv) SEO to concur search traffic, (v) mobile optimization, (vi) social responsibility, (vii) marketing and sales teams are working together, (viii) experimental marketing, (ix) inbound marketing, (x) the leading role of virtual reality (VR) and augmented reality (AR), and finally (xi) the native ads. The latter trends are confirmed the allegation of Vlačić et al. (2021), who predicted the evolving role of artificial intelligence in marketing. Sivaraman et al. (2023) examining trends in the hospitality industry and proved (i) an even faster transition process from traditional to digital marketing techniques, (ii) the importance of consumers’ reaction, and (iii) the leveraging of industry 4.0 as significant elements of future marketing trends. All these highlighted that technology transformation and the consumer-centric approach will have significant impact on the landscape of marketing in the future. Although digital-based marketing have may significant opportunities both in B2C and B2B marketing, “not all business people and customers understand and can apply technology, while the opportunity is that digital technology applications can innovate business marketing efforts efficiently, effectively, and productively” (Ena et al. ,2023, p. 869).The new challenges also require the building of new capabilities as well, for example it has an crucial impact in the field of the creative industry related to the marketing

field, in addition to the field of entrepreneurship, also in areas related to digitalization (Cerquetti, 2023). As a result of trends linked to the digitization, the need for business decision-making and consumer analysis and continuous contact with them increases the value of the role of IT and forces individual organizational functions to be more closely connected to each other, both at the tactical and managerial level (Sleep et al., 2023). Another prominent trend that can also be felt at the organizational level is built around internal marketing (Qiu et al., 2022): the significant increase in the importance of internal communication may have become a defining trend due to labour shortages and high fluctuation in some industries. The literature review shows that the trends are not collected and published in a general way, rather they appear connected to sub-areas and hit topics. At the same time, this overview pointed out that the focus of recent marketing strategies become the adaptation, that is indicated on the one hand by technology, on the other hand by the management of the entire consumer journey, and thirdly by various organizational aspects.

4. METODOLOGY

In this study, I examine the current marketing trends at large companies, among the marketing and communication decision-makers of companies operating in Hungary. This investigation was carried out as part of a series of research that has been taking place regularly for years on, since current marketing trends are collected, organized, and published every year by the HMA. The chosen qualitative group technique served the purpose of the study in a very proper way, as this exploratory technique is suitable for creating a group focused on a specific problem and issue, and for the fact that the group members themselves are mostly homogenous, people who are close to each other in some way (Bohnsack, 2004). Regarding the management and implementation of focus groups, the conative model (so-called "European school") and cognitive model (American-style focus groups) are significant different till today. In the cognitive model, they work with more participants (up to 10–12), more topics, shorter and more direct question, and answer techniques, and focus more on the cognitive content itself. In contrast to this, representatives of the European school are more psychology-centric in terms of group management and content management, and the results are based much more on the researcher's ability to understand and analyse than, solely on the information given verbally in the group (Hennink, 2013). The results presented in this study were revealed within the framework of a discussion group in January 2023, in which 12 decision-makers participated (see Table 1).

Table1: Overview of the marketing and communication decision makers participating in the discussion group

Name	Position	Firm	Industry	Product Service	Market#1	Market#2
Zsófia, BÁNHEGYI	Director for Marketing and Communication	Szerencsejáték Zrt.	Gambling	Service	Local / Regional	B2C
Beáta, HARCSA	Director for Strategy and Marketing	Bonafarm Zrt.	Food Industry (FMCG)	Product	Local / Regional	B2C, B2B
Eszter, JÁKÓ	Director for Marketing	MVM Zrt.	Public Service Provider / Energy	Service	Local	B2C
András P., KOVÁCS	Lead for Communication for Segments	Telekom Zrt.	Telecommunication	Service	Local / Global	B2C
Gabriella, LIPTAY	Director for Marketing and Communication	KPMG Zrt.	Advisory	Service	Local / Regional / Global	B2B
Bence, MARCZIN	Director for Strategy and Corporate Connections	Nemzeti Útdíjfizetési Szolgáltató Zrt.	Toll pay service provider	Service	Loca	B2C, B2B, B2G
Ágnes, MARJAI	Manager for Marketing	Vision-Software Kft.	Telecommunication & streaming	Service	Local	B2C
Ádám, MÉRŐ	Customer and shopper connection director, EU	The Coca -Cola Company	Food Industry (FMCG)	Product	Local / Regional / Global	B2C
Krisztina, SCHUBAUER	HR, Marketing and Communications Executive Director	Exim Bank Zrt.	Finace and Insurance	Service	Local /Regional / Global	B2B
Mónika, SZILVA	CX Director	TESCO GLOBAL Zrt.	Retail	Product	Local / Regional	B2C
Éva G., TAMÁSKOVITSNÉ	Director for Marketing	Gyulahús Kft.	Food Industry (FMCG)	Product	Local	B2C, B2B

Szabolcs, TURGONYI	Lead for Reaching Unique Market	Magyar Bankholding Zrt.	Finance, banking	Service	Local	B2B

Source: Own edition

The summary table above contains the participant's name, organizational position, company, and industry, and it is also indicated whether the given person deals with a product or a service while doing marketing actions. In the table, there is also transparent whether the actor operates in B2B (Business to Business), B2C (Business to Customer) or B2G (Business to Government) market, and it is also given that the participant has a local, a regional, or a global view of the given market and trends, according to the added role at the company. The participants represented the FMCG, gaming, telecommunication, retail, banking, and service markets, while more than half of them represented global market players operating in Hungary. The focus groups took place based on a carefully structured discussion guideline in accordance with the research objectives, in which, in addition to the results revealed in the literature review, the trends requested from the participants in advance were also incorporated. The group was moderated by the author of the study, who often participates in organized professional programs with the participants of the discussion. All of this was also important because, in addition to effective group leadership and interpersonal skills, the moderator's position is crucial when leading a discussion group (Babu, 2023). The results are presented based on Hungarian-language trends published by HMA (marketing.hu, 2023).

5. THE RESULTS OF THE DISCUSSION GROUP

"After the economic and political challenges of recent years and the pandemic times, many hoped that a lighter period would greet us and that a new balance would emerge in 2022. Now we can clearly see that the last months of the last year were more of a preparation period for the next, even tougher times" says *Krisztina Schubauer*. "Due to the challenges and disruptions caused by the pandemic, geopolitical tensions and economic uncertainty, this year is once again a year that cannot be compared to any other" adds *Beáta Harcsa*. We face simultaneous challenges such as war, inflation, rising energy prices, fluctuations in exchange rate and raw material shortages, the effects of which leave their mark on consumer habits and customer behaviour. "This year, 2023, is unpredictable, contradictory, and dubious: on one side, a kind of consumption growth is emerging, and on the other side, a conscious decrease can be seen in action" says *Eszter Jákó*. People do not yet see exactly how much the energy crisis and the related price increase will affect them, but it is already certain that for the further growth and survival of companies, business leaders must introduce unique strategies, and marketing and communication have a very crucial role in it. "It can be felt that a good part of the customers switched to consciously looking for bargains instead of shopping by routine, many people switch from branded food to own-brand alternatives, and it also seems to be a typical consumer attitude that those who have not reduced their food purchases, rather give up something else" highlighted by *Éva Tamáskovitsné*. All of this clearly conveys the message to the so-called "love brands" that they should not let go of caring for consumers, so it may pay off for them to continue to invest their energies in brand building. We can expect that the profession will have to build on several very different insights, regarding even the same product or service. *Eszter Jákó* believes that "the brand that can maintain its credibility and react sensitively to the rapid changes taking place in consumers side will be successful". The main trends in 2023 will consequently mostly be driven by the further and much more brutal rationalization of consumer and customer behaviour. The increase in price sensitivity, the devaluation of disposable income, and the decrease in the volume and value of the consumer basket will make customer decisions even more conscious. "At the same time, all of this further increases the role of marketing play an even more prominent role than before when consumers decide which products go into or out of that basket regardless of whether we are talking about an online or offline channel" emphasizes *Ádám Mérő*. "We are living in an age of crises, so we are actually in a so called polycrisis: our world is becoming more and more fragile, in which it is increasingly apparent how much we depend on each other as individuals, as employers and also in the brand-society relationship system" highlights *András P. Kovács*. All the above, we must find completely new approaches based on solid principles, based on values, and thus - through our profession - we can even make the whole country a little better place - adds the marketing expert.

5.1. Value as a guiding principle

"The real challenge for marketing in 2023 is how to find out that in this extremely fast-changing environment what is the truly relevant value for the customer and what day-to-day problems and tasks does the customer struggle with? The real question from these points of view, where can we offer a solution and connection point for our brand in a relevant and value-creating way, understanding the customer's priorities and entire decision-making mechanism" points out *Mónika Szilva.* "Nowadays, only the change is certain in the life of an organization, so we need to fundamentally rethink what the organization's ultimate goal is. What is the mission, what is the vision, what are the values that you vote for, how does it demonstrate this every day, both inside and outside the walls of the organization" referring to *Krisztina Schubauer* who emphasizes the distinguished role of the values. "It is a real dilemma, what exactly does the usefulness of purpose-driven brands mean for society now: the CSR-type approach and the expectation of tangibility in this regard keep coming back, while the most important task may be to match your brand's creed with a social

challenge, the solution of which you are actively involved in the brand undertakes" emphasizes *András P. Kovács.* "In the fierce competition, advertisers are trying to seize all means to win over consumers, one element of this is the further strengthening of sustainability and ESG (Environment, Social, Governance) buzzwords in media communication" highlights *Szabolcs Turgonyi*. This has been a trend for several years, but the emphasis on the topic is increasing, in no small part due to the increase in consumer awareness. "The advertiser who takes this topic seriously and incorporates it into his own operations, and then can present his efforts authentically, can gain a tangible advantage. The responsible approach to the growth formula, the impact of climate awareness, environmental aspects, green innovations, and green thinking on the world of marketing and the media, as well as the triad of Inclusion, Diversity & Equity (IDE) are enjoying primacy in more and more places" points out *Gabriella Liptay*.

5.2. Service as value

Inflationary challenges have thoroughly reshaped the decision-making mechanism of buyers. The basic question for households today is how do I come out of my monthly household budget? Thus "for the customers, the primary "experience" has therefore again become value for money, the main question for them is how they can preserve for example meals for their family in such a way that they must make as few compromises as possible" added *Mónika Szilva.* Based on all of this, the basic task of the year 2023 is to rethink how we can speed up and update the process of customer understanding, as well as to continuously renew our response to this, as well as the value of the brand. What the greatest attention is focused on this year is to be able to provide an even more efficient customer experience tailored to individuals and companies. *Ágnes Marjai* points out that one of the biggest challenges of the year 2023 is that customers choose the given brand because of the quality of the services and the extra experiences they receive. "We see that the trend of previous years continues to strengthen digitization, digitization, and digitization. More and more people from the older generation also use tablets or smartphones, therefore, we must work to strengthen digital services, but it is no longer enough to be "merely" good, we must also look trendy for persuading customers to use our service" emphasizes *Bence Marczin*. Meanwhile, the e-commerce function is becoming increasingly popular on Facebook and Instagram, which is being used by more and more people in Hungary. "For example, nearly 25% of the members of Generation Z, if they have a consumer problem or want to contact customer service, then the given brand social media platforms are the first to be searched for" as *Krisztina Schubauer* points out. "In addition to digitized solutions, personal recommendations will also be very important and decisive this year, so it is advisable to coordinate the activities between the sales and marketing teams, as it works noticeably well if we organize several personal events in addition to the digital contact points" highlights *Ágnes Marjai.* At the same time, innovative thinking, data collection and systematic analysis are necessary to set up a well-functioning, seamless omnichannel process.

5.3. Data as value

Most users expect ads to be tailored to their personal preferences and shopping habits, and to the top off all that they specifically want to see fewer but more personalized ads and offers. The strengthening of data-driven, personalized marketing is therefore expected to be in in focus, in which the company's own customer, user data assets and the level of marketing contributions will be very crucial. "At the same time, all of this is strongly influenced by Google's planned decision, which has been postponed several times, according to which - expectedly in 2024 - it will remove the third-party cookie from Chrome" highlights *Zsófia Bánhegyi*. Companies and brands' own automated marketing and CRM (Customer Relationship Management, CRM) solutions are advancing, so and every advertiser should have a medium-term data strategy, the focus of which is its own data assets, its construction and continuous increase.

5.4. The creative solution as a value

"We are just in time to show the true benefits of new digital solutions for society, so the goal may be to try to use and apply the available amount of data and their endlessly varied interpretations, starting from the problem's point of view" - points out *András P. Kovács*. Many leading brands in the world have already announced that they will place great emphasis on the "metaverse experience" of consumers. "Although there is great anticipation in this area, specific corporate cases are less available on the subject for the time being. It is interesting, however, who in Hungary will be the first to start planning and implementing activities in this world" says *Krisztina Schubauer*. Today, however, live streaming, video ads or video-based social media content are one of the most effective ways to connect with our audience. "Mainly those applying properly a storytelling approach (for example behind the scenes or werk-movie solutions) stand out from the crowded marketing space" claims *Gabriella Liptay*. Video and/or podcast/videocast content remains strong, but lengths are mostly shortened and audio, AR/VR, gamification, chatbot, other interactive and technological and immersive elements must be integrated. Collaborations, partnerships, the *attention economy*, and experiential approaches remain important, and more and more organizations are realizing how powerful the "voice" of employees can be in the online communication space. "The situation is the same for sharing of content by the company's users, consumers, and external stakeholders' points out *Krisztina Schubauer*, but "trolls" continue to cause the biggest problem in relation to social media trends - adds *Bence Marczin*. In addition, podcasts are becoming more

and more popular this year, both on B2C and B2B lines - points out *Ágnes Marjai*. "At the same time, in the current, war-torn situation, caution among advertisers continues to grow, so improving efficiency and increasing traceability will be key in 2023 as well, so that the achievements assigned to the goals can be analysed as precisely as possible and the campaigns evaluated based on them" says *Turgonyi Szabolcs*.

5.5. Stability as value

In the constantly changing conditions, consumers are looking for stable and reliable points and brands. "The current situation has accelerated the trends that have been growing in importance for years, according to which transparency and easy availability of relevant information have become extremely important in the customer decision-making process" says *Beáta Harcsa*. "Where this typical change in mood in society is consciously calculated with and the customer experience strategy can be developed into this direction, there will be a positive consumer response" highlights *Szabolcs Turgonyi.* At the same time, "as we live in times when plans, goals, strategic and tactical elements often have to be reformulated because of external circumstances and the economic environment force us to adapt and change, this is not the age of set-in-stone strategies!" emphasizes *Beáta Harcsa.* The people who choose our brands after careful consideration, in many cases even make a compromise or make some kind of sacrifice to cast their vote - so let's appreciate them, pay attention to them, find out what they need, build a program around them. "That must be a real priority service, so let's show them how important they are to us" says *András P. Kovács*. "But never let it forget in difficult times: the role of trust and attention is always appreciated, therefore which brand smartly recognizes the possibilities of "compromises", will definitely be able to maintain its positions during 2023" emphasizes *Tamáskovitsné G. Éva.*

6. CONCLUSIONS AND RECOMMENDATIONS

Based on the discussion, the following five focus areas were determined, in the field of strategic direction of marketing and communication functions: value-based business decisions, the priority role of inshore or offshore services, the responsible construction and management of data assets, the role of creativity in day-by-day solutions at different levels, and finally the stability of the company and brands. This discussion with a limited number of key Hungarian marketing and communication decision-makers also revealed the main high-level trends found in the literature: (i) the role of marketing in business decisions and the construction of a stable corporate strategy, (i) the challenge of responding to digitalization challenges, (iii) the all-pervading trend of creativity (see Deloitte, 2023), (iv) the marketing possibilities of managing the customer journey (see Singla et al, 2023), or even the dynamic spread of VR/AR solutions in the marketing communication toolbox (see Vlačić et al., 2021). While on the other hand, this research brought to the surface important trends that are more practical and operative than these, such as the creation of a data strategy, the deepening of CRM solutions or the exploitation of the role of storytelling in the attention economy. In addition to this, the decision-makers emphasized the strategic function of marketing, since the power of brand value and mental availability play an even more important role than before when consumers decide which products are included in and out of customer basket of offline and online channels. The results of the study can also form the basis of further, more extensive, quantitative research, during which marketing trends can be determined either by industry or by market.

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УТИЦАЈ ВЕРОДОСТОЈНОСТИ ОНЛАЈН ПРЕПОРУКА НА ПОНАШАЊЕ ТУРИСТА

Апстракт: Савремени потрошачи живе у свету у ком предузећа свакодневно пласирају многобројне информације, а услед све веће конкуренције спроводе агресивне промотивне стратегије. Управо због тога, потрошачи придају важност неплаћеном виду промоције који представља комуникација од уста до уста WOM (word-of-mouth). Специфична група потрошача посебно преферира систем препорука због неопипљивих карактеристика услуга које су понуђене на тржишту. У складу с тим, предмет рада представљају онлајн препоруке с конкретним освртом на туризам. Циљ рада је испитати утицај веродостојности eWOM-а (electronic-word-of-mouth) на понашање туриста као потрошача и њихово доношење одлука. Емпиријско истраживање спроведено је на територији Републике Србије на пригодном узорку од 268 испитаника, а добијени подаци аланизирани су путем статистичко-софтверске платформе IBM SPSS Statistics и Пирсоновог теста корелације.

Кључне речи: препоруке; eWOM; туризам; понашање потрошача; процес доношења одлука.

THE IMPACT OF ONLINE RECOMMENDATIONS CREDIBILITY ON TOURISTS BEHAVIOR

Abstract: Modern consumers live in a world where companies distribute a lot of information on daily basis, and due to increasing competition they implement aggressive promotional strategies. In line with that, unpaid promotion as it is WOM communication (word-of-mouth) became important to consumers. Specific group of consumers extraordinarily prefer the system of recommendations due to intangible caracteristics of services that are offered on the market. As a result of that, the subject of this paper are online recommendations with a special reference to tourism. The aim of this paper is to analyze the impact of eWOM credibility (electronic-word-of-mouth) on tourists behavior and their decision-making process. Empirical research, conducted on the territory of the Republic of Serbia, included a sample of 268 respondents, while the analysis of the obtained data was performed using the statistical software platform IBM SPSS Statistics and the Pearson's Correlation test.

Key words: recommendations; eWOM; tourism; consumer behavior; decision-making process.

УВОД

Електронски начин комуникације потрошача од уста до уста (electronic-word-of-mouth) надмашио је традиционални систем препорука (word-of-mouth) захваљујући бројним могућностима које нуди природа Интернета. Дигитализација намеће маркетарима константно упознавање с новим начинима тумачења, управљања и анализе онлајн WOM-а (Litvin, Goldsmith and Pan, 2006).
Садржај који генеришу потрошачи обухвата различите медијске форме, а један од најприступачнијих јесте садржај у виду рецензија, односно онлајн препорука и оцена потрошача. Аутор Gretzel (2008) такође наводи да је преко 30% корисника Интернета путем мреже оценило производе и/или услуге барем једном.
Опипљиве физичке производе карактерише могућност провере атрибута, те су потрошачи мање склони тражењу и вредновању информација у односу на нематеријалне услуге. Подстакнути вишим ризиком доношења погрешне одлуке, при процесу куповине услуга потрошачи придају велики значај препорукама, рангирању њихове корисности и провери саме веродостојности (Willemsen, 2011).
Туризам је једна од индустрија која је претрпела најтеже последице пандемије вируса вируса COVID-19, те је један од главних циљева маркетара побољшање самог имиџа и репутације туристичких дестинација. Моћно оружје у имплементираним стратегијама представља позитиван eWOM, који може утицати на повећан број посета туристичким дестинацијама као и дужи боравак туриста (Artigas, 2017).
У складу с тим, предмет рада представљају онлајн препоруке с конкретним освртом на туризам. Циљ рада је испитати утицај веродостојности eWOM-а на понашање туриста као потрошача и њихово доношење одлука. Путем емпирјског истраживања, испитана је веза корисности онлајн препорука (eWOM usefulness) и њихове веродостојности (eWOM credibility).
Према ауторима Ismagilova et al. (2020), информације се сматрају корисним уколико могу бити искориштене у процесу доношења одлука, односно уколико имају утицај на намеру појединца у процесу куповине, док се према аутору Filleri (2015) веродостојност и поузданост извора сматрају основним предусловима прихватања поруке од стране потрошача у електронској комуникацији од уста до уста.
Веродостојност eWOM-а се дефинише као степен до ког потрошач перципира препоруку/оцену као истиниту односно чињеничну (Cheung 2009).

1. ПРЕГЛЕД ЛИТЕРАТУРЕ

Аутори Berhanua & Rajb (2020) нагласили су тренд понашања савремених туриста у ком комерцијалне информације и економска пропаганда постају све мање вредне. У посматраној данашњици, на одлуку потрошача о реализацији туристичког путовања највише утичу онлајн препоруке (eWOM), као и препоруке пријатеља, породице и познаника (WOM).

Табела 1: Извори информација у туризму

Извор информација	**Врста комуникације**	
	Масовна	**Директна**
Плаћен	Брошуре	Туристичке агенције
	Лидери мишљења	Туристички водичи
	Локалне туристичке канцеларије	
Неплаћен	Онлајн рецензије и оцене потрошача	Лично искуство
		Пријатељи, породица и познаници

Извор: Истраживање аутора базирано на раду аутора Hernandez-Mendez et al., 2013.

Према Табели број 1, видна је разлика система препорука у односу на систем оглашавања јер на њега не утиче нити га финансира туристичка организација.
И један и други систем препорука одликују карактеристичне предности и недостаци, међутим, током пандемије вируса COVID-19 све већу популарност придобио је електронски систем у ком потрошачима није неопходна директна интеракција лицем у лице (Yan Syah et al. 2021). Промене у начину комуницирања потрошача повезане су с чињеницом да је скоро половина светске популације усвојила ограничење кретања у екстремним размерама (Rahman, Gazi, Bhuiyan and Rahaman, 2021).
Због специфичне ситуације која је угрозила туристичку делатност, потрошачима је од посебне важности редуковање могућег ризика и доношења погрешне одлуке. Иако потрошачи верују eWOM-у у великој мери с обзиром да је неплаћени вид комуникације, наведено је утицало да процес којим они процењују кредибилитет других потрошача постане битна тема истраживача.
Такође, аутор Cheung (2009) истиче да туристи генерално имају тенденцију да размишљају о кредибилитету eWOM-а у већој мери у односу на традиционални WOM, с обзиром да се на Интернету налази неограничен број непознатих учесника, као и присуство огромне количине нефилтрираних информација које код читалаца могу изазвати сумњу у веродостојност онлајн препорука.
Без обзира на наведену тенденцију, аутор Filleri (2015) истиче да је тешко проценити ниво веродостојности онлајн препорука и оцена. У електронском окружењу, примаоци онлајн препоруке не могу да се ослоне на

знакове невербалне комуникације на основу којих би формирали мишљење о веродостојности извора, као што је то могуће у директном контакту.
Из тог разлога, веб сајтови углавном обезбеђују потрошачима мета-податке, који би им омогућили да направе закључке о поузданости рецензената, анализом информација садржаних на њиховом профилу. Другим речима, многи веб сајтови чија је примарна делатност туризам и угоститељство креирају системе репутације на мрежи. На тај начин корисници могу да пронађу репутацију других корисника, увиде њихова претходна понашања у онлајн заједници и формирају мишљење о њиховом кредибилитету (Liu & Park, 2015).
Уз то, претпоставља се и да квалитет информација садржаних у рецензији може имати утицај на перцепцију потрошача о веродостојности извора. Другим речима, квалитет информација може сигнализирати на стручност и/или поузданост извора препоруке. Рецензент, односно потрошач који пружа тачне, чињеничне и детаљне податке у вези са релевантним карактеристикама производа/услуга може се сматрати кредиблнијим од извора који даје кратак, површан и субјективан опис производа/услуга (Filleri, 2015).
Самим тим, карактеристична је подела на две детерминанте веродостојности извора (Lou & Yuan, 2018):

- стручност;
- поузданост.

Експертиза извора представља компетентност односно квалификацију извора препоруке, укључујући његово знање и/или вештине, да изнесе одређене тврдње које се односе на одређени производ, услугу или актуелну тему. Поузданост извора односи се на перцепцију извора препоруке од стране примаоца препоруке као поштеног, искреног и/или истинитог (Lou & Yuan, 2018).
Велики недостатак eWOM-а одражава постојање апсолутно нетачних рецензија, које могу бити написане од стране лажних потрошача. На пример, позитивне критике могу да напишу или сами власници или плаћени потрошачи како би повећали свој ранг односно репутацију. Такође, компаније би могле да пишу негативне критике како би довеле конкуренте у лошију позицију или би потрошачи неискусни у писању рецензија могли да деле мишљења о туристичким атракцијама која би довела до ирелевантних и обмањујућих аспеката (Guzzo, Ferri & Grifoni 2022).
Како би туристичке организације придале важност наведеним примерима, неопходно је тестирати утицај веродостојности онлајн препорука на понашање туриста.

2. МЕТОДОЛОГИЈА ИСТРАЖИВАЊА

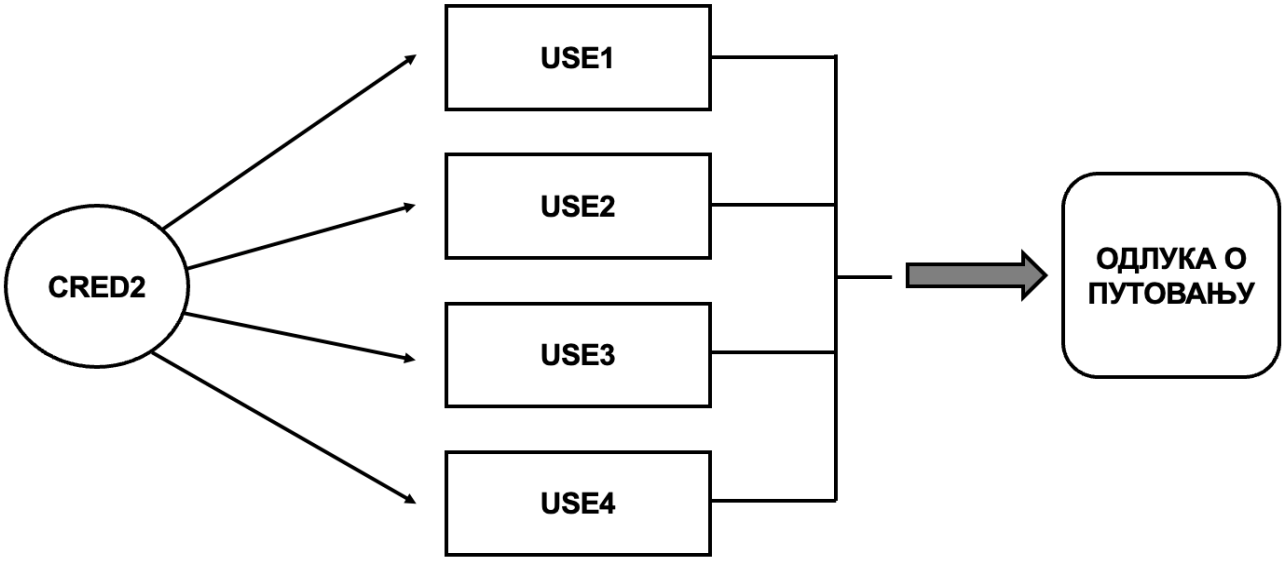
У току пандемије вируса COVID-19, од 2020. до 2022. године, друштвене мреже су проширили већ постојећу популарност до екстремних нивоа. Према статистичким подацима веб портала DataReportal (2023), друштвене мреже броје 4.76 билиона активних корисника, док друштвена мрежа Facebook заузима водеће место према броју истих, са свега 2.958 билиона. Водећи се тиме, истраживачки подаци прикупљени су у периоду од јула до септембра 2022. године у форми Google анкете, која је проширена путем друштвених мрежа Facebook и LinkedIN. Упитник је попунило укупно 268 испитаника са територије Републике Србије у.
Од укупних 268, свега 132 испитана потрошача одговорила су потврдно на питање да ли су током пандемије читали онлајн препоруке других туриста. Самим тим, пригодни узорак је сужен за потребе писања овог рада на 132 испитана потрошача различитих социо-демографских карактеристика.
Већински део пригодног узорка (62.1%) чинила је женска популација у виду 82 испитана потрошача, док су остатак (37.9%) чинили мушкарци у виду 50 испитаних потрошача. Према критеријуму старосне доби, најбројнију групу испитаника (59.1%) чини старосна група од 21. до 30. године, док је остатак распоређен следећим редоследом: старосну групу од 31. до 40. године чинило је 25 испитаника (18.9%), старосну групу од 41. до 50. године чинило је 19 испитаника (14.4%), старосну групу од 18. до 20. године чинило је 6 испитаника (4.5%) и старосну групу старију од 50 година чинило је свега 4 испитаника (3.1%). Према критеријуму стеченог образовања, најбројнију групу потрошача (43.2%) чини група испитаника која је завршила основне студије, док је остатак распоређен следећим редоследом: групу потрошача која је завршила средњу школу чинио је 31 испитаник (23.5%), групу потрошача која је завршила мастер студије чинило је 29 испитаника (22%), а групу потрошача која је стекла звање доктора наука чинило је 15 испитаника (11.4%).
Сужени узорак обухвата кориснике туристичког веб сајта, од којих је укупно 61 корисник до 2 године (46.2%), 50 њих су корисници веб сајта од 3 до 6 година (37.9%) и 21 дуже од тога (15.9%). Профил испитаника, који је у највећој мери читао онлајн препоруке на веб сајту, чини 86 запослених радника (65.2%) који одлазе на туристичке дестинације неколико пута годишње (38.6%) и то у друштву партнера (37.1%).
Осим питања везана за социо-демографски профил испитаника, упитник је садржао и другу секцију, односно 17 конструката базираних на истраживању које су спровели аутори Nilashi et al. (2022). Понуђене конструкте, испитаници су вредновали путем Ликертове скале од 5 нумеричких оцена (1- апсолутно неслагање, 2 - делимично неслагање, 3 - неутралан одговор, 4 - делимично слагање, док је оцену 5 представљало - апсолутно слагање).

Путем Пирсоновог теста корелације, у раду је тестирано неколико конструката, чији су појмови приказани у Табели број 2.

Табела 2: Појмови упитника значајни за истраживање и дискусију

Фактор:	**Појам:**	**Питање из упитника:**
Веродостојност онлајн препорука (eWOM credibility)	CRED1	Сматрам да су туристичке рецензије на овом веб сајту веродостојне.
Корисност онлајн препорука (eWOM usefulness)	USE1	Рецензије с овог веб сајта су ми помогле да донесем одлуку о туристичком путовању.
	USE2	Одабрао/ла сам туристичку дестинацију на основу рецензија с овог веб сајта.
	USE3	Придржавао/ла сам се рецензија с овог веб сајта док сам боравио/ла на туристичкој дестинацији.
	USE4	Након туристичког путовања, био/ла сам спреман/на да поставим своју рецензију на овај веб сајт.

Извор: Истраживање аутора базирано на упитнику који су креирали аутори Nilashi et al., 2022.



Илустрација 1: Модел истраживања
Извор: Истраживање аутора, 2023.

Пирсонов тест корелације представља меру линеарне повезаности између две нормално распоређене случајне променљиве (Schober, Boer, & Schwarte, 2018).
Тестирању и даљој анализи приступљено је помоћу статистичко-софтверске платформе IBM SPSS Statistics.

3. РЕЗУЛТАТИ ИСТРАЖИВАЊА И ДИСКУСИЈА

На основу прегледа литературе и циљева истраживања, постављене су следеће хипотезе:

- H_0 - Веродостојност онлајн препорука има позитиван утицај на доношење одлука о туристичком путовању

Табела 3: Статистичка корелација веродостојности онлајн препорука и њихове корисности при доношењу одлука о туристичком путовању

Корелација			
		CRED2 (веродостојност 2)	USE1 (корисност 1)
CRED2 (веродостојност 2)	Пирсонова корелација	1	.386**
	Sig. (двосмерни тест)		.001
	N	132	132
USE1 (корисност 1)	Пирсонова корелација	.386**	1
	Sig. (двосмерни тест)	.001	
	N	132	132
**. Корелација је значајна на нивоу 0.01 (двосмерни тест).			

Извор: Истраживање аутора, 2023.

Постављене варијабле карактерише статистички значајна корелација, с обзиром да је $p = 0{,}001$ односно ниже од границе значајности која износи $p < 0{,}01$. Како је коефицијент r једнак износу 0,386 статистичку везу одликује средње јак интензитет ($0{,}3 < r = 0{,}386 < 0{,}5$), док позитиван предзнак указује да ће повећање једне од варијабли утицати на повећање друге. Другим речима, како се повећава ниво веродостојности онлајн препорука, оне ће све више бити од користи у доношењу одлука потрошача о туристичком путовању. Такође, како се смањује ниво веродостојности онлајн препорука, оне ће све мање бити од користи у доношењу одлука потрошача о туристичком путовању. Емпиријско истраживање потврдило је постављену хипотезу H_0.

- H_1 - Веродостојност онлајн препорука има позитиван утицај на одабир туристичке дестинације

Табела 4: Статистичка корелација веродостојности онлајн препорука и одабира туристичке дестинације

Корелација			
		CRED2 (веродостојност 2)	USE2 (корисност 2)
CRED2 (веродостојност 2)	Пирсонова корелација	1	.271**
	Sig. (двосмерни тест)		.001
	N	132	132
USE2 (корисност 2)	Пирсонова корелација	.271**	1
	Sig. (двосмерни тест)	.001	
	N	132	132
**. Корелација је значајна на нивоу 0.01 (двосмерни тест).			

Извор: Истраживање аутора, 2023.

Постављене варијабле карактерише статистички значајна корелација, с обзиром да је $p = 0{,}001$ односно ниже од границе значајности која износи $p < 0{,}01$. Како је коефицијент r једнак износу 0,271 статистичку везу одликује слаб интензитет ($0{,}1 < r = 0{,}271 < 0{,}3$), док позитиван предзнак указује да ће повећање једне од варијабли утицати на повећање друге. Другим речима, како се повећава ниво веродостојности онлајн препорука, оне ће све више утицати на потрошачев одабир дестинације. Такође, како се смањује ниво веродостојности онлајн препорука, оне ће све мање утицати на потрошачев одабир дестинације. Емпиријско истраживање потврдило је постављену хипотезу H_1.

- H_2 - Веродостојност онлајн препорука има позитиван утицај на њихово придржавање током боравка на туристичкој дестинацији

Табела 5: Статистичка корелација веродостојности онлајн препорука и њиховог придржавања током боравка на туристичкој дестинацији

Корелација			
		CRED2 (веродостојност 2)	USE3 (корисност 3)
CRED2 (веродостојност 2)	Пирсонова корелација	1	.341**
	Sig. (двосмерни тест)		.001
	N	132	132
USE3 (корисност 3)	Пирсонова корелација	.341**	1
	Sig. (двосмерни тест)	.001	
	N	132	132
**. Корелација је значајна на нивоу 0.01 (двосмерни тест).			

Извор: Истраживање аутора, 2023.

Постављене варијабле карактерише статистички значајна корелација, с обзиром да је p = 0,001 односно ниже од границе значајности која износи p < 0,01. Како је коефицијент r једнак износу 0,341 статистичку везу одликује средње јак интензитет (0,3 < r = 0,341 < 0,5), док позитиван предзнак указује да ће повећање једне од варијабли утицати на повећање друге. Другим речима, како се повећава ниво веродостојности онлајн препорука, потрошачи ће се све више придржавати прочитаних рецензија током боравка на туристичкој дестинацији. Такође, како се смањује ниво веродостојности онлајн препорука, потрошачи ће се све мање придржавати прочитаних рецензија током боравка на туристичкој дестинацији. Емпиријско истраживање потврдило је постављену хипотезу H_2.

- H_3 - Веродостојност онлајн препорука има позитиван утицај на одлуку туриста о постављању сопствених рецензија на веб сајт

Табела 6: Статистичка корелација веродостојности онлајн препорука и одлука туриста о постављању сопствених рецензија на веб сајт

Корелација			
		CRED2 (веродостојност 2)	USE4 (корисност 4)
CRED2 (веродостојност 2)	Пирсонова корелација	1	.335**
	Sig. (двосмерни тест)		.001
	N	132	132
USE4 (корисност 4)	Пирсонова корелација	.335**	1
	Sig. (двосмерни тест)	.001	
	N	132	132
**. Корелација је значајна на нивоу 0.01 (двосмерни тест).			

Извор: Истраживање аутора, 2023.

Постављене варијабле карактерише статистички значајна корелација, с обзиром да је p = 0,001 односно ниже од границе значајности која износи p < 0,01. Како је коефицијент r једнак износу 0,335 статистичку везу одликује средње јак интензитет (0,3 < r = 0,335 < 0,5), док позитиван предзнак указује да ће повећање једне од варијабли утицати на повећање друге. Другим речима, како се повећава ниво веродостојности онлајн препорука, веће су шансе да ће потрошачи оставити сопствену рецензију на веб сајт. Такође, како се смањује ниво веродостојности онлајн препорука, мање су шансе да ће потрошачи оставити сопствену рецензију на веб сајт. Емпиријско истраживање потврдило је постављену хипотезу H_3.

ЗАКЉУЧАК

С обзиром на природу услуга, туристи се често ослањају на предлоге других људи, што је посебно наглашено у раним фазама пандемије вируса COVID-19, када су као потрошачи претрпели низ неочекиваних догађаја. Међутим, препоруке које се налазе на Интернет мрежи не гарантују у свим случајевима и њихову поузданост. Слабу страну eWOM система карактеришу нетачне препоруке и оцене, које могу бити написане од стране лажних потрошача да би се производи или услуге преценили односно потценили. Управо због тога, аутори Lujun Su et al. (2021) дефинишу перцепцију веродостојности онлајн препорука као спремност потрошача да се ослоне на прочитане коментаре, те их доживе као тачне и непристрасне.

Тестирањем скупа варијабли, у раду је доказано да постоје значајне корелације између веродостојности eWOM-а (eWOM credibility) и корисности eWOM-а (eWOM usefulness) у туризму, што резултира прихватањем постављених хипотеза:

- H_0 - Веродостојност онлајн препорука има позитиван утицај на доношење одлука о туристичком путовању
- H_1 - Веродостојност онлајн препорука има позитиван утицај на одабир туристичке дестинације
- H_2 - Веродостојност онлајн препорука има позитиван утицај на њихово придржавање током боравка на туристичкој дестинацији
- H_3 - Веродостојност онлајн препорука има позитиван утицај на одлуку туриста о постављању сопствених рецензија на веб сајт

Слични резултати приказани су и од стране аутора McKnight & Kacmar (2006), који су истраживали eWOM и ефекат перципиране веродостојности информација на спремност примаоца да прихвати информацију са веб сајта. Анализом је уочено да ће се потрошач водити онлајн препоруком уколико је сматра веродостојном. Обрнуто, утицај препоруке на потрошача ће бити мањи уколико је он не сматра веродостојном. Како би избегао потенцијални ризик доношења погрешне одлуке, потрошач углавном неће следити такву препоруку.
Методолошки недостатак истраживања огледа се у величини узорка, који је сужен са 268 на свега 132 испитана потрошача која су била погодна за даљу анализу. У будућем периоду неопходно је проширити базу података, те се осврнути и на испитанике чије пребивалиште није на територији Републике Србије. Наведено је од посебног значаја, с обзиром да је истраживање везано за период пандемије вируса COVID-19. Иако је пандемија проузроковала увођење рестрикција на глобалном нивоу, ограничења су била различитог степена у зависности од конкретне државе. Самим тим, претпоставља се да су потрошачи из различитих држава имали и различите ставове који су значајни за анализу eWOM у туризму.
Упркос описаним ограничењима, сврха рада огледа се у помоћи маркетиншким стручњацима и менаџерима у туризму како би боље разумели систем комуникације од уста до уста путем електронских платформи, с обзиром на уочени мањак доступне литературе која обрађује тему веродостојности препорука.

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MANAGING BRAND IMAGE IN SCHOOL

Abstract
Purpose: The paper discusses managing brand image in the school. Brand image is observed in the context of school management. Emphasis is placed on research and analysis of school branding from the aspect of service marketing.
Methodology/approach: The research is based on relevant theories of brand management. It starts from the construct of brand identity according to Kapferer and brand image according to Keller. The brand service context was observed according to Gronroos.
Results: In order to achieve a desirable school culture, which is a condition for developing the brand image of the school, it is necessary to develop internal marketing. Teachers are the most important segment of the school. The paper analyses different identities of the school and connects them with the construct of the teacher's identity. The results confirm that the teacher's identity construct, which represents a large part of school culture, is extremely important for school branding.
Conclusion: Proper management of school culture and building the school's identity creates an image in the minds of consumers. Since the image of the school is closely related to the service providers, the employees are both, promoters of the brand, and its creators. School branding was observed in the context of brand relationship. A brand develops in the minds of customers as a result of accumulated experiences of contacts.
Limitations/future research: This study is theoretical and is based on qualitative methodologies. Further empirical research can be conducted on different types of schools to identify models of school culture and school image.

Keywords: brand, employee, identity, image, school

1. INTRODUCTION

School management (SM) is a part of educational management and represents an interdisciplinary field because it includes economics, educational sciences, sociology, and psychology. SM, along with school leadership, also includes determining the goals and tasks of employees so that they can deal with new challenges and problems. In this sense, the task of SM is to coordinate the efforts of the staff to achieve the school's program goals, create a favourable school culture (SC), encourage increased activity, and motivate employees, as well as create the school's identity (SI). Thus, SM encompasses management, leadership, and the creation of the SI.
SI is very important because with the help of identity, among other things, we achieve the branding of the school. SI is a set of individual identities of employees and is established in the correlation between managers and employees. On the one hand, SI depends on the management, the way of leadership and the goals of the organization, and on the other hand, it depends on the perception of employees, their job satisfaction, and their own self-concept.
Consumers perceive the brand as a guarantee of constant value. That value depends on consumer to consumer and for some it can represent quality, guarantee, speed of service, design, low price and similar. In this sense, the brand represents a recognizable entity and symbol. A brand is a combination of the above attributes that gives a company, organizational product, service concept, or even an individual a distinctive identity and value. What is specific to the brand in service industries, such as schools, the attributes that make up the brand are both tangible and intangible.
The topic of this study is the research of the brand image of the school. The study research, questions and analyses the impact of employee identity, SC, and brand relationship in the context of SM. By analysing the content of relevant

literature in the field of SM, corporate marketing and service marketing, an interdisciplinary approach will be used to research what are the characteristics of brand relationships in the context of SM. Also, an attempt will be made to give a deeper insight into the propositions of brand building in the school, as well as the importance of brand values and the connection between employees and users.

2. RESEARCH METHODOLOGY

The paper uses an analytical method (Willig, 2013, p. 101-109) and deconstruction model (Romčević, 2018, p. 627), which analyses the meaning of the brand phenomenon to get a clearer and more detailed meaning of the branding school. The study uses the deconstruction method as a structure of thought (Romčević, 2018, p. 627-629). Also, the paper uses the method of brand resonance (Keller, 2013, p. 107-128), the identity prism (Kapferer, 2008, p. 182-190), and the service brand-relationship-value triangle (Grönroos, 2007, p. 337). This study is theoretical and is based on qualitative methodologies. The purpose of the study is based on the analysis of scientific literature.
The aim of the paper is to research, present and analyse the branding school in the context of educational management. The role of brand will be analysed using Keller' brand resonance model, and Kapferer's identity prism. Based on recent research (Mojsovska Salamovska & Todorovska, 2016, p. 38; Lukić & Vojteški Kljenak, 2017, p. 20; Jukić, 2017, p. 12; Jukić, 2019, p. 13; Tierno-García et al, 2020, p. 11-13; Jukić, 2022, p. 24; Trninić, 2022) we can conclude that brand image is crucial in creating image of the organizations. Also, based on recent research from perspective of service marketing (Grönroos, 2007; Grönroos, 2009; Grönroos, 2011; Grönroos & Ravald, 2011; Grönroos, 2019; Grönroos, 2020) we can conclude that marketing service is much more than organizational function. Research questions arise from all the above: What makes a school brand? What is the best strategy for branding schools? What is the role of school culture? Therefore, we start from the concept of brand relationship and the phenomenon of brand image.

3. BRANDING AND BRAND MANAGEMENT

Marketing in SM has come to be seen as the central business discipline. Brand management represents a set of activities related to launching a brand on the market and managing the brand during its life cycle (Veljković, 2010, p. 29). The brand, therefore, should be an expression of the organizational culture and values that the organization cherishes and be integrated into the organization's mission. The brand is a fundamental component of the company's strategy (Vranešević, 2007, p. 65). What is specific to creating a brand in service activities is certainly intangibility, time indivisibility and dependence on service providers. This is why the brand's basic strategy is based on added value. It is precisely the segment of added value that is crucial in service branding, as it refers to the possibility that a brand service has a greater value than a generic service.
Brands and brand marketing are at the very centre of successful service activities. Successful companies become attractive because of their strong brands. At its core, the brand represents the consumer's perception, and it reflects the individual characteristics of the customers and the result of integrated marketing communication (IMC). Brands perform important functions for any organization. The role of a brand is to focus attention on a product or service that could satisfy specific customer needs. This means that in the very philosophy of the brand is warning about the product or service and about its ability to satisfy needs (Keller et al, 2008, p. 48-52).
Branding involves creating mental structures to help customers make decisions. To build a school brand (see Table 1), an organizational structure that supports a modern brand management approach is needed. The first and most important assumption is to develop a brand strategy as a key process that will represent a leading role in the business of a service activity, such as a school. Brand image is the result of many factors, but the fact is that it largely depends on consumer experience, consumer perception, added values that consumers give to the brand and symbolic meaning (Kapferer, 2008; Keller, 2013).
However, what is particularly important, and relates to the school's brand, are definitely the employees. To realize the branding strategy of the school, it is necessary to harmonize the branding strategy and the business strategy and create an impression of the brand among employees, stakeholders, and users. Only then can SC be built, which becomes the basis for creating the user's impressions of the school.

Table 1: Propositions of brand building in school

School board	Vision of the school
The principal	SI
Employees	Teacher's identity
SC	Image of the school

Source: the author

Strong brands are as important to the profit and non-profit sector as they are to products or services. Scholars highlight the importance of the brand (de Chernatony & McDonald, 2003; Keller, & Lehmann, 2006; Grönroos, 2007; Kapferer,

2008; Keller, 2013) in the context of added value and developing brand relationships. However, from the aspect of corporate branding (Balmer, 2001; Balmer & Gray, 2003; Grönroos, 2007; Keller, 2013), the relationship between organizational culture and organizational climate is emphasized (Göhlich, 2009; Jukić, 2020; Wagner-Herrbach, & Skenderski, 2020; Jukić, 2022). Therefore, according to Jukić (2017; 2020; 2022), in the study we follow the proposition of corporate marketing and branding of the school, which emphasizes the importance of the identity of the teacher and the identity of the school.

3.1. The value of brands

The attitude towards the brand can be positive or negative. If the attitude towards the brand is positive, it is more likely that users will take appropriate action (Evans, Jamal & Foxall, 2006; Kotler & Armstrong, 2008; Keller, 2013). The user's perception of the brand, i.e., the service provided, tells us about the user's satisfaction. In this context, we view school as a service activity that provides subjective value for users (Jukić, 2017; Jukić, 2022). This means that the expected value for users is not the same as the expected value for stakeholders (school founders). This is also the reason why there is a discrepancy between the expected value of the service user and the cognitive value of the founder of the school (see Table 2).

Table 2: User values and brand relationship

Expected value	An idea (brand image)
Cognitive value	Subjective perception (brand personality)
Actual value	Attitude (brand experience)

Source: the author

Expected value is the user's idea of how the service will fulfil his needs and expectations. Cognitive value represents a subjective experience. For SM to be successful, it is necessary to establish and accept the user's assessment of the value of the service. This means that students see various benefits and values in services and their perception is often not in line with the perception of the school board and principal. The actual value represents what the users received, i.e., the result of the service provided and the perceived quality. Constant knowledge about service users is an important component of service marketing (Grönroos, 2007; Grönroos, 2009; Grönroos & Ravald, 2011; Grönroos, 2019; Grönroos, 2020). According to Grönroos (2011, p. 295), value is accumulated during the user's interaction with the service, is always unique and depends on the customer's experience. The value that the consumer receives from the service provided is created through the interaction of the service itself. We conclude that the employee is a brand promoter and service provider. Therefore, the entire process of creating service customer loyalty (Grönroos, 2009) is crucial in marketing practice.

A brand is a promise that marketers will deliver predictable service attributes. Therefore, the brand promise represents a vision of what the brand should be and what it should do for consumers. This is both the greatest strength and weakness of the brand because, if it does not fulfil its promise, the real value of the brand lies in the image (consumer impressions). Brand identity can most simply be seen as the way in which an organization wants to be identified and position itself or its product (Kotler & Keller, 2007; Kapferer, 2008; Keller, 2013). Brand identity is the way in which various elements of a brand are made to appear externally. The model presented by Kapferer, the brand identity prism (2008, p. 183), is conceived as a hexagonal prism of six facets. A brand has its physique (made from salient objective features) and represent added value. Second facet is brand personality. A brand is a culture (means of communication) and set of values. Brand culture plays an essential role in differentiating brands (Kapferer, 2008, p. 185). A brand is a relationship, and this is particularly true in the service sector. A brand is a customer reflection (customers use brands to build their own identity). Finally, a brand represents our self-image. For the school to be able to build a brand identity, it should have an appropriate identity that should realistically show the value of the brand for the user.

According to brand resonance model (Keller et al, 2008, p. 57; Keller, 2013, p. 108) looks at building a brand as a sequence of step. Before we analyse the brand resonance model (Keller, 2013, p. 108-127) and connect it with the brand identity prism (Kapferer, 2008, p. 171-185), it is necessary to ask the question: What makes a brand strong? As an answer to the question, we will take the concept of customer-based brand equity (CBBE), which represents a unique point of view on what brand equity is and how it should be built and managed. The basic premise of the CBBE concept is that the power of a brand lies in what customers have learned, felt, seen, and heard about the brand because of their experiences over time (Keller, 2013, p. 69). Keller presents his model in the form of a pyramid, where brand resonance is at the top and brand salience at the bottom. As an example of school branding, we will analyse an art school (see Table 3). To achieve the first step (identity), we first start from brand salience, which points us to brand awareness, the ease of displaying the brand and SI, in this case the physical characteristics of the identity (Kapferer, 2008) of the school building, and the basic elements of identity (Keller, 2013) such as slogans, logos and similar. The second level is the school's brand meaning, i.e., the school's values and the very style that the school cultivates (school climate, ceremonies) to identify the school's image.

Table 3: Brand resonance in school service

Stage of Brand Development	School construct	Branding Objective
Brand relationship	Teacher's identity	Brand loyalty
Brand response	School culture	Brand personality
Brand meaning	School style, school values	Brand image
Brand identity	Art school	Brand awareness

Source: the author

The third step is the brand response, which according to Keller (2013, p. 108) is divided into two categories: judgments and feelings. Judgments, in the context of SM, includes the user's judgments and evaluations of the service brand, and feeling includes the emotional connection with the school. Specifically, brand response expands the understanding of the brand in the context of relationships, and positive perceptions and emotional reactions represent the possibility of developing the SC construct. Finally, brand relationship represents brand resonance because it refers to the mutual relationship between student and teacher. This means that brand resonance represents the realization of all three values (expected, cognitive and experiential) and opens the possibility of creating brand loyalty.

One way to create brand value for a service is to create a brand image. Brand image is the perceptions and beliefs of customers that are reflected in associations. A key measure of the success of the brand image is the preference that customers show towards the brand. Since the brand image is on the receiver's side (Kapferer, 2008, p. 174), the brand identity precedes it because it is on the sender's side, which means that in school branding it represents a means of communication. In this sense, brand image reflects current perceptions of a brand. Like brand identity, brand position is more aspirational, reflecting perceptions that the strategist wants to have associated with the brand. Comparing brand image and brand identity, any brand image can be: a) augmented, b) reinforced, and c) diffused. In Table 4, we show the brand position and the brand image in SM.

Table 4: Brand communication in school

Brand Image	School communication
Augmented	Add association
Reinforced	Exploit strength
Diffused	Visual imagery

Source: the author

Augmenting image in the school context means an attempt to position the image or by adding associations to the existing image. Sometimes the image of the organization, as well as SI (Jukić, 2022), is not in agreement with the identity of the organization as imagined by the management. The brand position might, therefore, attempt to add associations to the brand image and to soften restrictive perceptions. The challenge of a school or college is to add associations and develop an image, creating the second step in the CBBE model, creating brand meaning (Keller, 2013), and expanding the school's values, such as additional activities, equipped libraries, gyms, and IT equipment, and similar. Reinforcing image marks the moment when brand image associations are consistent with brand identity (Kapferer, 2008), but this consistency is too strong and dictates the position of the school brand. Then it is allowed to use points-of-parity (POPs) and extend the image to other segments, for example when a school or college tries to build an image of a new program and the skills it teaches. Diffusing an image is used when the image is inconsistent with the brand identity, for example when analysing the identity of the school according to the AC^2ID Test model (Balmer & Gray, 2003, p. 972-997).

In this way, SM learns the actual state of the existing from the desired identity and enables them to create communication that will project the desired image. The above model serves to enable strategic leadership and management of a corporate brand. As can be seen, the image of the brand refers to the way of decoding the stimulus by the recipient of the message, which is in accordance with all relevant theories of branding (de Chernatony & McDonald, 2003; Kapferer, 2008; Keller, 2013).

3.2. Brand customer experience

To position the brand, it is necessary to determine the frame of reference (Kotler & Keller, 2007). We determine the brand service frame of reference by identifying the target market and competition. When it comes to secondary schools, three different types of schools must be considered: gymnasium, vocational school, and art school. The same applies to colleges and universities, i.e., depending on study programs and market segmentation. School missions reveal school models and ways of leading and managing the school. By understanding the definition of the school's mission, it is possible to create a school strategy, create a school identity (SI) and a school culture (SC). Comparing the types of secondary schools and their characteristics, it is evident that gymnasiums have a different SC than vocational and art schools.

Therefore, we present the reference frame of the identity positioning strategy according to Kotler and Keller (2007, p. 312-316) in terms of competing points-of-parity in three segments: a) points-of-difference (PODs), b) points-of -parity- (POPs) and c) points-of-parity vs points-of-difference (POPs vs PODs). Simply put, PODs represent qualities that students associate with the school and value positively. Also, POPs make associations towards competitive schools that students perceive in the context of similar schools (categorize them) and in the context of competitive schools (compare the characteristics of competitive schools). To achieve a degree of similarity for certain benefits (values), it is necessary that there is a certain number of users who believe that their service is better (see Table 5).

Table 5: School brand positioning strategy

PODs	Brand image
POPs	Brand identity
POPs vs PODs	Brand relationship

Source: the author

The preferred approach to positioning the image of the high school starts from PODs because it emphasizes the diversity of the school, its characteristics, specifics, and consumer benefits. Strong and desirable associations are built through the creation of SC, the quality of service and the creation of the image of the school. However, if we start from the vocational school positioning strategy, then it is necessary to give preference to POPs because the goal is to emphasize the similarity of school categories, especially since the image is built on comparison with stronger schools (gymnasiums). Then the emphasis is on the "categorization" of subjects, teachers, and curriculum and, at the same time, emphasizing the advantages of competitive qualities. Therefore, PODs represent brand image, POPs brand identity, and POPs vs PODs represent brand relationship.

Let's note that what is crucial is what relates to the user's perception, i.e., the range of tolerance of students who accept their school's service as good enough for certain features, preferences, and benefits (Jukić, 2017, p. 12). From the above, we can conclude that there are three ways in which we can brand a school: a) emphasizing its categorization or type of school, b) benchmarking schools, c) storytelling schools. Emphasizing the categorization refers to the type of school, and declaring the affiliation of a certain school enables the creation of a product/service category in the consumer's mind. In this way, schools build their identity by creating a mental image of the type of school they aspire to or, in the process of reform and transition, build the image of the school they aspire to. Benchmarking means comparing with a competing school. Building the identity of a private school at an already existing private college can serve as an example. The last category is reliance on the description of the service, i.e., when, in addition to the existing service, additional attention is given to its specificity, characteristics or affiliation (private schools, sports academies, music schools).

3.3. Educational services and teacher professional identity

A service is an act or performance offered by one party to another (Lovelock & Wright, 2002, p. 6). The service product must be tailored to customer needs and actively promoted to customers. The service performance itself is an intangible. The benefits of using a product come from its physical properties, while in service, the benefits come from the nature of the performance. It is characteristic of services that they should pay attention to two types of markets: internal and external. Schools should respect different interest groups. Apart from students, who directly and indirectly influence their business, the key role comes from teachers, stakeholders, and founders.

In high-contact services, such as schools, the role of teachers is extremely important because teachers are not only service providers, but also promoters of their organization. Professional identity depends on the environments in which teachers work and develop. Satisfaction with the profession has been shown to be the best predictor in all aspects of professional identity in some studies. Korthagen (2004) argues that professional identity consists of unconscious needs, feelings, values, role models, previous experiences, and behaviours, which together create a sense of identity. The professional identity of a teacher is very complex because it includes the teacher's thoughts about teaching and their own realization (Vranješević & Vujisić-Živković, 2013, p. 588). Teachers define and realize their identity through self-image, attitudes, relationships with other employees, school culture and the service provided.

The identity of the teacher can be presented as the teacher's sense of self-worth and reflection on those values (Jukić, 2022, p. 22). The teacher identity construct is a combination of factors such as personal, professional, and situational factors (Granjo, Silva & Peixoto, 2021, p. 161). The teacher's identity is created by the emotional aspect of teaching, but also as a result of personal experience and SC. The identity of the teacher depends on the development of the professional community. It relates to the feeling of success at work, and includes the purposes of educational work, which are always in relation to ethical, and not only narrowly didactic-methodical values. We can conclude that the teacher's identity refers to a wider professional involvement in the school and the way teachers realize themselves. The most important research on the professional identity of teachers (Beijaard, 2019; Beijaard, Verloop & Vermunt, 2000) suggests the existence of different professional orientations in the community of teachers.

Organizational performance is determined by employee performance (Šafránková & Šikýř, 2018, p.532). Schools provide educational services, acquire, and retain users through capable, motivated, and satisfied employees. Principals who want to achieve excellent results in their schools should pay special attention to SM and HR management.

Corporate identity is created by employees. Positive identity is reflected in positive images in the mind of the consumer. Employees build a corporate identity through their work and organizational culture. Marketing in school should be viewed according to its focus on: a) teachers, b) students and c) stakeholders. Focusing on employees is a form of internal marketing because we see them as internal customers (Grönroos, 2007; Grönroos & Ravald, 2011; Grönroos, 2019; Grönroos, 2020), while focus on stakeholders is a form of managing activities that are focused on the service model itself.

3.4. School culture and brand relationship

The process of creating a school's image can be influenced by a whole series of factors, such as business behaviour, school reputation, SC, school behaviour towards society, school behaviour towards employees and students, quality of service, publicity, cooperation with other educational institutions, teacher education, teacher satisfaction and similar. It is obvious that many factors influence the image of the school in the public. One of the ways that a school can improve its image, i.e., expand and add new associations (see Table 4) is to create cooperation with other educational and cultural institutions by creating hidden promotions and in this way create a positive image by participating in promotions, ceremonies, and public events. Of course, part of the impressions can be built thanks to positive SC (Jukić, 2022), but also through reference points POPs vs PODs (see Table 5).

Each school has its own specific SC, which depends on the school's mission, vision, and strategy. The type of SC depends on the type of school (gymnasium, vocational school, and art school), ownership of the school (private or public school), teacher's identity, students, urban or rural area, influence of school climate, interpersonal relations, principal's management style and similar. School culture can most simply be described as the shared beliefs and values of the school. Strong SC shapes employee behaviour. School culture consists of frameworks, products, expressions, and activities (Peterson & Costner, 2006, p. 249).

If schools invest in a SI building strategy, and users perceive the school's image as positive and desirable, then the school's reputation will increase. If teachers do not believe in the promise that the school makes through external marketing and do not know how to implement the service, then teachers will not use the service they provide. To achieve this, teachers must be satisfied in the environment in which they work and in their relationships with their colleagues, the school, and the principal. Grönroos claims that the branding process is actually a brand relationship. The brand as a concept is always an image. (Grönroos, 2007, p. 331). In this sense, branding is the process of creating an image. When the customer is given an active role in the branding process, our understanding of the brand changes (Grönroos, 2007, p. 331). It is a process that is constantly evolving and changing as users encounter the services. Therefore, the brand is the consequence of how a given customer perceives his relationship with the brand. Brand relationship develops in a series of brand contacts experienced by customers.

Precisely because of this, planning and managing the service process is at the heart of the branding process (Grönroos & Ravald, 2011; Grönroos, 2019). A service marketer who creates brand awareness must fulfil the promise that the brand made to its users. It is only a part of creating the brand image of the school. To develop a school brand, a continuous process of identity development (Kapferer, 2008) and reaching brand resonance (Keller, 2013) is needed. SM should involve teachers in the creation of SI and motivate them so that the service is impressive, high-quality, and unique. Only at such a moment, the metaphor "moment of truth" (Lovelock & Wright, 2002, p. 59), an impression of the school appears. That is why interactive marketing implies managing the activities of the service process itself. The main task in the branding school is to manage the service process so that they provide the customers with positive brand contacts and corresponding brand message (Grönroos, 2007; Grönroos, 2019; Grönroos, 2020).

Service process will not contribute to the emergence of an intended brand, if SI is out of proportion with SC. Also, SI must agree with the desired identity, which is actual, and not with the ideal identity (Jukić, 2022). The model that best illustrates the promise concept is the service brand-relationship-value triangle (Grönroos, 2007, p. 337). According to this model, the school creates a brand promise through various IMCs, which then creates brand awareness among customers and other stakeholders. What is specific to this model is that teachers become brand promoters and take on the most important role of providing service and creating value. Finally, the interactions that occur with students in the service process and the behaviours of the teachers must contribute to a brand fulfilment.

4. CONCLUSION

The school's brand image is built even when nothing is done to create it. Therefore, it is necessary to understand promotion as an important part of marketing communication that is aimed at the external market. The main goal of SM in the context of building the image of the school is to create an appropriate SI. Identity is based on all contacts with external and internal users, employees, and partners. In this sense, the IMC strategy should connect as many elements of the brand identity as possible and connect them to the mission of the school. However, it should be emphasized that communication is not the only generator of creating a positive image of the school. Brand communication must be strategically placed and connect all segments of the organization's identity.

Also, it is necessary to encourage important contacts that are not so much dependent on principles, but reflect on the organization, such as SC, school climate, employee satisfaction, teacher identity and experience with the service

provided. It is evident that the role of employees is extremely important because they are the bearers of the school's identity and image builders. The importance of teachers is related to the very nature of the service (high interaction), but also due to the determined intensity of contact with users, stakeholders, and colleagues. Teachers become promoters and spokespersons of the school, transmitters of SC and generators of new values for society.

Building a school's image is a strategic business process that greatly affects the value of the brand in the eyes of consumers. That is why it is very important to communicate with teachers, support them, build a favourable school climate, and build a positive SC that indirectly affects the satisfaction of all employees, teaching and non-teaching staff. It is necessary to develop awareness of the school's identity to form an image of the school's brand and create an appropriate school image. The brand identity is only one part of the presentation that the school presents, and the image is the subjective, perceptive thing that users associate with the school. Principals and teachers should be partners because only if teachers feel part of SC, their engagement can be expected.

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THE METAVERSE: A GAME-CHANGING OPPORTUNITY FOR MARKETING

Abstract: The Metaverse, a completely new digital realm where people can interact with one another, take part in activities, and create unique virtual identities, is growing in popularity with consumers. Despite being at an early stage of implementation, the Metaverse is becoming increasingly popular due to its numerous benefits. This paper explores the potential of Metaverse Marketing as a brand-new method of engaging customers through immersive and interactive experiences. It draws attention to the distinctive features of the Metaverse and the possibilities it offers for building engaging and loyal customers. The challenges that companies might encounter when Marketing in the Metaverse as well as the importance of matching digital marketing strategies with user expectations are also the subject of this research. Without a doubt, the Metaverse offers significant opportunities for companies to broaden their marketing plans and find new audiences through the development of digital marketing strategies. The immersive and interactive experience that consumers can have in the Metaverse will have a significant impact on their engagement and loyalty.
Keywords: Metaverse, marketing, digital strategy, consumer experience

1. INTRODUCTION

The Metaverse is a significant technological advancement recognized as the next-generation Internet. It is a single shared, immersive, and persistent 3D web-based environment that offers new opportunities (Rawat & El Alami, 2023). In the Metaverse, users can congregate in a virtual world and engage in any activity that is offered. It resembles a digital, interconnected environment with digital objects, non-fungible tokens (NFTs), avatars, and much more (Figure 1.) (Gupta, 2022; Srivastava, 2023). As a self-contained and operational universe that is constantly active, featuring user-generated content in real-time, it combines a variety of technologies such as Virtual Reality (VR), Augmented Reality (AR), Mixed Reality (MR), Extended Reality (XR), Artificial Intelligence (AI), Internet of Things (IoT), Digital Twins (DTs), 5G/6G, blockchain, holography, etc. (Dwivedi et al., 2022).
The Metaverse market is expanding quickly as more and more users look for alternatives to established online distribution channels. In comparison to its centralized rivals, the Metaverse platform has a number of benefits, such as lower transaction fees, better security, and increased scalability. Due to its infancy, the Metaverse market possesses enormous potential for growth (DaveAI, 2021). According to a survey conducted in March 2022, over 17% of IT companies worldwide have made investments in the Metaverse. With adoption rates ranging from 9% to 12%, sectors like education, finance, healthcare, and marketing are also starting to use the Metaverse (Figure 2.) (Srivastava, 2023). There is a prediction that around 30% of global organizations will offer Metaverse products and services by 2026. The Metaverse will be a unified world that combines existing digital activities and will also feature a virtual economy with digital currencies and NFTs. The Metaverse market is expected to see significant growth in revenue and user adoption. Revenue is projected to reach USD 54.95 billion in 2023, with an annual growth rate of 36.71% resulting in a projected market volume of USD 490.40 billion by 2030. The United States is expected to generate the most revenue, with a projected market volume of USD 17.48 billion in 2023. The number of users is expected to reach 1,461.00 million by 2030 with an average revenue per user of USD 119.40 (Statista, 2023).

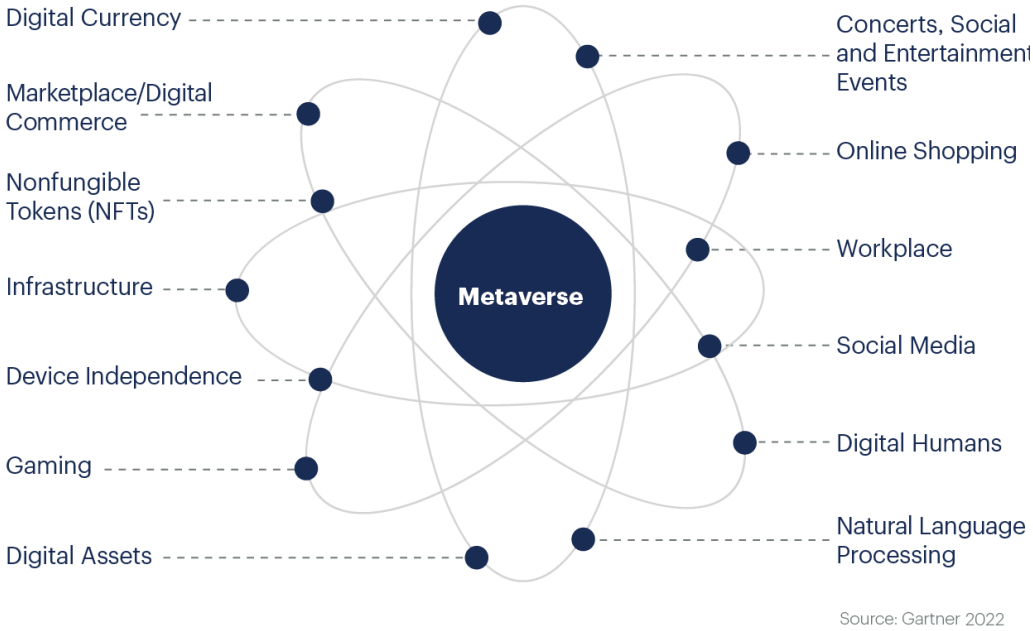

Figure 1. Elements of a Metaverse
Source: Gupta, 2022

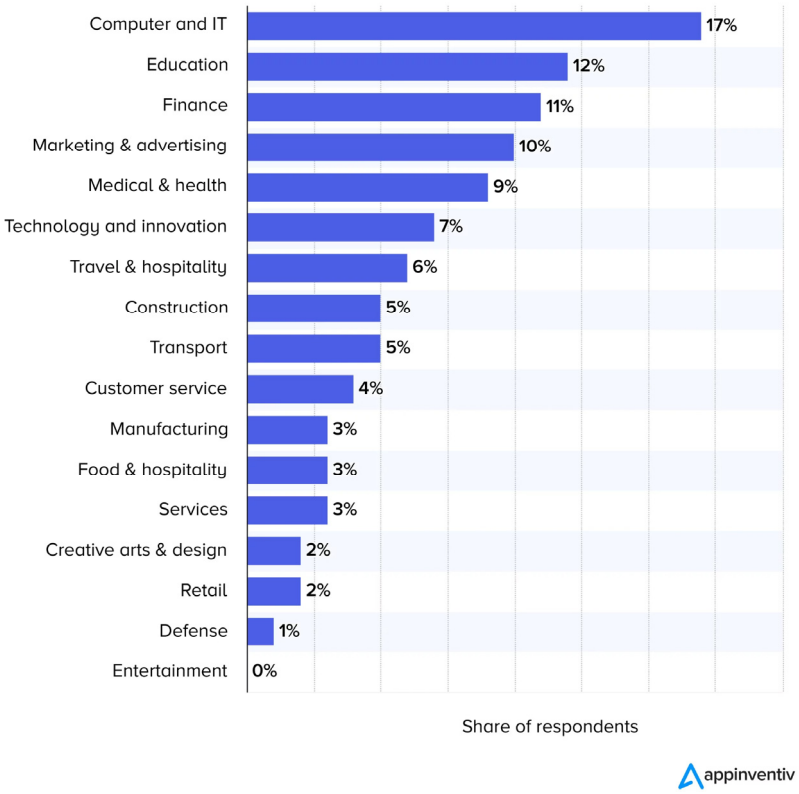

Figure 2. Business sectors from around the world that have already made investments in the Metaverse (March 2022).
Source: Srivastava, 2023

The shift from physical to digital spaces is disrupting advertising and marketing efforts, prompting companies worldwide to recognize the importance of understanding the Metaverse and its impact on brand promotion. There is a very real possibility that brands could be commercially successful in Metaverse. Gaining the cultural, business, and creative knowledge required to prosper in the Metaverse is now more vital than ever as brands aim to establish an authentic virtual identity and enhance consumer experiences (Murgai, 2022). In other words, through the use of the Metaverse, marketers have the opportunity to engage consumers in new and unique ways, as well as drive brand innovation. The Metaverse is expected to have staying power due to ongoing technological advances, major investments

in infrastructure, a wider set of use cases, the mainstream nature of online commerce, demographic tailwinds, and the shift towards more consumer-led brand marketing and engagement (Hazan, Kelly, Khan, Spillecke & Yee, 2022).
The purpose of this paper is to clarify the idea of the Metaverse, investigate the required technologies, and consider its significance, potential advantages, and difficulties in the marketing sector. Therefore, the rest of this paper is structured as follows. The concept of Metaverse, its architecture, and the underlying technologies are presented in Section 2. Section 3 focuses specifically on Metaverse Marketing, discussing its importance for digital marketing strategies as well as consumer experience, and challenges. The paper is concluded in Section 4.

2. WHAT IS A METAVERSE?

Neal Stephenson first introduced the idea of the Metaverse in 1992 (Stephenson, 1992), but this term has recently come to the public's attention. Composed of "Meta" (meaning transcending or going beyond) and "Verse," (derived from the word universe), the term Metaverse represents a 3D, networked, and immersive environment that enables individuals to interact with one another more viscerally and realistically than they can in the real world.
The characteristics of Metaverse are (Rawat & El Alami, 2023):

- Immersiveness - describes how emotionally and psychologically involved a user is when interacting with a computer-generated virtual environment. It is achieved through sensory perception and expression.
- Spatio-temporality - space and time are no longer constraints.
- Sustainability – preserves a closed economic loop and a constant set of values.
- Interoperability – enables the exchange of digital assets and smooth transition between virtual worlds.
- Scalability - guarantees efficiency with a rising number of users, complexity, and interactions.
- Heterogeneity - can be found in physical objects, digital spaces, data types, communication channels, and psychological aspects of people.

The technological advancements have led to growing interest in the Metaverse. Metaverse finds applications in various significant fields, including but not limited to gaming, real estate, finance, marketing, education, healthcare, tourism, remote working, social media, and entertainment (Figure 1, Figure 2). Emerging technologies such as AR/MR/VR/XR, AI, DTs, IoT, 5G/6G, Blockchain, etc. serve as the foundation for Metaverse:

- AR/VR/MR/XR - VR and AR are essential for the development of the Metaverse. MR provides a smooth transition between these technologies while XR combines VR, AR, and MR technologies to provide an interactive experience through front-projected holographic displays, Human-Computer Interaction, and massive 3D modeling. In other words, XR allows users to engage with avatars and environments using different interactive devices, allowing for real-time communication and delivering an immersive experience (Park & Kim, 2022; Dwivedi et al., 2022; Rawat & El Alami, 2023). Hence, AR/VR/MR/XR provide users with new ways to interact with and consume digital content. Understanding AR/VR/MR/XR and their potential for brand and product promotion can be a valuable tool for marketers and brands due to the unique consumer experiences they offer (McLaughlin, 2022).
- DTs - offer a precise simulation of real-world items and can be used in the Metaverse to create a more lifelike experience. They build highly accurate digital replicas that pick up on and adjust to real-world data using 3D simulations and AI. The bi-directional connectivity between the real and virtual worlds enabled by DTs can improve efficiency and reduce risks through predictive maintenance and accident tracking (Banaeian Far &. Imani Rad, 2022; Rawat & El Alami, 2023). Producing digital copies of brand assets and products for Metaverse platforms that can be exchanged, shared, and sold as digital products is an example of DTs' use in the marketing domain (McLaughlin, 2022).
- AI - is crucial in enhancing the effectiveness of Metaverse. AI can enhance experiences in the Metaverse by enabling deep learning-based software to autonomously drive activities, chatbots and natural language processing to facilitate interactions, and generating 3D images, animation, speech, and artwork. Creating accurate avatars with the help of AI is essential for immersive user interaction in the Metaverse (McNichols, 2022; Shi et al., 2023).
- Blockchain – is a technology used in the Metaverse to decentralize and secure data. It can be used for various purposes like storing in-game items, smart contracts, virtual real estate, NFTs, and controlling data sharing while ensuring transparency in data changes (Huynh-The et al., 2023). Decentralized applications are becoming more and more common in sectors like finance, community governance, and e-commerce. Marketers must keep an eye on Blockchain use cases that show adoption and product-market fit in order to foresee any developments that might change consumer behavior and the marketing sector. NFTs' marketing applications include developing new brand and collectible product lines on Web 3.0 platforms, as well as facilitating and managing customer loyalty programs (McLaughlin, 2022).
- Communication and networking – In order to show its potential, the Metaverse requires reliable, secure, and low-latency communication. Undoubtedly, 5G and 6G will adequately address the needs for communication in the Metaverse. IoT is also of immense importance for Metaverse since it enables the mapping of real-life data into virtual reality. Due to the need for extensive computing, storage, and networking resources for

maintaining high-speed and low-latency connections, the utilization of resource allocation frameworks can enable better management and allocation of different resource types (Rawat & El Alami, 2023).

- Ubiquitous computing - For the Metaverse to become a reality, computing architecture that is both hierarchical and ubiquitous is required. As such, it facilitates interaction with avatars and immersive Metaverse services (Rawat & El Alami, 2023; Shi et al., 2023).

There are different proposed Metaverse architectures in literature. For instance, Duan et al. (2021) suggest a three-layer architecture consisting of Infrastructure, Interconnection, and Ecosystem layers, while Radoff (2021) suggests a seven-layer architecture that includes Infrastructure, Human Interface, Spatial Computing, Creator Economy, Discovery, and Experience layers.

3. METAVERSE MARKETING

The development of the Metaverse is just one part of a larger transformation of digital technology, which involves the creation of a new, decentralized version of the Internet, known as Web 3.0. With Web 3.0. people will have more control over their data and Internet usage. Information sharing was the main focus of Web 1.0, while peer-to-peer interactions and user-generated content were the main focus of Web 2.0. Web 3.0 technology is divided into components, or subcategories, such as Blockchain, cryptocurrencies, and the Metaverse. These elements enhance how people access and make use of the Internet. Since many of Web 3.0.'s innovations will power the Metaverse, understanding Web 3.0. is crucial for marketers. These innovations could have an effect on social media, online shopping, and online gaming, among other aspects of the Internet. Therefore, marketers need to be aware of these changes in order to succeed in the new digital environment (McLaughlin, 2022).

Marketing in the Metaverse is an addition to existing marketing techniques rather than a replacement. A new class of digital assets and channels are being introduced by the Metaverse that can be used to develop virtual brand activations, digital products, and other engaging consumer experiences. There are some ideas that marketers should keep in mind when implementing Metaverse Marketing (Emeritus, 2023):

- In order to maintain brand trust and reputation, they should first interact with already existing communities.
- It is crucial to develop an immersive experience, but it must be appropriate for the brand and target market.
- By using Blockchain technology to create NFTs, marketers can sell branded collectibles.
- Marketing in the Metaverse should complement other marketing tactics by simulating marketing in real-world scenarios.
- Ongoing experimentation is encouraged in order to test out various marketing approaches, learn from failure, and come up with new ideas.
- When trying to establish their brand in the Metaverse, marketers should consider Search Engine Optimization (SEO) and using AR content strategies.

"Marketing mix" refers to the 4 marketing Ps: product, price, place, and promotion. McLaughlin (2022) discusses how the 4 Ps of the marketing mix can be applied in the Metaverse:

- P1-Metaverse products: NFTs, digital avatar skins, digital land and real estate, and in-game upgrades for digital games are examples of Metaverse products. It is essential to understand how these digital products can be used and why consumers may want them, as well as the resources required to create them.
- P2-Pricing in Metaverse: Good marketers understand their customers and their price points. However, conducting price research is critical in the Metaverse. Tangible steps can be taken to develop a pricing strategy, such as researching the competition, reviewing Metaverse consumer trends, and conducting market research.
- P3-The Metaverse as a Place: Evaluation of platform opportunities, checking to see if target customers are present there, risk assessment, and thinking through how goods or services might be sold there are essential to product distribution and channel strategy in the Metaverse.
- P4-Promoting brands in the Metaverse: It is necessary to plan how to drive users to the company's presence within the Metaverse. This can involve using the Metaverse as a channel to promote the company's products sold elsewhere or leveraging existing marketing channels to promote their new Web 3.0 platform products.

3.1. The Importance of Metaverse for Digital Marketing Strategies

Digital marketing strategies are a collection of methods and strategies used by companies to advertise their goods and services online. With the help of digital channels like search engines, social media platforms, email, and websites, these strategies seek to reach potential customers. Commonly used digital marketing strategies and their use in the Metaverse are presented in the rest of this paper.

- **SEO –** is a technique for improving a website's content and structure so that it will appear more prominently and rank higher on search engines like Google. SEO for Metaverse is the process of marketing a physical or digital business to increase its popularity in the Metaverse, using AR/VR and other technologies to create content and build communities to engage users in the virtual world. The goal is to increase visibility and reach in the Metaverse and rank higher on search engines for Metaverse-related keywords (Gupta, 2023).

- **Pay-per-click (PPC) advertising -** is a form of online advertising in which advertisers are charged for each click on their advertisements, which are typically placed on social media sites or search engines.
- **Social media marketing -** is a strategy that involves promoting goods and services on social media sites like Facebook, Instagram, Twitter, and LinkedIn. The Metaverse, a virtual world where users can interact with each other and digital objects, is transforming social media. It offers a new level of user experience with AR/VR technology, allowing users to explore, play games, and interact with others and digital objects in real time, leading to new forms of communication and expression. The blurring of the lines between online and offline experiences is the second most significant way that Metaverse will change social media. Through the Metaverse, users will be able to interact with digital content and other users in the physical world while simultaneously experiencing the real and virtual worlds. This interaction will become a new paradigm for how humans interact with technology, enabling more intuitive and natural connections with people around the world. The growth of the Metaverse is likely to alter how users access and use online content and it will give brands, advertisers, and creators new chances to make more interactive and interesting user experiences. By enabling branded virtual spaces, in-game sponsorships, and targeted advertising, the Metaverse will open up new avenues for marketing and advertising. New kinds of content will also emerge as a result, including virtual reality movies, video games, and other forms of online entertainment (Blockchain Council, 2023).
- **Content marketing** - is a strategy that entails the production and dissemination of worthwhile and pertinent content in order to draw in, hold on to, and ultimately motivate a target audience to take an advantageous action. Companies must concentrate on producing content and experiences that are simple to navigate and give customers the information they require if they want to succeed in the Metaverse. The following are some of the qualities of the content that companies will need to create for the Metaverse (Maddyness, 2022):
    - Highly Immersive Content - Content that is immersive will be so realistic and interactive that users will believe they are actually there. The development of technologies like VR and AR has made this possible.
    - Highly Personalised Content - Companies have a special chance to get to know their customers better thanks to the Metaverse. In other words, they will be able to connect emotionally with their customers through highly immersive content, which will result in more customer loyalty and engagement.
    - AR content - Companies will be able to use AR to develop experiences in the Metaverse that are even more immersive than conventional VR. This is due to the fact that AR enables users to interact with virtual objects and other Metaversians while still seeing and interacting with their actual surroundings.
    - Democratic content - Compared to the current Internet, the Metaverse will offer a more democratic environment. A lot of people think of the new Web 3.0 as social media in the VR space. This implies that organizations won't have complete control over the information that is created about them. Instead, customers will have the option to produce their own content about companies.
    - Collaboration will be crucial for success - Collaboration between companies will be necessary to develop effective, cost-efficient Metaverse-focused content marketing campaigns.
- **Email marketing** – is a strategy that involves using email to advertise goods or services, foster customer relationships, and generate leads. Although it is unclear how the Metaverse will affect email marketing, it could lead to a move toward more immersive and interactive email campaigns as well as a stronger focus on personalization and targeted messaging. Marketers might need to develop campaigns that work with the Metaverse, like interactive advertisements or virtual reality experiences. In order to adjust to the specific characteristics of this new environment, they might also need to invest in tools and technologies that allow them to analyze data and develop targeted campaigns.
- **Influencer marketing** – is an approach to marketing that makes use of social media influencers to market goods or services to their followers. Influencers who are knowledgeable about the Metaverse and eager to spread its word can help brands with their Metaverse Marketing campaigns. Events in the Metaverse can be hosted by brands to interact with their customers. Influencer marketing is especially effective in the Metaverse, where traditional marketing techniques may not be as successful, as younger generations are now more immersed in digital spaces (Banik, 2022).
- **Affiliate marketing** – is a performance-based marketing strategy that rewards affiliates (individuals or businesses) with a commission for generating leads or sales. Affiliate marketing in the Metaverse operates on a similar basis as traditional affiliate marketing, with affiliate partners receiving higher commission rates for driving web traffic and sales to a brand. However, there are key differences in the Metaverse, where affiliates can be represented as avatars, virtual worlds, or virtual offices. Payment methods for commission may also differ, as cryptocurrencies, NFTs, and built-in currency systems within virtual worlds are likely to be used (Bishop, 2022).

Businesses in the digital age need to implement digital marketing strategies because they provide a variety of online channels for connecting and engaging with potential customers. These tactics boost online visibility, raise brand recognition, and encourage profitable customer action. Targeting particular audiences, distributing useful content, and monitoring campaign performance are all made possible by digital marketing. Digital marketing and digital media are interdependent, and companies that use digital media wisely can anticipate better outcomes from their digital marketing efforts. Digital media in the Metaverse is a crucial component of the consumer experience with high potential for the

market. The rise of digital media in the Metaverse is fueled by technological advancements which make it possible to create more engaging and immersive digital experiences. In other words, the increasing use of gaming, social media, and Metaverse platforms, personalized and targeted digital content, as well as technological advancements, experimentation, and the potential for live streaming and e-commerce are driving the growth of digital media in the Metaverse. The digital media market in the Metaverse is expected to grow at a Compound Annual Growth Rate (CAGR) of 11.66% and reach a market size of USD 1.27 billion by 2030 (Statista, 2023).
By enabling customers to browse virtual shelves, try on items, and make real-time purchases, a well-planned digital strategy can significantly improve their experience in the Metaverse. These tactics can also assist companies in gathering important consumer data and customizing their products to better suit customer requirements. To successfully launch a Metaverse Marketing strategy, the following components must be included: defining business goals and key performance indicators (KPIs), conducting market research, defining a target audience, selecting a Web 3.0 platform for channel strategy, integrating with existing marketing mix for promotional strategy, conducting a risk assessment, developing a project plan for resourcing and timeline, and evaluating results and making necessary adjustments. (McLaughlin, 2022). It is more than obvious that brands must give priority to digital strategies that produce a memorable and distinctive customer experience if they want to succeed in the Metaverse. In other words, digital strategies will become more and more crucial for the success of brands in this expanding virtual world as the Metaverse continues to develop.

3.1.1. Consumer Experience in the Metaverse

Metaverse consumer experience refers to the ways in which consumers engage and interact with virtual worlds. In the Metaverse, consumers can enjoy an immersive and interactive experience, which offers them distinct and captivating means of engaging with products and services. Hence, the consumer experience can be highly customized thanks to the Metaverse, including customizing avatars and preferences like colors and important details. Additionally, brands have the ability to customize advertisements and offer customers a variety of avatar choices based on their gender, age, social networks, and interests. Customers are free to present themselves however they choose, and brands are better able to comprehend their needs thanks to this customer-centric approach (Chaturvedi, 2022).
Beinex Consulting experts provide four examples of how to improve the customer experience using the Metaverse (Consultancy-me, 2023):

- Offering distinctive, personalized experiences - Metaverse allows for unique and customized customer experiences that are tailored to their preferences, enabling them to browse products according to their needs. The Metaverse platform also promotes connectedness, allowing customers to share experiences and read reviews before making a purchase.
- Using VR/AR - In order to give users an entirely immersive experience, the Metaverse makes use of VR/AR. Customers who participate in immersive experiences might be able to do things that they might not otherwise be able to do or things that they could only do in that particular way. Customers can currently only use AR in a limited way through apps, but the Metaverse will allow them to interact directly with the product.
- Accessibility - The Metaverse provides numerous advertising opportunities and enables users to research their interests from anywhere. It offers free samples of actual events, making it a perfect substitute for those who are unable to attend in person. Through 3D virtual worlds and avatars, users can experience front-row access to events at a level of immersion that must be felt. Simple navigation places them in a Metaverse tailored to their interests.
- Enhancing the customer experience - Through immersive experiences, Metaverse assists companies in developing personal connections with customers by providing guidance and support in addition to products and services. Customers can interact with other users in the Metaverse, share opinions, and buy products after trying them out. With this tailored experience, companies can stay current with their customers' needs as the Metaverse develops.

There is no doubt that customers will have significantly different experiences on the Metaverse due to the nature of technology. This is crucial for improving customer experiences because omnichannel customer engagement increases loyalty, and including the Metaverse as an additional medium only enhances the overall experience (Israfilzade, 2022). In other words, if a brand is present on the Metaverse, it has a distinct identity in the customer perception. It is important to highlight that, like other innovative technologies, the Metaverse has a lot of space for improvement. By locating points of friction and removing them, brands can improve the customer experience.

3.2. The Current Challenges of Metaverse Marketing

To fully realize Metaverse Marketing, it is essential to develop a comprehensive strategy that addresses various issues. The following are some of the major issues that the implementation of Marketing in the Metaverse faces (Metric Marketing, 2022; Park & Kim, 2022; Dwivedi et al., 2022; Rawat & El Alami, 2023; Shi et al., 2023):

- Technology and equipment – The implementation of Marketing in the Metaverse requires hardware and software components with adequate computing power and efficient communication. When designing the user interface, especially in the field of marketing, it's crucial to take into account how to satisfy the Metaverse's

requirements for open access, high fidelity, visualization, immersion, and multi-sensory interaction. In addition, the cost of building Metaverse Marketing is influenced by several factors, such as the level of expertise required, the complexity of the modeling tool, and the amount of deployed hardware. For example, some customers might not have the money to invest in a headset, a pair of smart glasses, or any other piece of technology required for a Metaverse experience.

- Lack of data – Companies may find it difficult to operate in the Metaverse if there is a lack of data. However, as more companies work with Metaverse Marketing agencies, more information will be available. The effect of Metaverse Marketing on small businesses is still unknown.
- Cybersecurity issues: The vulnerability of data in the Metaverse is one of the main issues because a lot of important personal information can be easily obtained and potentially used for unethical purposes. Therefore, the Metaverse requires customized security measures.
- Identifying the customers - When creating an advertisement in the Metaverse, it is important to take into account the target customers and think about whether they are the same as those on other platforms and do they differ from their Metaverse avatars.
- Metaverse products vs. real-life products – It is important to find out whether companies are using the Metaverse to promote their virtual products or their real-life products. There are also concerns about what happens if the Metaverse products become more successful than their physical counterparts.
- Accessibility – The current state of Metaverse accessibility may have an impact on digital marketing strategy.

CONCLUSION

The Metaverse is a virtual environment where users can engage with one another and digital objects in real-time. It offers improved immersive experiences and is physically persistent. As such, the Metaverse presents an exceptional opportunity for marketers to engage with their intended audience in a way that is more immersive and interactive than any previous means, creating personalized experiences and collecting valuable consumer data. Therefore, immersive experiences, data gathering, and community-building should be companies' top priorities if they want to succeed in the Metaverse. By establishing personalization, they may be able to connect with their target audience more deeply. Even the Metaverse holds immense potential, for its full success widespread adoption and accessibility are essential. In other words, there are many challenges in the way of the development of the Metaverse and its integration into the marketing domain. However, once the initial challenges are overcome, Metaverse Marketing has the potential to be more engaging and beneficial for both businesses and customers.

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ЕЛЕКТРОНСКА КОМУНИКАЦИЈА КАО СРЕДСТВО ГЕНЕРИСАЊА ЛОЈАЛНОСТИ ПОТРОШАЧА

Апстракт: Електронска комуникација (eWOM) представља неформалну комуникацију између потрошача посредством технологије засноване на интернету. Дељење информација и искуства потрошача везаних за куповину и потрошњу путем ових технологија је веома интензивно, одвија се у изузетно кратком времену због чега је пресудно за репутацију једног бренда. Ставови потрошача који се међусобно размењују произилазе из њиховог искуства са брендом. То искуство може бити позитивно и негативно. Преношење позитивних искуства условљено је пре свега задовољством потрошача обављеном куповином и жељом да такве утиске и осећања пренесе другим потрошачима, настојањем да буде од користи компанији са којом има позитивно искуство, али и потребом да се добију корисне информације од других потрошача за будуће куповине. Са друге стране, дељење негативних информација детерминисано је незадовољством потрошача добијеном вредношћу, неиспуњеним очекивањима и формираним негативним осећањима, као што су осећање тензије, стреса, па чак и освете. Позитивне информације о бренду јачају склоност потрошача ка поновљеним куповинама и дугорочној лојалности, док негативне информације могу изазвати супротно понашање.
Полазећи од чињеница да коришћење електронске комуникације у сврху изградње имиџа бренда захтевају придобијање већег броја задовољних и лојалних потрошача, циљ рада је да се истражи однос између степена сатисфакције потрошача и њихове склоности ка електронској комуникацији и посредно утицај обе варијабле на лојалност потрошача. Склоност ка електронској комункацији је истраживана преко фактора који мотивишу потрошача на дељење информација као што су жеља потрошача да пренесе стечено знање о бренду, пренесе позитивна/негативна осећања, пружа/прима савете од других потрошача, искаже наклоност према производу/услузи или предузећу, као и израз жеље за социјализацијом у виртуелном простору и добијањем финансијских подстицаја. Истраживање је спроведено на територији Србије, методом испитивања, уз помоћ онлајн анкетног упитника, док су резултати обрађени у статистичким програмским пакетима за друштвене науке SPSS и AMOS. Емпиријско истраживање је показало позитивну везу између степена задовољства потрошача и фактора који мотивишу потрошаче да електронски комуницирају, али није потврђена директна веза између електронске комуникације и лојалности потрошача. Такође, истраживањем смо потврдили позитиван однос између сатисфакције и лојалности потрошача. Добијено истраживање представља допринос маркетинг теорији и пракси јер је сагласно постојећим истраживањима која потврђују позитивне релације између електронске комуникације, задовољства и лојалности потрошача.

Кључне речи: eWOM, сатисфакција, лојалност потрошача, искуство, имиџ

ELECTRONIC COMMUNICATION AS A MEANS OF GENERATION OF CONSUMER LOYALTY

Abstract: Electronic communication (eWOM) is informal communication between consumers through Internet-based technology. The sharing of information and consumer experience related to purchases and consumption through these

technologies is very intensive, takes place in an extremely short time, which is why it is crucial for the reputation of a brand. Consumer attitudes that are exchanged with each other arise from their experience with the brand. That experience can be positive and negative. Passing on positive experiences is conditioned primarily by the consumer's satisfaction with the purchase and the desire to convey such impressions and feelings to other consumers, by the effort to benefit the company with which he had a positive experience, but also by the need to obtain useful information from other consumers for future purchases. On the other hand, the sharing of negative information is determined by consumer dissatisfaction with the value received, unfulfilled expectations and formed negative feelings, such as feelings of tension, stress, and even revenge. Positive information about a brand strengthens consumers' preference for repeat purchases and long-term loyalty, while negative information can induce the opposite behavior.
Based on the fact that the use of electronic communication for the purpose of building a brand image requires the acquisition of a greater number of satisfied and loyal consumers, the aim of the work is to investigate the relationship between the degree of consumer satisfaction and their tendency towards electronic communication and indirectly the influence of both variables on consumer loyalty. Propensity for electronic communication was investigated through factors that motivate the consumer to share information, such as the consumer's desire to convey acquired knowledge about the brand, convey positive/negative feelings, provide/receive advice from other consumers, express affection for the product/service or company, as and the expression of the desire to socialize in the virtual space and obtain financial incentives. The research was conducted on the territory of Serbia, using the survey method, with the help of an online questionnaire, while the results were processed in statistical software packages for social sciences SPSS and AMOS. Empirical research has shown a positive relationship between the degree of consumer satisfaction and the factors that motivate consumers to communicate electronically, but a direct relationship between electronic communication and consumer loyalty has not been confirmed. Also, through research, we have confirmed a positive relationship between satisfaction and consumer loyalty. The resulting research represents a contribution to marketing theory and practice because it agrees with existing research that confirms the positive relationship between electronic communication, satisfaction and consumer loyalty.

Key words: eWOM, satisfaction, consumer loyalty, experience, image

1. УВОД

Комуникација од уста до уста (WOM) представља комуникацију која се одвија између потрошача који на тај начин међусобно преносе информације и ставове везане за стечено искуство са куповином и/или конзумирањем производа/услуге и/или самим предузећем. Она се може одвијати како у офлајн, тако и онлајн простору (Brown et al., 2007). Развојем информационих и комуникационих технологија традиционална комуникација од уста до уста проширује се електронском комуникацијом (eWOM) (Jeong & Koo, 2015). Henning-Thurau и др. (2004) дефинишу eWOM комуникацију као сваку позитивну или негативну изјаву потенцијалног, стварног или бившег потрошача о производу или предузећу која је доступна великом броју људи и институција путем интернета. Јединствена интерактивна природа дигиталног простора омогућила је онлајн корисницима једноставну и брзу дискусију око различитих тема, размену искустава и идеја са другим корисницима и пријатељима. Незаобилазне теме су везане за куповину и потрошњу. eWOM комуникација одвија се кроз бројне дигиталне платформе као што су: форуми за дискусију, рецензије производа, сајтови за друштвене мреже и путем *email*-а (Flavian et al., 2020; Ren et al., 2022). Развој интерактивне технологије омогућио је eWOM комуникацију не само између корисника већ и између корисника и предузећа (Hu et al., 2014). Полазећи од начина на који се eWOM одвија, Hu и Ha (2015) су идентификовали следеће врсте eWOM-а: специјализовани eWOM који се односи на рецензије купаца или на сајтове за оцењивање који се не баве продајом производа, (нпр. Epinions.com); повезани eWOM односи се на рецензије купаца повезане са малопродајним веб локацијама (рецензије купаца на Амазону и eBay-у); друштвени eWOM подразумева размену разноврсних информација које су везане за конкретне производе и/или брендове између корисника путем друштвених мрежа; и eWOM који укључује информације о бренду/производу које се размењују на другим платформама друштвених медија као што су блогови и дискусионе групе.
Иако су се онлајн рецензије купаца показале као ефикасан вид eWOM-а у маркетингу, истраживачи указују на значај да eWOM-а путем друштвених мрежа (Hu et al., 2014). Растућа популарност друштвених мрежа трансформисала је начин на који се eWOM одвија у дигиталном добу (Rui et al., 2013). Објављивањем препорука и мишљења о производу или услузи на својим профилним страницама индивидуа или страницама предузећа, потрошачи остварују жељу да пренесу своје знање о производима/услугама својим пријатељима, познаницима који су стварни или потенцијални потрошачи и на тај начин им помогну при доношењу одлука о куповини. Стечено знање произилази из њиховог искуства из куповине и потрошње које може бити позитивно или негативно. Позитивно искуство потрошача води њиховој сатисфакцији, поновним куповинама, али и већу склоност ка eWOM-у (Parasuraman et al., 1988; Ladhari, 2007; Walsh et al., 2011). Са друге стране, негативно

искуство потрошача изазива неиспуњена очекивања, незадовољство, формирање негативних осећања и негативне препоруке.
Полазећи од претходног намера аутора у раду је да истраже релације између следећих варијабли: сатисфакције потрошача и њихове склоности ка eWOM-у, сконости потрошача eWOM-у и њихове лојалности, као и између сатисфакције и лојалности потрошача. Склоност потрошача ка eWOM-у је истраживана преко фактора који мотивишу потрошача на дељење информација. Емпиријско истраживање реализовано је на тржишту мобилних телефона Републике Србије. Куповина мобилног телефона захтева висок степен ангажовања потрошача у процесу претраживања и анализе информација, уложено време, енергију, психички напор, али и финансијска средства. Дигиталне платформе су кључни извори информација неопходних за куповину ових производа . Истраживања показују да су онлајн рецензије кључни извори информација за савремене потрошаче због доступности, брзине претраживања и количине информација (Jung & Kim, 2012). На тај начин потрошачи у одређеној мери смањују ниво ангажовања у процесу куповине. Према Републичком заводу за статистику Србије у 2021. години 95,5% појединаца поседује мобилни телефон што је у поређењу са 2020. годином више за 1,4%. Највећи број становника Републике Србије користи мобилни телефон за разговор путем интернета - 93%, као и за претраживање информација о производима и услугама - 73,4%. Рад ће допринети и проширењу постојеће литературе о комуникацији на дигиталним платформама, као и о задовољству коришћењем производа или конзумирањем услуге.

2. ПРЕГЛЕД ЛИТЕРАТУРЕ

2.1. Електронска комуникација од уста до уста

Друштвени медији обухватају низ апликација заснованих на интернету које омогућавају креирање и размену садржаја који генеришу корисници (Kaplan & Haenlein, 2010). Бројност друштвених медија условило је интензивно друштвено умрежавање и комуникацију између самих корисника који дељењем обиља информација и изношењем позитивних или негативних ставова у великој мери утичу на репутацију брендова и предузећа (Serra-Cantallops et al., 2018).У том смислу eWOM је последњих година значајно обликовао понашање људи у куповини и потрошњи, очекивања и намеру куповине (Erkan & Evans, 2016). Иако све платформе на мрежи наглашавају повезивање и комуникацију нових људи, ове везе су често, али не увек, реципрочне. Међутим све већи број предузећа покушава да утиче на eWOM, наметањем тема за дискусију са корисницима и утицајем на сам ток дискусије (Tsimonis & Dimitriadis, 2014; Chu et al., 2011). Склоност потрошача да електронском комуникацијом преносе своја искуства о производу/услузи или предузећу може бити мотивисана различитим факторима. Жеља потрошача да пренесе стечено знање о бренду, позитивна, али и негативна осећања појединца према другима, али и жеља да се пренесу и приме савети од других, наклоност према производу/услузи, социјализација у виртуелном простору и финансијски подстицаји су најчешћи мотиви eWOM-а (Табела 1).

Табела 1: Фактори који мотивишу потрошаче на eWOM

Мотивациони фактори	Опис фактора
Жеља потрошача да пренесе стечено знање о бренду	Мотив потрошача да своје формиране ставове пренесе другим потрошачима
Позитивна осећања	Мотив потрошача проистиче из јаке жеље да подели са другима радост о позитивном искуству
Негативна осећања	Мотив потрошача да своје незадовољство подели са другима на платформама што може послужити за смањење фрустрације и смањите анксиозности повезане са догађајем
Пружање савета	Мотив потрошача да омогући другим потрошачима да добију конкретне и корисне информације него једноставно анонимно читање коментара
Примање савета	Мотив потрошача да добије информације о искуству са производом/услугом
Наклоност према производу/услузи	Мотив потрошача да се захвали компанији за позитивно искуство
Социјализација у виртуелном простору	Мотив потрошача да постане део виртуелне заједнице кроз друштвене медије
Финансијски подстицаји	Мотив потрошача у знак уважавања његовог позитивног понашања од стране компаније

Извор: Hennig-Thurau et al., 2004

2.2. eWOM комуникација и сатисфакција потрошача

Традиционални WOM еволуирао је у eWOM у новој дигиталној ери. Главне разлике између WOM и eWOM могу се идентификовати у домету односно броју људи на које се може утицати и брзини интеракције. С обзиром на ово поређење, Sun et al. (2006) су закључили да је у поређењу са традиционалним WOM-ом, eWOM је утицајнији због своје брзине, погодности, домета један на више и одсуства људског притиска односно комуникације лицем у лице. Због интензитета eWOM-а и његовог утицаја на одлуке о куповини предузећа се последњих година све више фокусирају на истраживање релација између искуства са производом и предузећем, односно сатисфакције потрошача и eWOM-а, односно да ли сатисфакција потрошача појачава њихову склоност ка електорнској комуникацији (Labrecque et al., 2013). У том смислу, позитивно искуство са производом и предузећем формира позитивне ставове потрошача, јача сатисфакцију потрошача што последично интензивира препоруке, односно позитиван eWOM (Parasuraman et al., 1988). Са друге стране, ширење негативног искуства у куповини и потрошњи детерминише незадовољство потрошача и склоност негативном eWOM-у (Sweeney et al., 2005). Полазећи од установљене позитивне релације између искуства, ставова и сатисфакције потрошача и склоност WOM-у (Ladhari, 2007; Walsh et al., 2011), значајно је формулисати следећу хипотезу:

X1: Постоји значајна позитивна веза између сатисфакције потрошача и eWOM-а.

2.3. eWOM и лојалност потрошача

Истраживање везе између склоности потрошача ка eWOM-у и њихове лојалности је такође значајна тема истраживача последњих година. Већина њих сматра лојалност потрошача претходником eWOM-а. Тако на пример, истраживање Worthington и др. (2010) показало је да лојални потрошачи имају већу склоност да преносе позитивне ставове и искуство са производом/услугом. Последица тога је стицање нових потрошача и јачање њихове склоности ка понављању својих куповина. Коментари и рецензије лојалних потрошача су у онлајн куповини значајни за обликовање ставова других потрошача, посебно у куповини техничких производа, новим куповинама или када су искуства брендом недовољна. Такође, рецензије гостију детерминишу број резервација у хотелима и кључне су за привлачење нових (Serra-antallops et al., 2018; Xie et al. (2011); Litvin et al., 2008; Ye et al., 2009). Тестирање обрнуте везе ових варијабли, односно да је позитиван eWOM претходник лојалности потрошача није често заступљено у маркетинг истраживањима. Једно од њих је показало да што је већа склоност ка eWOM-у позитивно утиче на лојалност потрошача хотела (Serra-antallops et al., 2018). Полазећи од ове чињенице значајно је тестирати следећу релацију:

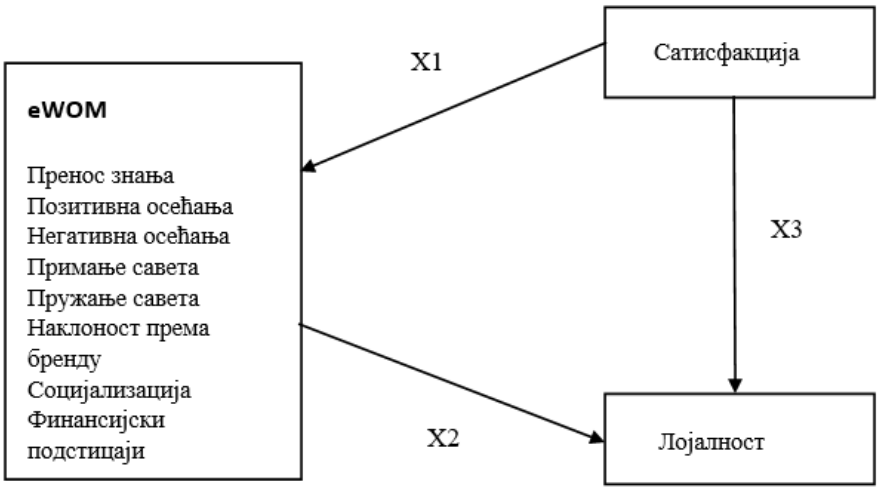
X2: Постоји позитивна eWOM као предходник лојалности потрошача.

2.4. Сатисфакција потрошача и лојалност потрошача

Сатисфакција је важан предиктор за остваривање лојалности потрошача. Већи степен сатисфакције води поновним куповинама, имуност на конкурентске пристиске и већим препорукама другим потрошачима (Brakus и др. 2009; Lin и Benett, 2014). Оваква веза две варијабле потврђена је истраживањима спроведеним у онлајн куповинама и eWOM-а (Pandey & Chavla, 2018; Rose et al., 2012). Штавише, неколико истраживања је потврдило ефекат сатисфакције на лојалност и препоруке потрошача који куповину обављају путем мобилних уређаја (Kim et al., 2017; Lin & Wang, 2006). Бројна истраживања су се такође бавила како сатисфакција утиче на коришћење апликација за куповину које интензивно користе малопродавци. У том смислу резултати потврђују да уколико су корисници малопродајне апликације задовољни услугама које апликација нуди, онда је већа вероватноћа да ће наставити да купују путем њих и препоручују их другима (Alnawas и Aburub, 2016; Iyer et al., 2018; Thakur, 2018; Trivedi & Trivedi, 2018). Полазећи од претходног, релевантна је следећа хипотеза која ће бити предмет тестирања:

X3: Постоји значајна позитивна веза између сатисфакције и лојалности потрошача

Концептуални оквир истраживања приказан је на Слици 1 и изграђен је на преовлађујућим идејама о друштвеној eWOM комуникацији (Bambauer-Sachse & Mangold, 2011; Jalilvand & Samiei, 2012a, 2012b, Teng, et al., 2014, Serra-Cantallops et al., 2018, Anastasiei & Dospinescu, 2018), сатисфакцији (Yang, 2017; Serra-Cantallops et al., 2018) и лојалности куповине (Lin & Wang, 2006; Serra-Cantallops et al., 2017).



Слика 1: Концептуални модел истраживања заснован на развијеним хипотезама
Извор: Аутори

3. МЕТОДОЛОГИЈА ИСТРАЖИВАЊА

Метод и инструмент истраживања. Емпиријско истраживање реализовано је коришћењем метода испитивања, док је за прикупљање информација коришћен је онлајн упитник. Онлајн анкетни упитник (Google forms) структуриран је тако да су најпре постављена питања која су се односила на демографске карактеристике испитаника, а затим констатације које су се односиле на мотивационе факторе eWOM комуникације, сатисфакцију и лојалност потрошача. Констатације које су се односиле на eWOM комуникацију прилагођене су према Hennig-Thurau et al. (2004), а односе се на осам мотивационих фактора који покрећу eWOM и то: жеља потрошача да пренесе стечено знање о бренду, пренесе позитивна/негативна осећања, пружа/прима савете од других потрошача, искаже наклоност према производу/услузи или предузећу, као и израз жеље за социјализацијом у виртуелном простору и добијањем финансијских подстицаја од стране предузећа. Сатисфакција потрошача испитана је на основу констатација пирлагођених према Fornell (1994), док су констатације које се тичу лојалности потрошача прилагођене према Aaker (1996). Испитаници су степен слагања са наведеним констатацијама исказивали помоћу петостепене Ликертове скале, где оцена 1 има значење „у потпуности се не слажем“, а оцена 5 „у потпуности се слажем“.

Контекст истраживања. Истраживање је спроведено на територији Србије у периоду јун-август 2022. године. Број дистрибуираних он лајн упитника био је 300 и сви су попуњени и обрађени. Упитник је формулисан тако да испитаник мора да одговори на свако питање.

Карактеристике узорка. Демографске карактеристике узорка приказане су у Табели 2.

Табела 2: Демографске и економске карактеристике испитаника

Елемент	Број испитаника	Пропорционално учешће
Пол	**300**	**100.0**
Мушки	105	35.00
Женски	195	65.00
Старост	**300**	**100.0**
до 20 година	26	8.66
21-30 година	209	69.66
31 -40 година	65	21.68
Образовање	**300**	**100.0**
Средња школа	64	21.34
Виша/Висока школа	97	32.33
Факултет/Мастер	139	46.33
Статус	**300**	**100.0**
Запослен	217	72.33
Незапослен	36	12.01
Студент/ученик	47	15.66

Извор: Аутори

Метод и инструмент истраживања. Тестирање истраживачких хипотеза извршено је у статистичким програмским пакетима за друштвене науке (*The Statistical Package for the Social Sciences*-SPSS, верзија 21) и AMOS (верзија 18). Од статистичких анализа, најпре је коришћена дескриптивна статистика за утврђивање хомогености/хетерогености узорка. Као мера интерне конзистентности констатација у оквиру добијених фактора, коришћен је Кронбах алфа коефицијент. Поред тога, испитана је усклађеност модела путем конфирмативне факторске анализе, израчунавањем вредности неколико важних индекса усклађености ($\chi 2/df$; CFI; TLI; IFI; GFI; NFI; RFI; RMSEA), а затим је испитана значајност и јачина релација у предложеном моделу, примењен је модел структуралних једначина (Structural Equation Modeling - SEM). Конкретно, јачина тестираних односа процењена је анализом вредности стандардизованих регресионих коефицијената.

4. РЕЗУЛТАТИ ИСТРАЖИВАЊА

У почетном кораку анализе израчунали смо вредности аритметичке средине и стандардне девијације за сваку димензију у оквиру eWOM комуникације, сатисфакције и лојалности потрошача за сваку констатацију. Циљ ове анализе је утврђивање хомогености/хетерогености ставова испитаника. Затим је коришћена Пирсонова корелациона анализа како би се утврдила статистичка значајност и јачина корелације између варијабли. Резултати су представљени у Табели 3.

Табела 3: Вредности дескриптивне статистике (аритметичка средина и стандардна девијација)

Statements	Mean	SD	Cronbach's Alpha	N of Items
eWOM			**.929**	**16**
Пренос знања о производу/услузи			.820	2
Верујем да ће одговорна особа у компанији видети моју поруку и предузети мере	4.84	.402		
Верујем да ће компанија бити спремнија за сарадњу ако поделим своје знање	4.41	1.029		
Позитивна осећања			.548	2
На овај начин могу изразити своју радост због добре куповине	4.79	.492		
Осећам се добро када другима причам о својим успесима у куповини	4.60	.826		
Негативна осећања			.760	2
Мени је компанија нашкодила, а сад ћу и ја њој!	4.19	1.148		
Нанећу штету компанији! Желим да се осветим компанији	3.64	1.701		
Пружање савета другима			.551	2
Желим да упозорим друге на лоше производе	3.98	1.462		
Желим да моје лоше искуство пренесем другима	4.63	.675		
Примање савета од других			.822	2
Надам се да ћу добити савет од других	4.65	.699		
Очекујем да ћу добити савет или подршку	4.61	.824		
Наклоност према производу/услузи/компанији			.798	2
Толико сам задовољан компанијом да желим да јој помогнем	3.75	1.704		
По мом мишљењу, добре компаније треба подржати	4.34	1.111		
Социјализација у виртуелном простору			.810	2
Верујем да је разговор са истомишљеницима лепа ствар	4.37	1.085		
Забавно је комуницирати са људима у виртуелној заједници	4.18	1.287		
Финансијски подстицаји			.768	2
Добијам новчане подстицаје од предузећа	4.29	1.082		
Добијам награду за писање рецензија од стране предузећа	3.65	1.770		
Сатисфакција			.665	2
Задовољан сам овим брендом и његовим перформансама	3.71	1.697		
Мој избор да купим овај бренд био је мудар	4.47	1.013		

Лојалност			.778	4
Кад год је могуће бирам свој омиљени бренд	4.83	.434		
Разлика у цени између појединих брендова утиче на моју намеру да купим свој омиљени бренд	4.48	.990		
Желим да платим вишу цену када купујем свој омиљени бренд и без размишљања	4.44	.914		
Купујем свој омиљени бренд и мислим да је то најбољи избор за мене.	4.30	1.039		

Извор: Аутори

Тумачењем добијених вредности аритметичке средине и стандардне девијације, може се указати да на основу вредности ових индикатора испитаници углавном сматрају да постављене истраживачке варијабле односно eWOM, сатисфакција и лојалност потрошача у крајњој инстанци утичу на лојалност потрошача приликом куповине мобилних телефона. Највећа вредност аритметичке средине односи се на електронску комуникацију и то конкретно код следећих мотивационих фактора: кад је у питању утицај на компанију у делу констатације *Верујем да ће одговорна особа у компанији видети моју поруку и предузети мере* (4,84) и преношење позитивних осећања о производу, услуги или задовољству са компанијом *На овај начин могу изразити своју радост због добре куповине* (4.79), као и код лојалности потрошача која се тиче констатације *Кад год је могуће бирам свој омиљени бренд* (4.83). Посматрајући вредност стандардне девијације, може се закључити да су најхомогенији ставови испитаника у исказу *Верујем да ће одговорна особа у компанији видети моју поруку и предузети мере* (стандардна девијација 0,402), док се највећа хетерогеност ставова види код изјаве која се односи на констатацију *Добијам награду за писање рецензија* (стандардна девијација 1,770). На основу наведеног може се закључити да је највећи интензитет између eWOM-а и жеље да се пренесу знања другим потрошачима или позитивна искуства. Најмањи интензитет установљен је између eWOM-а и подстицаја за писање рецензија.

Како бисмо приступили даљем истраживању постављеног модела кроз статистички програм AMOS испитали смо поузданост и валидност варијабли, као и усклађеност модела кроз конфирмативну факторску анализу. Резултати су приказани у Табели 4.

Табела 4: Поузданост, валидност и корелациона анализа за истраживачке варијабле

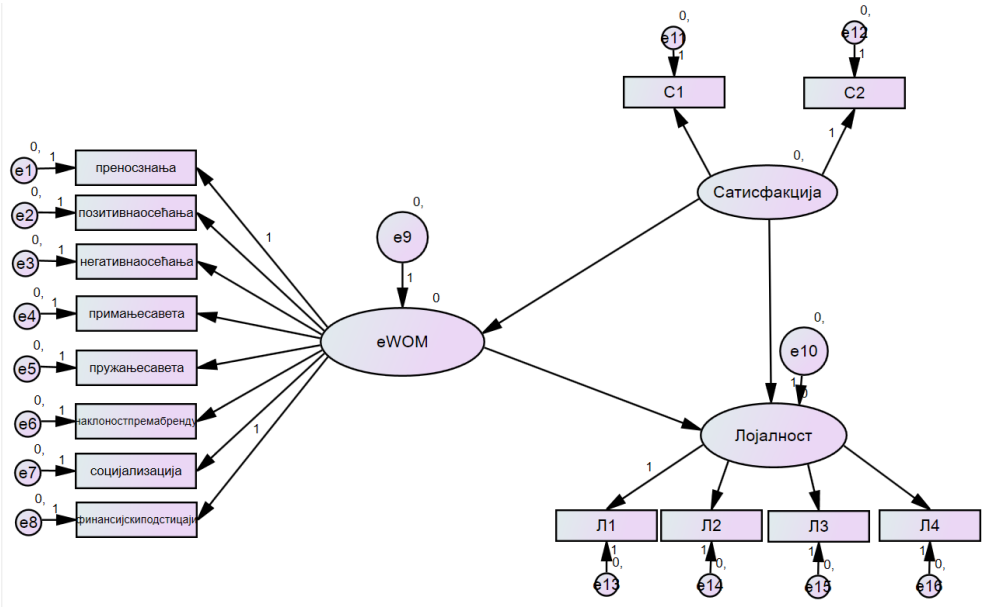
Constructs	AVE	CR	Correlations		
eWOM	.764	.924	.783**		
Сатисфакција	.617	.663	.821	.785**	
Лојалност	.686	.796	.694	.759	.719**

** p<0.001

Извор: Gakingston Statistical Toolkit Output

Конкретно, у циљу испитивања конвергентне валидности модела, приказана је просечна издвојена варијанса (AVE- Average Variance Extracted) за све варијабле истраживачког модела. Њена вредност изнад 0,5 указује на то да приказани истраживачки модел остварује конвергентну валидност (Fornell & Larcker, 1981; Hair et al., 2010). У циљу додатне конфирмације конвергентне валидност, важно је истаћи да је за сваку латентну варијаблу CR>AVE, у складу са препорукама које наводи Калинић и сарадници (2019). Даље, вредност композитне валидности (CR- Composite Reliability) је у прихваћеним границама односно изнад 0,6 (Fornell & Larcker, 1981). Такође, у оквиру Табеле 2 приказана је корелациона анализа у циљу провере конзистентности варијабле eWOM, сатисфакције и лојалности потрошача. Добијене вредности коефицијента Cronbach's alpha су изнад 0,7 што указују на добру интерну конзистентност унутар сваке постављене истраживачке варијабле.

На основу спроведене анализе поузданости и конфирмативне факторске анализе, дошли смо до следећег истраживачког модела приказаног на Слици 2.



Слика 2: Истраживачки модел
Извор: Аутори

Успостављен истраживачки модел подразумева анализу валидности показатеља модела (χ2/df, NFI, IFI, TLI, CFI, PCFI, RMSEA) у циљу даљег тестирања модела структуралних једначина. Добијене и препоручене вредности показатеља приказане су у Табели 3.

Табела 5: Показатељи валидности модела

Показатељи	**Модел истраживања**	**Препоручена вредност**
χ^2/df	4.963	**<5**
NFI	.926	**>0.9**
IFI	.940	**>0.9**
TLI	.908	**>0.9**
CFI	.939	**>0.9**
PCFI	.619	**>0.5**
RMSEA	.115	**<0.08**

Извор: Аутори

Истраживачки модел обухвата све варијабле и релације датих појмова у циљу испитивања постављених хипотеза. Иако за валидност модела вредност χ2 статистике не треба да буде статистички значајна (Pappas, 2016), у датом моделу истраживања, вредност овог показатеља је статистички сигнификантна на нивоу $p < .001$. Наиме, овакав резултат могао би се оправдати тиме што је узорком обухваћен велики број испитаника од коришћеног броја варијабли, као и чињеницом да χ2 тест у великој мери зависи од комплексности самог модела истраживања (Schermelleh-Engel et al., 2003). Из тог разлога, бољу процену ваљаности модела даје рацио χ2/дф, који се налази у оквиру препоручене вредности (Marsh & Hocevar, 1985). Вредност CFI показатеља, указује на бољу валидност модела што је његова вредност ближа броју 1. Дакле, на основу датих параметара, али и свих осталих-, чије су вредности у оквиру оних које су предходно идентификоване као референтне може се потврдити да је конципирани модел показао прихватљив ниво усклађености. RMSEA није у оквиру препоручене вредности, али анализа се може наставити с обзиром на то да је могуће одступити од препоручене вредности у оквиру једног или два параметара.

Анализом показатеља у моделу структуралних једначина, долази се до следећих закључака: Хипотеза 1 односно успостављен однос између сатисфакције потрошача и eWOM указује на позитиван и статистички значајан однос ($B = .681$, $p < .001$); Хипотеза 2 којом је испитано да ли је eWOM предходник лојалности потрошача није показала статистички значајне вредности ($B = .060$, $p > .005$) и Хипотеза 3 којом је успостављен однос између сатисфакције и лојалности потрошача указала је на и статистички значајне вредности односно сатисфакција потрошача позитивно утиче на лојалност потрошача на тржишту мобилних телефона.

Табела 6: Тестирање веза између варијабли SEM

Хипотезе	Посматрана релација	Процена	Статистичка значајност (p)	Резултат	R^2
Хипотеза 1	Сатисфакција → eWOM	.681	.000	Потврђена	0.693
Хипотеза 2	eWOM → Лојалност	.060	.484	Одбачена	
Хипотеза 3	Сатисфакција → Лојалност	.195	.005	Потврђена	

Извор: Аутори

На основу претходне анализе, можемо закључити да су X1 и X3 потврђене, док је X2 одбачена. Наиме, тестирањем прве дефинисане хипотезе између сатисфакције потрошача и димензија eWOM комуникације може се констатовати да повећањем сатисфакције за једну јединицу, eWom комуникација ће се повећати за 0.681 јединица, при чему сви остали услови остају непромењени (B= 0.681, p< 0.001). Затим, друга постављена хипотеза је одбачена с обзиром на то да вредност није статистички значајна (B= .060 , p>0.001) што указује на закључак да није успостављена позитивна статистичка веза између eWOM и лојалности потрошача. Даље, уколико се сатисфакција повећа за једну јединицу, лојалност ће се повећати за 0.195 јединица уз све остале непромењене услове (B= .195, p< 0.001). Коефицијент детерминације R^2 у датом моделу истраживања указује на то да је 69,3% варијабилитета зависне променљиве лојалности објашњено наведеним моделом истраживања, до је 30,7% под утицајем других екстерних фактора који нису објашњени моделом истраживања.

5. ЗАКЉУЧАК

Истраживање теоријских ставова везних за однос између сатисфакције потрошача, склоности потрошача ка eWOM-у и њихове лојалности у раду, као и реализовано емпиријско истраживање омогућавају формулисање одговарајућих закључака који су индикативни за академску и пословну праксу. Наиме, на основу теоријских разматрања у раду може се закључити да сатисфакција потрошача јача њихову сколоност ка eWOM-у, да преношење ставова потрошача о куповини и потрошњи може бити мотивисано жељом да се пренесе искуство и знање и тиме докажу своју личност, позитивним или негативним осећањима, склоношћу да се промовише бренд коме су лојални, али и добијањем финансијских подстицаја за своју наклоност према бренду, као и да потрошачи склонији ка eWOM-у су лојалнији од оних који то нису. Интензитет мотива eWOM-а анализирали смо пре тестирања постављених хипотеза. Међутим, реализовано емпиријско истраживање је показало да интензитет везе између истраживаних мотива и склоности eWOM-у није идентичан. Најзначајнији интензитет везе је доказан између eWOM-а и тежње потрошача да своје знање пренесу другим потрошачима (mean= 4.62), жеље да поделе позитивна осећања са другима (mean=4,63) или да поделе савете (mean=4,63). Најмањи интензитет је установљен између eWOM-а и подстицаја за писање рецензија (mean =3.65), и eWOM-а и жељом потрошача да пружи помоћ компанији (mean =3.75). Даље се приступило тестирању хипотеза у оквиру којих је eWOM посматран кроз анализу свих мотивационих фактора.

Резултати истраживања *прве* хипотезе показали су да је успостављен позитиван и статистички значајан однос између сатисфакције и eWOM комуникације, а то даље значи да су задовољни потрошачи мотивисанији ка позитивном eWOM-у. Ови резултати су сагласни резултатима истраживања аутора Wu и Wang (2011) који су доказали постојање позитивне везе између eWOM-а и сатисфакције потрошача, при чему је та веза јача уколико је извор (особа) који поставља коментар и рецензију креидибилнији (особа којој се верује). Резултати истраживања Hu и Ha (2015) такође показују да позитиван eWOM утиче на позитиван став према производу као и на намеру да исти купе и да то води сатисфакцији потрошача. Међутим, наше истраживање није показало да eWOM може бити предходник лојалности потрошача чиме је *друга* хипотеза одбачена. Стога, може се закључити да позитивна комуникација у онлине окружењу није релевантан показатељ лојалности потрошача. Такође, лојалност не представља само фреквенцију куповине већ инсистирање на поновној куповини исте марке (Oliver, 1999). *Трећа* хипотеза имала је за циљ да испита однос између сатисфакције потрошача и лојалности потрошача када је у питању куповина мобилних телефона у Републици Србији. Резултати истраживања показују позитиван утицај сатисфакције потрошача на лојалност потрошача. Што је у складу са претходним научним истраживањима (Park et al., 2007; Callarisa et al., 2012; Loureiro & Kastenholz, 2011; Tu et al., 2012; Wilkins et al., 2010);

Рад доприноси развоју теоријских и менаџерских импликација. Наиме, истраживање је обухватило тржиште мобилних телефона, као једно комплексно тржиште због сложености и развоја нове технологије и иновација, са једне стране, и динамичних потреба и захтева потрошача са друге стране. С обзиром на то да савремени услови пословања захтевају и присуство компанија на дигиталним платформама, неопходна је јасно дефинисана дигитална маркетинг стратегија која ће бити усмерена на стварање свесности о бренду, а затим и на задовољство потрошача које ће резултирати потрошаче адвокате. Даље, маркетинг активности требају бити усмерене да изграде онлине поверење потрошача како би се задовољство потрошача проширило и на лојалност потрошача. Осим тога, резултати ове студије доприносе разноврсном скупу литературних токова као што су eWOM задовољство и лојалност (Sijoria et al., 2018). Осим тога, овај рад унапређује претходна истраживања о

међусобној повезаности eWOM-а, задовољства и лојалности потрошача (Gauri et al., 2008; Thakur, 2016; Thakur, 2019; Prasad et al., 2019).
Емпиријско истраживање користи метод анкетирања и SEM као технику анализе што је чини корелационом и потврдном. Истраживање, према томе, нема чврсте тврдње о утврђивању узрочности. Будући истраживачи могу користити друге истраживачке методе како би утврдили узрочност односа између конструката. Такође, истраживање је засновано на подацима прикупљеним коришћењем технике узорковања без вероватноће и ослања се на ставове испитаника, што је ограничење истраживања. И поред наведних ограничења истраживања у раду и коришћени модел могу послужити као основ за будућа истраживања и примену на друге производе/услуге.

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УТИЦАЈ ГЕОПОЛИТИЧКИХ ТУРБУЛЕНЦИЈА НА АКТИВНОСТИ ГЛОБАЛНЕ ЛОГИСТИКЕ

Апстракт: Ефикасност менаџмента глобалне логистике, чија се специфичност огледа у томе што обухвата управљање протоком роба од тачке порекла до тачке потрошње кроз међународни ланац снабдевања, подразумева сарадњу и координацију бројних пословних партнера лоцираних широм света. Она подразумева висок степен флексибиности, брзине и квалитета сервиса потрошача уз најниже могуће трошкове глобалних логистичких операција, како би се успешно превазишла временска и просторна удаљеност која постоји. Самим тим, актуелне геополитичке турбуленције које су довеле до успоравања глобалног привредног раста, смањења међународне трговинске размене, пада тражње, пораста националних баријера и других промена, узроковале су поремећаје у глобалним ланцима снабдевања и активностима глобалне логистике. Тржиште глобалне логистике суочило се са прекидима и кашњењима испорука, повећањем транспортних трошкова, несташицама контејнера, затварањем транспортних путева, недостатком складишног простора итд. Циљ овог рада је да укаже на утицај геополитичких турбуленција на активности глобалне логистике, те потребе трансформације и прилагођавања пословања свих учесника у глобалним ланцима снабдевања новонасталим околностима.

Кључне речи: Геополитичке турбуленције, глобална логистика, транспорт.

THE IMPACT OF GEOPOLITICAL TURBULENCES ON GLOBAL LOGISTICS ACTIVITIES

Abstract: The efficency of global logistics management, which specificity is reflected in the fact that it includes the management of the flow of goods from the point of origin to the point of consumption through the international supply chain, implies the cooperation and coordination of numerous business partners located around the world. It implies a high degree of flexibility, speed and quality of customer service with the lowest possible costs of global logistics operations, in order to successfully overcome the time and space distance that exists. Therefore, the current geopolitical turbulences that have led to a slowdown in global economic growth, a decrease in international trade, a drop in demand, an increase in national barriers and other changes have caused disruptions in global supply chains and global logistics activities. The global logistics market has faced interruptions and delays in deliveries, increasing transport costs, container shortages, closures of transport routes, lack of storage space, etc. The aim of this work is to point out the impact of geopolitical turbulence on global logistics activities, and the need to transform and adapt the business of all participants in global supply chains to new circumstances.
Key words: Geopolitical turbulences, global logistics, transportation.

УВОД

Међународно тржиште, између осталог, карактерише висок степен глобализације и спољнотрговинске либерализације. Глобализација, која се може описати као процес укрупњавања капитала, а чији ефекат је између осталог и хомогенизација потреба потрошача, представља одличну прилику за предузећа да се шире ван граница домицилног тржишта. Домицилна тржишта великих предузећа су у великом степену сатурирана и намеће се природна потреба предузећа из различитих делова света за освајањем нових тржишта пре свега путем извоза. Поред очигледног утицаја глобализације, на интернационално ширење глобалних предузећа утиче и висок степен спољнотрговинске либерализације. Једно од основних обележја спољнотрговинске либерализације је уклањање трговинских баријера на глобалном тржишту (смањивање и укидање царина, квота, контингената, добровољног ограничења извоза итд.). На тај начин и спољнотрговинска либерализација подстиче глобална предузећа на повећање спољнотрговинских токова размене и ширење на нова неосвојена тржишта (Милићевић, 2015).

Да би се глобална предузећа ширила и освајала нова тржишта и да би се обим међународне трговине повећавао, што је подстакнуто глобализацијом и либерализацијом спољне трговине, неопходна је ефикасна и ефективна глобална логистика. Токови глобалне логистике могу бити поремећени различитим геополитичким турбуленцијама. Геополитичка турбуленција се може окарактерисати као било која ситуација која утиче на отежано извршавање активности глобалне логистике (транспорт, складиштење, управање залихама) на глобалном нивоу. Ове турбуленције не могу бити контролисане, а врло често ни избегнуте. Глобалним предузећима остаје само да их прихвате и да им се, уз веће трошкове пословања, прилагоде (Ceniga и Sukalova, 2015).

Сам рад полази од тачке која се односи на ефикасност глобалне логистике, у склопу ње дефинисан је логистички менаџмент као део менаџмента ланца снабдевања, објашњене су главне логистичке активности и указано је на њихову ефикасност. Друга тачка се бави анализом глобалног логистичког тржишта, у оквиру ње су анализирани подаци о укупним глобалним логистичким трошковима и подаци о величини глобалног логистичког тржишта, извршена је компарација највећих логистичких предузећа на глобалном нивоу. У оквиру треће тачке објашњен је утицаја конкретних геополитичких турбуленција на активности глобалне логистике.

1. ЕФИКАСНОСТ ГЛОБАЛНЕ ЛОГИСТИКЕ

Логистички менаџмент обухвата процесе планирања, имплементације и контроле ефикасности и ефективности унапред и уназад токова и складиштења производа и услуга, као и информације од тачке порекла до тачке потрошње са циљем задовољавања захтева потрошача (Council of Supply Chain Management Professionals, 2023). Он представља саставни део менаџмента ланца снабдевања који обухвата све токове производа у оквиру дистрибутивног канала, односно све аспекте животног циклуса одређеног производа. Самим тим, ефикасност логистичког менаџмента је од великог утицаја на остваривање конкурентске предности одређеног ланца снабдевања. Из тог разлога логистички менаџмент мора бити с једне стране усмерен ка унапређењу логистичког сервиса потрошача који ће бити у функцији њихове сатисфакције, док с друге стране систематски оријентисан ка минимизацији трошкова примарних логистичких активности.

Глобална логистика обухвата читав низ функција (активности) као што су: транспорт, складиштење, сервис потрошача, предвиђање тражње, управљање царинском и нецаринском документацијом, управљање повратним токовима (повратни транспорт палета и контејнера), управљање залихама (инпута, полупроизвода, аутпута), сервисна подршка, управљање материјалом, процесирање поруџбина, избор локације за погон и складиште, планирање производње, паковање, одлагање отпада, оптимизација рута итд. (Wood, Barone, Murphy и Wardlow, 2001, стр. 4).

Као основне активности глобалне логистике могле би се издвојити транспорт (чија је основна функција превазилажење просторне дистанце између тачке порекла и тачке крајње намене), управљање залихама (баланс између трошкова држања залиха и адекватне снабдевености залихама) и складиштење (избор локације складишта и погона). Да су ове 3 логистичке активности примарне (главне) види се из података према којима су трошкови ових активности износили 58%, 23% и 11% респективно у 2018. години, што је укупно 92% свих трошкова глобалне логистике за ту годину (Rodrigue, 2023).

С обзиром да транспорт чини више од половине логистичких трошкова, управо је то област са великим потенцијалом за смањење укупних трошкова пословања глобалних предузећа. У самом транспорту би требало да буде што мање „празног хода“, односно ситуација у којој транспортна средства превозе празне транспортне јединице (палете, контејнере). Неке статистике показују да возачи камиона у Сједињеним Америчким Државама годишње пређу 29 милијарди миља вожње празног хода (Finances online, 2023).

Транспорт је свакако логистичка активност коју треба оптимизовати, али не треба занемарити ни остале активности. Исте статистике показују да је трговински ланац „Wal-mart“ 2013. године остварио губитке до чак 3 милијарде долара због неефикасног управљања залихама. Не треба занемарити ни складиштење, нагласак би требао бити на аутоматизацији складишних активности, имајући у виду да је 80% глобалних складишта управљано мануелно (Finances online, 2023).

Пословање свих глобалних предузећа, али и предузећа уопште се може описати кроз 4 основна инструмента маркетинг микса (производ, цена, промоција и дистрибуција). Предузећа, искористивши потенцијале остала 3 инструмента маркетинг микса свој фокус преусмеравају управо на оптимизацију логистичких активности у области дистрибуције. Дуги временски период је дистрибуција сматрана за споредну економску област (била у сенци), да би данас постала једна од основних области смањења укупних трошкова пословања савремених предузећа.

Ефикасност саме логистике је могуће мерити и на нивоу појединачне земље. Алат за мерење ефикасности логистике на нивоу нацоионалне привреде је развила Светска Банка и назива се индекс логистичких перформанси (LPI – Logistics Performance Index). Индекс логистичких перформанси је интерактивни алат за бенчмаркинг креиран да помогне земљама да идентификују изазове и могућности са којима се суочавају у свом учинку у области трговинске логистике и шта могу да ураде да побољшају своје перформансе. „LPI“ се заснива на светској анкети оператера на терену (глобалних шпедитера и експресних превозника), пружајући повратне информације о „пријатељству“ логистике земаља у којима послују и оних са којима тргују. Повратне информације од оператера су допуњене квантитативним подацима о учинку кључних компоненти логистичког ланца у датој земљи. „LPI“ се стога састоји и од квалитативних и од квантитативних података и помаже у изградњи профила логистике за одређену земљу. „LPI“ се рачуна на основу 6 подиндикатора:

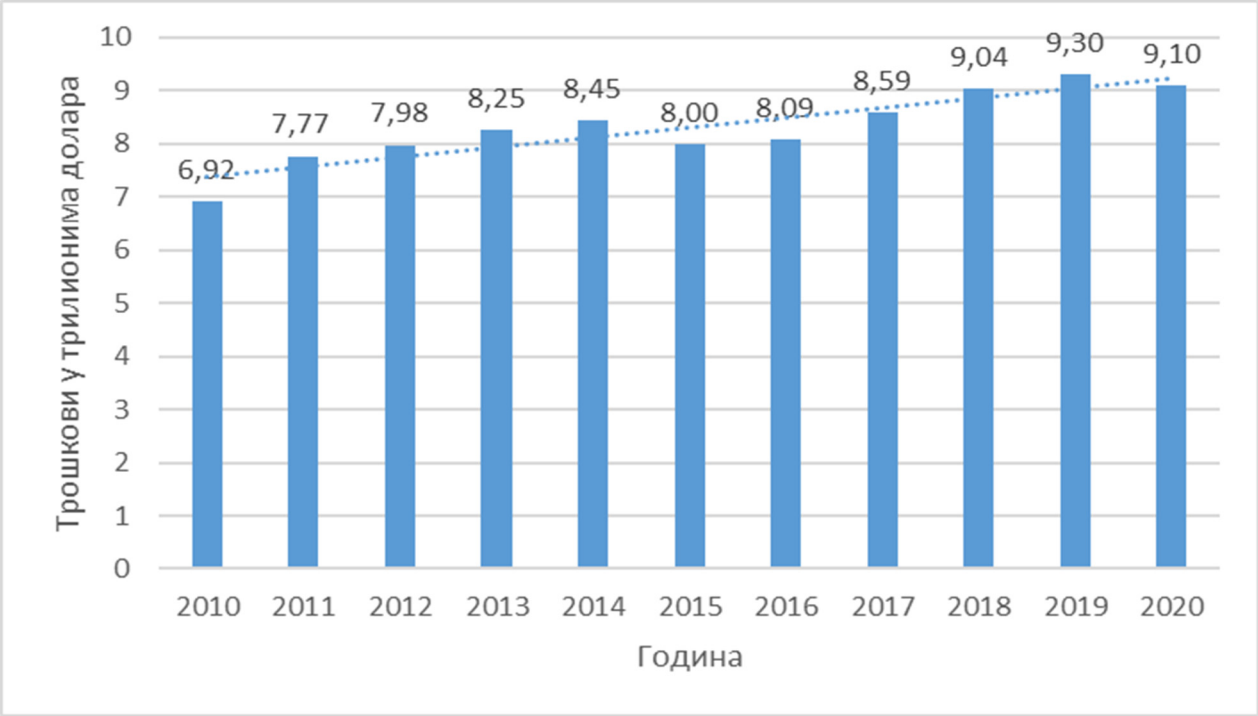
1. Царине – где се мери ефикасност процеса царињења (тј. брзина, једноставност и предвидљивост формалности) од стране агенција за граничну контролу, укључујући царину;
2. Инфраструктура - Квалитет трговинске и транспортне инфраструктуре (нпр. железнице, путеви итд.);
3. Међународне пошиљке - лакоћа организовања пошиљки по конкурентним ценама;
4. Логистичка компетенција – компетенција и квалитет логистичких услуга;
5. Праћење – способност да се прати и надгледа пошиљка током путање;
6. Правовременост - благовременост пошиљки, да пошиљке стигну на одредиште у предвиђеном или очекиваном року испоруке (The World Bank, 2023).

Сваки подиндикатор се рачуна за поједину земљу посебно, аритметичком средином вредности свих 6 подиндикатора добија се вредност „LPI“ индекса. Светска Банка је у своју анализу обухватила 160 земања које су рангиране према вредности овог индекса. Индес представља одличну подлогу за бенчмаркинг анализу земаља по основу логистичке ефикасности. Анализа из 2018. године показује да су логистички најефикасније земље биле Немачка, Шведска, Велгија, Аустирија и Јапан (топ 5 земаља по логистичкој ефикасности) са оствареним „LPI“ индексом од 4,2; 4,05; 4,04; 4,03 и 4,03 у тој години респективно. Србија је те, поређења ради, те године заузела 65 место логистички најефикасније земље са индексом у вредности од 2,84 поена (The World Bank, 2023).

Упркос датом индексу, саму логистичку услугу (као и услугу уопште), је тешко мерити. Доста је лакше мерити инпуте логистичких активности, него аутпуте логистичких услуга. Инпути се изражавају кроз трошкове ових активности (укупан трошак превоза, трошак држања залиха итд.). Међутим, мерење трошкова инпута логистичких активности не говори о аутпутима, не говори о томе да ли је испорука била благовремена, тачна и у складу са постављеним захтевима (Марић и Нушева, 2022).

2. АНАЛИЗА ТРЖИШТА ГЛОБАЛНЕ ЛОГИСТИКЕ

Тржиште глобалне логистике је у 2022. години вредело 10 трилиона и 115 милијарди америчких долара, што је раст у односу на 2021. када је тржиште глобалне логистиге вредело 9 трилиона и 525 милијарди. Предвиђања указују да би ово тржиште до 2027. године могло достићи вредност и до 13 трилиона и 326 милијарди долара (Research and Markets, 2023).



Графикон 1: Приказ трошкова глобалне логистике од 2010. до 2020. године у трилионима долара
Извор: Statista , (2023a).

Из наведеног графичког приказа се може закључити да су трошкови глобалне логистике од 2010. до 2020. године порасли за 2,18 трилиона долара. На графикону је путем линије тренда забележен благи раст укупних логистичких трошкова на глобалном нивоу из године у годину. Овај раст је с једне стране узрокован повећањем обима услуга и активности глобалне логистике, с друге стране је последица повећања цена логистичких услуга. Од 2018. до 2019. године, период кинеско-америчког трговинског рата, присутан је благи раст трошкова глобалне логистике са 9,04 на 9,3 трилиона долара. Док је од 2019. до 2020. године, период обухваћен пандемијом „Covid-19“, присутан благи пад трошкова глобалне логистике са 9,3 на 9,1 трилион долара, што је између осталог узроковано падом обима глобалних логистичких активности (Statista, 2023a).

Графикон 2: Највеће логистичке компаније по обиму прихода
од превоза у милијардама долара у 2021. години
Извор: Statista, (2023б).

Из графичког приказа можемо закључити да глобално логистичко тржиште одликује велики степен концентрације с обзиром да две највеће логистичке фирме по обиму прихода од превоза („UPS“ и „FedEx Corp.“) имају учешће од око 40% у укупним приходима од превоза свих логистичких предузећа на глобалном нивоу. Геополитичке турбуленције свакако утичу на пословање ових предузећа. Али је неопходно скренути пажњу на то да нису сва предузећа подједнако погођена. Па тако, украјинска криза највише погађа европске логистичке фирме (попут „Deutsche post DHL“) пре свега због раста цена руских енергената на европском тржишту (Statista, 2023б).

3. УТИЦАЈ ГЕОПОЛИТИЧКИХ ТУРБУЛЕНЦИЈА НА ПРИМЕРИМА

Једна од свакако најупечатљивијих глобалних геополитичких турбуленција која је имала значајан утицај на међународну трговину и логистику јесте америчко-кинески трговински рат 2018. године. У 2018, две највеће светске економије, САД и Кина, размениле су рунде наметања увозних царина једна против друге, а то је ескалирало у трговински рат између САД-а и Кине. Пошто су САД увеле увозне царине на челик и алуминијум у марту 2018, Кина је у априлу узвратила царинама на алуминијум, месо, воће и вино увезено из САД-а. Касније се трговински спор још више интензивирао, а САД су увеле додатне царине од 25% на увоз из Кине у вредности од 50 милијарди долара, 34 милијарде долара у јулу и 16 милијарди долара у августу 2018. Кина је узвратила царинама од 25% на увоз из САД у вредности од 50 милијарди долара. Подизањем оволиких увозних царина, кинески производи и сировине на тржишту САД-а су постали скупљи, па је самим тим тражена количина ових производа и сировина на тржишту САД-а опала. Такође, производи увезени из САД-а у Кину су због наметнутих кинеских увозних царина постали скупљи и неконкурентнији на кинеском тржишту, што је довело до пада тражене количине ових производа на кинеском тржишту (Itakura, 2019).

Ефекти америчко-кинеског трговинског рата могу се осетити у целом ланцу снабдевања, од добављача сировина до произвођача, велетрговаца и трговаца на мало. Највећи терет ове вишеструке напетости се манифестује кроз неефикасност ланца снабдевања, поремећаје у транспортним рутама и повећање царина. Велики део америчке привреде је нераскидиво повезан са произвођачима и добављачима у Кини и њеним уносним потрошачким тржиштем. Америчке царине на кинески увоз довеле су до повећања трошкова ланца снабдевања, смањења профита за америчке индустрије и све веће неизвесности (Supply Chain Brain, 2023).

Добар пример утицаја геополитичких турбуленција на глобалне логистичке активности јесте руско-украјинска криза. Одмах након почетка кризе 25. фебруара 2022. ЕУ је забранила продају авиона, делова и опреме руским компанијама, укључујући услуге осигурања и одржавања. Након тога ЕУ забрањује свим руским авионима лет изнад свог ваздушног простора. Као одговор, Русија је забранила улазак у свој ваздушни простор свим авио-компанијама ЕУ и авио-компанијама 36 других земаља које су усвојиле сличне санкције. Санкције и реципрочне мере су се након тога наставиле и обухватиле забране улазака у луке (Европске Уније бродовима са руским

заставама). Санкције и реципрочне мере су поред ваздушног и поморског захватиле и друмски транспорт, пакет је забранио друмски транспорт предузећима основаним у Русији за превоз робе друмским путем у ЕУ, укључујући и транзит (European Parlament, 2022).
Што се ваздушног превоза тиче затварање украјинског ваздушног простора и санкције руским авионима имали су значајан утицај на ваздушни превоз путника, многе линије за превоз путника су потпуно отказане. Поред тога, продужено време лета и повећана потрошња горива који су резултат заобилажења руског ваздушног простора повећавају трошкове транспорта. Очекује се да ће санкције и забране смањити летни капацитет, посебно између Европе и Азије. Поред тога, више од 500 комерцијалних авиона који су у власништву западнх компанија а изнајмљени су Русији остали су заробљени у Русији (European Parlament, 2022).
Када говоримо о железничком транспорту треба имати у виду да теретни возови из ЕУ могу да саобраћају кроз Русију али само транзитно, не смеју се ту зауставити. Многе логистичке компаније које оперишу железничким теретним везама између Кине и ЕУ избегавају транзит кроз Русију из безбедносних разлога. Ово води продуженом коришћењу средњег коридора 5 као обилазнице, што доводи до дужих путовања и допунских трошкова. Пре самог конфликта, главни железнички превозни пут између Европе и Азије је била Транс-Сибирска железница која је уједно и највећи железнички систем на свету укупне дужине од 9.288 километара (Britannica, 2023).
Када је реч о поморском транспорту, поморске санкције ограничавају запошљивост помораца. Украјински и руски поморци чине до 14,5% глобалне радне снаге у бродарству и флоте ЕУ се у великој мери ослањају на њих (учествовањем у ратним дејствима ови поморци постају недоступни). Страхујући због посаде, велики европски власници бродова позвали су ЕУ регулаторе да гарантују мобилност помораца и њихова права као основних радника. Блокада лука у Црном и Азовском мору ствара огромне извозне проблеме с обзиром да је 70% укупног украјинског извоза превезено морем (European parlament, 2022). Такође, неопходно је истаћи да су непосредне последице рата оштећена и уништена транспортна инфраструктура.
Украјина и Русија су међу главним светским добављачима пољопривредно-прехрамбених производа, посебно житарица. Заједно обезбеђују преко 30% светске трговине пшеницом, 32% јечмом, 17% кукурузом и преко 50% сунцокретовим уљем. Многе економије у развоју се ослањају на ове залихе хране, посебно на Блиском истоку и у Африци. На пример, земље као што су Бенин, Египат и Судан набављају скоро сав свој увоз пшенице из Украјине и Русије (CBI Ministry of Foreign Affairs, 2023).
Управо се на овом примеру види утицај које геополитичке турбуленције имају на активности глобалне логистике, ова криза је утицала на то да многе кључне транспортне руте постају недоступне, што за резултат има употребу алтернативних и дужих рута транспорта. Такође, ту су и многи други проблеми које је узроковала ова геополитичка турбуленција попут затварања ваздушних и поморских простора, недоступност возача, морепловаца и превозних средстава која су остала заробљена у Русији и Украјини итд. Све наведено има за резултат смањење ефикасности логистичких активности и повећање укупних логистичких трошкова.
Још један од глобалних логистичких проблема догодио се свега месец дана након почетка руско-украјинске кризе у виду делимичног затварања шангајске и шенценске луке као последица мера здравствених власти у циљу заштите од „COVID-19“. Шангај поред тога што је финансијски центар Кине, представља и њену највећу контејнерску луку. Након наведених мера шангајска лука је наставила са радом али са 20% мање контејнерског саобраћаја. Огроман број бродова је остало с једне стране да чека да уђе у луку, с друге стране да напусти луку. Велики број терета (контејнера) намењен шанганској луци је преусмерен у оближне луке као што је лука Нингбо. Све ово је довело до кашњења у испорукама и до месец дана, што је имало утицаја и на Србију (Saxon, 2023).
Из наведена три примера можемо закључити да различите геополитичке турбуленције различито утичу на глобални логистички систем. Али и да све геополитичке турбуленције имају нешто заједничко, готово свака од њих утиче на повећање трошкова логистичких активности на глобалном нивоу.

ЗАКЉУЧАК

Геополитичке турбуленције су у последњих неколико година заправо толико учестале да су постале правило, а не изузетак (трговински рат између Кине и Америке, „Covid-19“ криза, рат у Украјини). Можемо говорити о томе да је спровођење логистичких активности на глобалном нивоу у условима геополитичких турбуленција постала нормалност, јер оног момента када једна геополитичка турбуленција пролази и њен утицај на међународне логистичке активности почне да попушта, нова турбуленција почне да испољава своје ефекте на глобалну логистику. Па тако, имајући у виду да спољнотрговинске токове и међународну размену на глобалном нивоу карактерише висок ниво либерализације (смањивање спољнотрговинских баријера), геополитичка турбуленција која је у почетном стадијуму локалног типа тј. ограничена на један регион врло брзо поприма глобалну димензију и прелива се на остале регионе и тржишта.
Сама геополитичка турбуленција и њен утицај на глобалну логистику може имати негативан утицај на глобална логистичка предузећа, али треба имати у виду и то да многа предузећа могу искористити околности геополитичке турбуленције у циљу остваривања већих прихода и профита (богаћења). У ситуацијама геополитичких турбуленција многа предузећа пропадају због негативних утицаја које имају ове турбуленције по њихово

пословање, али управо у оваквим условима поједина глобална предузећа остварују екстрапрофите и нагли пораст пословних индикатора.
Имајући у виду нестабилне геополитичке односе на глобалном нивоу, у будућности се могу очекивати нове турбуленције. Свака од ових турбуленција оставља свој траг на глобални ланац снабдевања. С обзиром на то да је резултат ових турбуленција готово увек повећање логистичких трошкова, а да логистички трошкови чине саставни део коначне малопродајне цене свих производа, највећи терет ових турбуленција заправо сносе крајњи потрошачи кроз плаћање веће укупне малопродајне цене производа и услуга.

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МЕРЕЊЕ ИМИЏА БРЕНДА

Апстракт: Једна од кључних активности у оквиру бренд менаџмента је адекватно мерење, односно избор кључних показатеља који ће показати да ли улагање у бренд даје очекиване резултате. Проблем који се јавља огледа се у квалитету увида који уобичајена метрика, која се углавном ослања на препознатљивост бренда, пружа у сагледавању колико је бренд присутан у свести потрошача. У складу са наведеним, циљ овог рада је да покаже начине мерења имиџа бренда како би се спровела адекватна евалуација постављене стратегије бренда, као и измерила ефикасност улагања у бренд.
Аутор ће сагледати теоријски оквир за спровођење маркетинг истраживања кроз релевантну литературу и научне радове који се баве овом тематиком, и упоредити их са актуелном применом маркетинг истраживања у пракси. На основу информација из неколико компанија које редовно спроводе мерење бренд имиџа кроз континуирана маркетинг истраживања у форми бренд трекера, аутор ће сагледати колика је дискрепанца праксе и теорије и шта је кључни разлог тог одступања. На крају, као закључак истраживања аутор ће дати препоруку на који начин би требало унапредити мерење имиџа, а самим тим и смањити разлике у приступу између теорије и праксе.
У реализацији овог рада аутор ће спровести следећа истраживања: интервју са представницима привреде, као и истраживање за столом на основу секундарних података. Интервју ће бити спроведен са особама које су одговорне за спровођење маркетинг истраживања, као и за анализу и тумачење резултата. Док ће се истраживање за столом базирати на тумачењу већ спроведених маркетинг истраживања и анализи интерпретације и закључака у делу имиџа бренда. На основу спроведеног истраживања аутор закључује да постоји простор за унапређење мерења имиџа бренда у привредној пракси.

Кључне речи: имиџ бренда, ефикасност улагања у бренд, стратегија бренда, маркетинг истраживање

BRAND IMAGE MEASUREMENT

Abstract: One of the key activities within brand management is adequate measurement, that is, the selection of key indicators that will show whether the investment in the brand produces the expected results. The problem that arises is reflected in the quality of insight that common metrics, which mainly rely on brand recognition, provide in detecting how much the brand is present in the consumer's mind. In accordance with the above, the goal of this reaserch is to show the ways of measuring the brand image in order to conduct an adequate evaluation of the set brand strategy, as well as to measure the effectiveness of investment in the brand.

The author will focus at the theoretical framework for conducting marketing research through relevant literature and scientific works dealing with this topic, and compare them with the current application of marketing research in practice. Based on information from several companies that regularly measure brand image through continuous marketing research in the form of brand trackers, the author will look at the discrepancy between practice and theory and what is the key reason for this discrepancy. Finally, as a conclusion of the research, the author will give a recommendation on how image measurement should be improved, and thus reduce the differences in approaches between theory and practice.
In the realization of this work, the author will conduct the following research: an interview with representatives of the business, as well as research „at the table“ based on secondary data. The interview will be conducted with persons who are responsible for conducting marketing research, as well as for analyzing and interpreting the results. While the research „at the table“ will be based on the interpretation of the already conducted marketing research and the analysis of the interpretation and conclusions in the part of the brand image. Based on the conducted research, the author concludes that there is a space for improving brand image measurement in business practice.

Key words: brand image, effectiveness of brand investment, brand strategy, marketing research

УВОД

Бренд се може дефинисати као „име, појам, знак, симбол или дизајн, или њихова комбинација, намењена препознавању добара или услуга једног произвођача или групе произвођача и њихово диференцирање од оних који припадају конкуренцији (Kotler, Vong, Sonders, Armstrong, 2007; стр. 549).
Постоји пуно теоријских приступа који се баве мерењем вредности бренда (brand equity), на основу прегледане литературе биће представљене три различите теорије које су по мишљењу аутора вредне споменути у овом раду. Први приступ се односи на концепт вредности бренда који произилази из економске снаге бренда која се огледа у цени бренда, односно колико је бренд снажан да поднесе премијум цену и да се на тај начин бори на тржишту. Финансијска вредност бренда је веома важна свим стејкхолдерима бренда (Anselmsson, Bondesson & Johansson, 2014). Други приступ вредност бренда дефинише као перцепцију додатне врендости од стране потрошача, која се не односи на функционалост или било какве рационалне бенефите производа, већ искључиво на асоцијације које потрошачи имају о бренду. Уколико је вредност бренда на високом нивоу потрошачи су више лојални и чешће конзумирају бренд, а са друге стране ти брендови су значајно отпорнији на флуктуацију цена јер њихови купци су спремни да плате вишу цену (Lee, James & Kim, 2014). Имиџ бренда је кључни покретач за раст врендости бренда и због тога маркетари теже да креирају имиџ који ће им омогућити да њихов бренд изгради квалитетан однос са потрошачима. Трећи и најсвеобухватнији приступ је дефинисао Келер (Keller, 1993) који уводи нови термин „вредност бренда заснован на потрошачима“ (customer-based brand equity). Он дефинише вредност бренда засновану на потрошачима као знање које бренд диференцира, а настаје као резултат реакције потрошача на маркетиншке активности бренда. Вредност бренда заснованог на потрошачима је присутна међу потрошачима који су имали искуства са брендом, односно код којих се бренд налази у меморији и изазива јаке, јединствене асоцијације. С тим у вези знање које потрошачи имају о бренду је показатељ вредности бренда.
Знање о бренду се дефинише кроз две кључне компоненте: препознатљивост бренда и имиџ бренда (Keller, 1993, стр. 2). Препознатљивост показује колико је бренд присутан у меморији потрошача, као и колико њих препознају бренд, односно знају о коме се ради. С друге стране, имиџ показује сет асоцијација које купци имају о бренду.
Концепт знања о бренду треба сагледавати у контексту свих кључних елемената јер показује како купци реагују на одређене маркетинг активности, односно начин на који се оне рефлектују на понашање купаца (Keller, 1993). Знање о бренду показује ниво асоцијација о бренду које су меморисане у свести потрошача у тренутку када потрошач разматра категорију производа или сам бренд и могу послужити као веза која ће повезати знање о бренду са конкретним брендом и утицати на одлуку потрошача.
Циљ овог рада је да упореди теорију и праксу у погледу мерења имиџа бренда. Потребно је уз помоћ релевантне литературе дефинисати имиџ бренда, као и доћи до теоријског оквира за спровођење мерења имиџа бренда. Кроз дубински интервју са релевантним представаницима привреде, аутор ће покушати да сагледа на који начин се спроводи мерење имиџа бренда у компанијама у Србији, као и у које сврхе се резултати истраживања користе. На основу добијених резултата аутор ће сагледати да ли постоји простор за унапређење истраживања које се спроводи у циљу мерења имиџа бренда.

2. ПРЕГЛЕД ЛИТЕРАТУРЕ

2.1. ИМИЏ БРЕНДА

Разматрање имиџа бренда могуће је отпочети његовим сагледавањем као једне од две основне компоненте знања о бренду. Објашњење свих кључних елемената знања о бренду (са посебним акцентом на имиџ бренда због тематике овог поглавља) приказано је у наставку и у складу је са њиховим представљањем које даје Keller (1993). Свест о бренду (brand awareness) је прва компонента бренд знања. Она показује снагу и способност повезивања бренда са меморијом потрошача која утиче да бренд буде препознат од стране потрошача у различитим околностима. При томе, бренд је препознат као производ или услуга који има одређену функцију. Свест о бренду показује вероватноћу колико лако ће бренд „пасти на памет“ потрошачима у кључним тренуцима. Две компоненте чине свест о бренду:

- препознавање бренда (brand recognition) - представља потврду од стране потрошача да је имао претходно искуство са брендом и
- присећање на бренд (brand recall) - способност да потрошач „повуче“ бренд из меморије у тренутку када разматра категорију или потребе које она задовољава или неки други повезани импулс.

Важно је да бренд постане део асоцијација које потрошачи имају о одређеној категорији производа. На пример, када размарају категорију месних производа – шунке, пожељно је да им одређени бренд (рецимо Неопланта) буде део сета асоцијација поред осталих које су карактеристичне за категорију производа (као што су асоцијације: за сендвич, укусне, мање масти…). Значај свести о бренду се разликује и од нивоа укључености и напора који потрошачи издвајају при одабиру производа. На пример, уколико купац из неког разлога није много заинтересован да уложи напор у избор неког производа, али је ипак макар мало претходно био „изложен“ бренду, то може врло позитивно утицати на избор датог бренда. Док код купаца који су врло заинтереовани и детаљно приступају одабиру одређеног производа, очекује се да само брендови који су веома присутни у меморији купаца, са пуно релевантних асоцијација, буду фаворизовани од стране њих. На крају, све асоцијације које утичу на препознавање бренда и присећање на њега, зависе од имиџа бренда. Управо број и брзина складиштења одређених асоцијација у меморији купаца, односно њихово „прилепљивање“ за постојеће асоцијације, показују снагу бренд имиџа.

Шта чини **имиџ бренда**? У теорији и пракси не постоји јединствен одговор на ово питање. Може се рећи да је најважнија активност за имиџ бренда позиционирање у свести потрошача. Процес који има за циљ да изгради познатост и јединственост бренда и повеже га са производом или услугом (Lee, James & Kim, 2014). С тим у вези маркетари би морали континуирано да спроводе истраживања како би имали увид каква је перцепција њиховог бренда у свести потрошача и колико се разликује од жељене која је дефинисана стратегијом бренда.

Келер (Keller, 1993, стр.3) дефинише бренд имиџ као: „перцепције о бренду које одражавају асоцијације брендова које се налазе у памћењу потрошача“.

Знање о бренду које се огледа у јединствености, фаворизовању и снази асоцијација и игра кључну улогу у јачању вредности бренда, а нарочито долази до изражаја у тренутку доношења одлуке о куповини. Постоји више врста асоцијација и могу се поделити кроз следеће категорије: атрибути, бенефити и ставови.

Атрибути представљају карактеристике производа или услуге које потрошачи имају о бренду, категорији и производу. У зависности колико су атрибути везани за производ или услугу деле се на:

- Производне атрибуте, који су уско везани за функционалне карактеристике производа или услуге (нпр. састав или укус производа);
- Непроизводни атрибути, који су везани за искуство куповине или конзумације производа (нпр. информације о цени или изглед амбалаже).

Најчешће су производни атрибути у првом плану у погледу анализе перцепције од стране купаца и неоправдано се сматра да су важнији. Из тих разлога, више ће непроизводни атрибути бити фокус анализе. Један од најважнијих непроизводних атрибута је цена, која представаља кључну критичну тачку у процесу куповине и неопходан корак да се куповина деси. Цена производа одсликава снагу, односно вредност бренда (Anselmsson, Bondesson & Johansson, 2014), и веома је битна одредница која често не зависи од функционалних карактеристика производа. Она представља резултат ставова и асоцијација које потрошачи имају о бренду. Слично је и са амбалажом, она омогућава видљивост производа на месту продаје и комуницира према купцима често информације које су изван функционалних карактеристика производа. У непроизводне атрибуте спада и корисничко искуство купца које често може бити резултат прилика у којима се производ или услуга користе, као

и какав је профил купаца у погледу демографских и психографских карактеристика. Непроизводни атрибути могу бити и производ комуникације бренда, односно емоције које бренд изазива код потрошача.
За разлику од атрибута, бенефити представљају вредност за потрошаче, односно шта одређени производ или услуга значи за њих. Бенефити се могу поделити у три групе: функционали, искуствени и симболички бенефити. Функционални бенефити се односе на предности производа или услуге у току конзумације или коришћења. Уско су везани за прозводне атрибуте и зависе од потреба које потрошачи задовољавају производом или услугом. Искуствени атрибути се односе на оно што потрошачи осећају док конзумирају или користе производ (нпр. сензорске карактеристике производа) и такође су веома у вези за производним атрибутима. Док симболички бенефити полазе од непроизводних атрибута и не везују се за сам производ већ су више у вези са социјалним статусом или животним стилом потрошача, где бренд помаже потрошачу да се тако осећа. Потрошачи знају да цене ексклузивност или престиж који им одређени бренд пружа што представља један он најчешћих симболичких бенефита бренда.
Поред атрибута и бенефита, ставови о бренду и производу чине још једну категорију асоцијација који се базирају на понашању потрошача. Карактеристика ставова о бренду се базирају на више везаних атрибута или бенфита, који заједно чине одређени став о бренду или производу.
Одређени сет асоцијација утичу да ли ће бренд имиџ бити више базиран на производним или непроизводним атрибутима, као и да ли ће доминирати функционални, искуствени или симболички бенефити производа. Све те асоцијације пре свега зависе о тога колико су јединствене, снажне и колико их потрошачи фаворизују приликом разматрања неког производа или бренда.

2.2. МЕРЕЊА ИМИЏА БРЕНДА

Када је у питању мерење имиџа бренда, у литератури је могуће наћи преглед различитих техника коришћених у ту сврху (Plumeyer, Kottemann, Böger & Decker, 2017). Табела 1 даје преглед наведених техника.

Табела 1: Технике мерења имиџа бренда

Техника	**Кратко објашњење**	**Извор на који се упућује**
Ликертова скала	тражи од испитаника да наведе степен у коме се слажу или не са низом изјава о бренду или његовим асоцијацијама	Martínez & de Chernatony (2004)
Скала семантичког диференцијала	у оквиру симетричног континуума користи биполарне придеве или прилоге	Malhotra (2010)
Техника слободних асоцијација	на добијени стимулус као што је име бренда, учесници треба да напишу све што им падне на памет	Koll, von Wallpach & Kreuzer (2010)
Фокус групе	отворена и неформална дискусија о бренду међу мањим бројем учесника	Calder (1977)
Дубински интервјуи	за добијање дубинских информација о асоцијацијама на бренд	Hair et al. (2009)
Техника слободног избора	испитаницима се представи атрибут, а потом су питани да ли са њим повезују неки од брендова и ако да, које/који.	Nenycz-Thiel and Romaniuk (2014)
Дихотомно скалирање	увид да ли је унапред дефинисана асоцијација повезана са циљним брендом и да ли је циљни бренд карактеришу било које специфичне асоцијације	Malhotra (2010)
Пројективне технике	пројектовање подсвесних мисли на бренд	Boddy (2005)
Мрежа репертоара	откривање кроз неколико корака димензија имиџа неког бренда	Kelly (1995)
Мапе бренд концепта	агрегирање појединачних мапа асоцијација на бренд	John et al. (2006)
Метод константне суме	за одређивање релативног значаја атрибута	Aaker et al. (2011)
Рангирање	брендови се рангирају у односу на конкуренцију по повезаности са атрибутом	Driesener and Romaniuk (2006)

Извор: на основу Plumeyer et al. (2017)

Када су у питању појединачни упитници који се могу користити у ту сврху, за њихов преглед може се ослонити на рад аутора: Грубор, Ђокић и Милићевић (2019).
Питања из упитника које наводе Грубор, Ђокић и Милићевић на примеру мерења имиџа бренда у категорији чоколада (Emari и сар., 2012):

- Бренд који купујем задовољава моју жељу да једем чоколаду.
- Бренд који купујем ми обезбеђује сензорни ужитак.
- Бренд који купујем ми нуди осећај припадности групи.

Дрги сет питања које такође наводе Грубор, Ђокић и Милићевић се односе на мерење имиџа бренда на примеру козметике аутора Liao и сар. (2017):

- Имиџ бренда који купујем ми обезбеђује сензорни ужитак.
- Бренд који купујем задовољава моју жељу да га имам.
- Бренд који купујем ми обезбеђује добар имиџ.
- Бренд који купујем је фокусиран на сопствени квалитет.
- Бренд који купујем ми нуди осећај припадности групи.

3. МАТЕРИЈАЛИ И МЕТОДЕ

Истраживање за потребе писања овог рада спроведено је у априлу 2023. Коришћена су квалитативна истраживања, конкретно техника дубинских интервјуа. Учествовало је два представника из реномираних агенција за маркетинг истраживање: Гфк (gfk) и Смарт плус (Smart plus); као и два Директора маркетинга из компанија Имлек и Јафа (Jaffa) и један Бренд менаџер из компаније Неопланта. Ове три компаније редовно спроводе маркетинг истрживања и представљају пригодан и релевантан узорак за потребе овог истраживања. Примењена је техника анализе садржаја одговора учесника у истраживању.
У оквиру подсетника за дубински интервју са представницима агенција за маркетинг истраживање, прва тема се односи се на:

- садржај упитника који се користио у бренд трекеру и начина његовог креирања;
- на чему се заснива структура упитника и методологија која се користи у изради;
- да ли се при изради упитника користи акумулирано знање и искуство у оквиру агенције или лично знање и искуство истраживача, или се пак консултује стручна литература.

Друга тема се односи на коришћење резултата добијених након спроведеног бренд трекер истраживања:

- за које анализе се користе резултати;
- у којој мери наручиоци истраживања користи резултате анализа за доношење пословних одлука;

Као трећа тема било је сагледавање колико су представници агенција које спроводе маркетинг истраживања упознати са техникама које су доступне кроз релевантну научну литературу и да ли их користе. Коришћена је Табела 1. у поглављу 2.2. овог рада.
Подсетник за дубински интервју који је коришћен за разговор са представницима наручиоца истраживања, а у складу са горе поменутим темам садржао је следеће елементе:

1. на који начин резултати бренд трекера утичу на пословне одлуке и планове;
2. у којој мери наручиоци истраживања утичу на садржај упитника за бренд трекер;
3. да ли постоји потреба за суштинским променама у креирању и спровођењу бренд трекер истраживања уколико би буџети за ову врсту истраживања били већи;
4. постоји ли корелација између резултата бренд трекера и финансијских резултата бренда;

Ако сумирамо теме и питања која су коришћена приликом спровођења дубинског интервјуа, можемо закључити да су била усмерена на упознавање са начином мерења имиџа и свести о бренду (brand awareness). Пре свега какав је садржај упитника који се користи у оквиру бренд трекер истраживања. На који начин се креира упитник, за које анализе се користи и на које пословне одлуке утичу резултати спроведеног истраживања. Учесницима истраживања су постављена питања на тему евентуаланог унапређења постојећег упитника, затим да ли су упознати са техникама које су дате у теоријском делу овог рада, као и да ли их користе.

4. РЕЗУЛТАТИ

Прва тема која се разматра у оквиру дубинског интервјуа се односи на садржај упитника, као и на који начин је креиран.

Одговори учесника су сугерисали да упитници за бренд трекер најпре садрже демографске податке и занимања испитаника. По речима испитаника најчешћа питања која покрива бренд трекер истраживање се односи на: мерење познатости бренда, фреквенције куповине, перцепције и коришћење бренда, затим повезаност бренда са атрибутима. Мерење нивоа задовољства потрошача кроз оцењивање коришћењем скалних тврдњи (нпр. скале оцена од 1-5 или 1-7) представљају такође питања у оквиру ове врсте истраживања. У упитнику се налазе и питања о каналима информисања (медији), затим врстама промотивних активности кроз које су потрошачи видели или чули за бренд. Један од важних делова су и питања у којим малопродајним објектима купци најчешће обављају куповину одређене категорије производа. Погледати упитник из Прилога 1.

Учесници дубинског интервјуа су једногласни у одговору да питања у упитинику формулише истраживач на основу претходно добијеног упита од клијента, односно компаније која наручује истраживање. Клијент може својим сугестијама и предлозима утицати на садржину упитника, тако што предлаже одређене тврдње или додатна питања. С тим да истраживач на основу свог знања и искуства указује клијенту да ли је одређено питање релевантно за задату тему или је потребно поставити га на другачији начин, како би одговори на крају били валидни и корисни за даљу анализу и употребу.

Један представник агенције за маркетинг истраживање је сугерисао да неке компаније, најчешће глобалне, имају своје дефинисане упитнике, и нису дозвољене промене, прихватљиве интервенције су искључиво кроз додавање локалних брендови. Код домаћих компанија та правила су мање стриктна, наиме постоје обавезна питања и она која могу да се мењају. Често се дешава да нема дефинисаних упитника, већ се наменски креирају за решавање конкретног проблема или предмета истраживања. У зависности од наручиоца истраживања, агенција има више или мање утицаја на садржај. Истраживачи се труде да правила струке буду испоштована, као и да се упитником добију одговори на сва неопходна питања, а на основу упита од стране наручиоца итраживања.

Оба представника маркетинг агенција су дала одговор да структура упитника се креира углавном на основу личног искуства истраживача, као и на основу акумулираног знања у агенцији за маркетинг истраживање.

Што се тиче евентуалног унапређења, сви испитаници су навели да не би мењали структуру упитника, чак су нагласили да никако не би требао да буде дужи због пажње и стрпљења људи који учествују у анкетирању. Оно што би требало размотрити је чешће спровођење истраживања, због промена у понашању потрошача услед смењивања трендова, као и о евентуалном ширењу узорка због тачности резултата. Један од испитаника, на страни наручиоца истраживања, је навео да би требало додати питања око специфичности индустрије, која су важна за разумевање понашања потрошача.

Друга тема се односила на резултате истраживања.

Углавном сви испитаници су навели да наручиоци користе резултате истраживања за доношење стратешких одлука, као и за креирање и корекцију оперативних планова. Два од три представника компанија - наручиоца истраживања, су навели да постоји корелација између резултата бренд трекера и финансијских резултата компаније, уз кашњење које је, у зависности од категорије производа и циљева бренда, присутно од неколико месеци до годину дана. Кашњење обухвата период од када се позитивни резултати имиџа бренда прикажу у истраживању, до манифестације позитивних ефеката кроз финансијске параметре бренда. Док је трећи представник компанија изразио је сумњу у веродостојност резултата бренд трекера и навео пример бренда где су позитивни параметри имиџа одступали од финансијских параметара бренда који су били значајно лошији.

Као трећа тема у оквиру дубинског интервјуа било је сагледавање колико су представници агенција које упознати са техникама које су доступне кроз релевантну научну литературу и да ли их користе.

Испитаници су упознати углавном са свим техникама за мерење имиџа бренда које су обрађене кроз теоријски део овог рада. Први представник је навео да за бренд трекер истраживање користи све наведене технике из Табеле 1., осим Методе константне суме, за одређивање релативног значаја атрибута, Aaker et al. (2011). Други представник је навео да је упознат са свим техникама, али већину не користе за мерење имиџа бренда већ за нека друга истраживања. За мерење имиџа бренда најчешће се користи техника слободног избора, испитаницима се представи атрибут, а потом су питани да ли са њим повезују неки од брендова и ако да, које/који, Nenycz-Thiel and Romaniuk (2014).

5. ДИСКУСИЈА И ЗАКЉУЧАК

Након спроведених истраживања и анализе литературе која се бави дефинисањем и мерењем бренд имиџа, као и ширим контекстом вредности бренда, намеће се закључак да је ова тема веома битна како за научну академску публики, тако и за представнике привреде. Може се рећи да иако постоји дикрепанца између теорије и праксе, она није велика, бар што се тиче већих компанија које имају адекватне буџете за спровђење маркетинг истраживања. У наставку су дате кључне разлике и препоруке за унапређење упитника који се користи за спорвођење истраживања о вредности бренда (бренд трекер).

На основу литературе која је коришћена у дефинисању вредности бренда, односно знања о бренду као једну од његових кључних компоненти на основу Келеровог приступа (Keller, 1993) који уводи термин: „вредност бренда заснован на потрошачима“ (customer-based brand equity). Евидентно је да у стандардним бренд трекер истраживањима, врло мало простора је дато за мерење имиџа и свести о бредну (brand awareness), као две компоненте занања о бренду. Од 17 страница бренд трекер упитника, 2,5 странице се односе на свест и имиџ бренда (текст дат у Прилогу 1.), односно само 15% питања се односи на мерење парамтара које су кључне за вредност бренда. С тим у вези, препорука је да се више простора да овој групи питања, али да се не повећава обим упитника, у складу са одговорима у дубинском испитивању, већ да се нека мање битна питања избаце.

Питања која се односе на свест о бренду и имиџ бренда не дају прави увид колико је бренд са релевантним асоцијацијама присутан у свести потрошача и који је однос посматраног бренда у односу на конкуренцију. У овом правцу би требало унапредити упитник, као и анализе које ће се радити након добијања података. Као препоруку аутор даје методологију и параметре менталне присутности који су дати од стране Шарпа и сарадника (Vaughan, Corsi, Beal и Sharp, 2021).

Повећање простора у оквиру бренд трекер упитника са питањима која се баве мерењем имиџа бренда, треба тражити и кроз додавање питања која се баве непроизводним атрибутима, као и симболичким бенфитима бренда. Ова врста асоцијација помаже да бренд буде заступљенији у свести потрошача, што га чини препознатљивијим и повећава вероватноћу да, у тренутку разматрања одређене категорије производа, баш тај бренд „падне на памет“ купцу.

Аутор до сада није наишао на истраживање којим се у научној литератури представља инструмент бренд трекер. Такође нема ни коментара представника стручне јавности о нивоу усклађености бренд трекера са теоријским достигнућима. Отуда дискусија произилази из ауторове компарације научних радова који су доступни у датој области и инструмента који се користи у пракси.

Будућа истраживања треба да обухвате већи узорак испитаника-предстваника компанија и агенција које спроводе маркетинг истраживање, да упореде резултате по различитим категоријама производа, као и да укључе искустав из земље и иностранства.

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ПРИЛОГ 1.

У наставку су делови једног типичног упитника за бренд трекер истраживње, који се односи на питања за мерење свести и имимџа бренда. Као пример је коришћена категорија шунки.

ПА1. Када се спомену шунке (стишњена, прашка, каре, пилеће или ћуреће груди/прса, пилећи или ћурећи филе), која марка шунки вам прво пада напамет?

САМО ЈЕДАН ОДГОВОР

ПА2. Које још марке шунки знате? Још неку? Још неку?

Овде можете навести СВЕ марке шунке које Вам падну на памет

ПЕ1. Понекад је тешко сетити се свих марки. Које од наведених марки шунки знате, без обзира да ли сте их пробали или не?

ПОКАЗАТИ ЛИСТУ 1. МОЖЕ ВИШЕ ОДГОВОРА.

ПЕ2. Које од ових марки сте икада пробали? ПОКАЗАТИ ЛИСТУ 1. МОЖЕ ВИШЕ ОДГОВОРА.

Само марке излистане на Листи 1.

ПЕ3. Које од ових марки сте конзумирали у последња 3 месеца?

ПОКАЗАТИ ЛИСТУ 1. МОЖЕ ВИШЕ ОДГОВОРА.

САМО МАРКЕ ИЗЛИСТАНЕ НА ПЕ2.

ОВДЕ ДОЗВОЛИТИ „НИЈЕДНУ" АКО ЈЕ РЕКАО 8 ИЛИ 9 НА Р5Б (АКО ЈЕДЕ РЕЂЕ ОД ЈЕДНОМ У 3 МЕСЕЦА)

ПЕ4. А коју марку једете чешће него друге марке, која марка је ваша главна марка?

ПОКАЗАТИ ЛИСТУ 1. ЈЕДАН ОДГОВОР.

ПЕ7. Ако би сада требало да купујете шунку, које све марке бисте узели у разматрање да их купите?

ПОКАЗАТИ ЛИСТУ 1. МОЖЕ ВИШЕ ОДГОВОРА.

ПЕ8. А која марка би била ваш први избор?

ПОКАЗАТИ ЛИСТУ 1. ЈЕДАН ОДГОВОР.

СТАВИТИ САМО МАРКЕ КОЈЕ СУ ОДГОВОРЕНЕ НА ПЕ7.

ПЕ8б. Зашто бирате баш ту марку, а не неку другу?

ОТВОРЕНО ПИТАЊЕ, ВИШЕ ОДГОВОРА: _____

ПЕ9а. Ако ова марка није доступна, шта ћете урадити?

1. Купити шунку неке друге марке
2. Купити паризер исте марке
3. Купити неки други производ исте марке
4. Потражићу је на неком другом месту
5. Нећу купити ни другу шунку ни неко друго сухомеснато
6. Нешто друго, шта?_____

ПЕ9б. Да ли остајете при овој марки шунке, ако би нека друга марка била на попусту? 1. Да 2. Не

ПЕ9ц. Коју другу марку шунке бисте купли? ПИТАТИ АКО ПЕ9А = 1 Листа 1

ПЕ11. Шта су ваше асоцијације на Бренд А шунке? Шта вам прво пада на памет? Особине, осећања, стуације, прилике, боје, предмети... ПИТАТИ ОНЕ КОЈИ ЗНАЈУ ЗА БРЕНД А ОТВОРЕНО ПИТАЊЕ, ВИШЕ ОДГОВОРА: _____(тако редом сви кључни конкуренти)

Перцепција марки. За које од следећих марки шунки бисте рекли да су (листа понуђених брендова + ниједна од понуђених):

1. Премиум марке (високе цене и високог квалитета)
2. Исплативе марке (ниске цене и прихватљивог квалитета)
3. Марке ниског квалитета

Имиџ марке. За које марке шунки важе следеће особине? Свака особина може да важи за једну, више или за све марке шунки, а може да не важи ни за једну марку. За које марке шунки бисте рекли да:

	Бренд А	Бренд Б	Бренд В	Бренд Г
1. Шунке лепо изгледају на пресеку				
2. Висок проценат меса				
3. Велики број различитих шунки				
4. Марка за коју сам везан				
5. Марка која се разликује од осталих				
6. Најквалитетнија				
7. Најлепша паковања				
8. Најповољнија				
9. Најукусније шунке				
10. Имам највеће поверење у овај бренд				
11. Препознатљив укус				
12. Најдоступнија у радњама				
13. Најквалитетнији састојци				
14. Марка за коју вреди платити више				
15. Најбољи однос цене и квалитета				
16. Лидер на тржишту				
17. Марка за децу				
18. Марка за целу породицу				
19. За широке народне масе				
20. Марка са традицијом				
21. Иновативна марка				

3. И сит и фит
4. За оне које волите
5. Само за велике играче

Комуникација слогани. Сада ћемо вам показати неке слогане, тврдње, предности и специфичности које иду уз неке шунке? За које од тих слогана знате?

1. Широко
2. Висок проценат меса
3. И сит и фит
4. За оне које волите
5. Само за велике играче
6. Хоћу шунку, али ....(назив марке)
7. Није прашка, него ... (назив производа)
8. Пуно меса а мало калорија
9. Знам. Зато бирам (назив марке)
10. Шунка стишњена, а укус широоооко
11. Ниједну

ПИТАТИ САМО ЗА СЛОГАНЕ ЗА КОЈЕ ЗНА. Коју марку везујете уз те слогане или тврдње?
ПОКАЗАТИ ЛИСТУ 1. ЈЕДАН ОДГОВОР.

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CONCEPTUALISATION OF POLITICAL MARKETING WITH PUBLIC CHOICE THEORY AND THE POSTMODERN APPROACH

Abstract: The key theoretical issue of political marketing is that, what the political product is. Thinkers of political economy, like the representatives of social marketing, say that exchange can be extended to whole society. However, the postmodern marketing emphasize the role of symbols in the individual's decision-making process, which means questioning the role of exchange. The aim of the paper is to examine the role of exchange in politics and outline some possible marketing strategic postures.
Firstly, I introduce the evolution of marketing conception from the first decades of 20th century. After that, our next milestone is the political economy theory of Schumpeter, who reinterprets the political competition, innovation and leadership. Then, it is compared with Public Choice Theory and the postmodern marketing approach. Finally, I synthesize these theories and show our interpretation of political marketing and political exchange.

Keywords: political marketing, politics products, Schumpeter, Public Choice Theory, postmodern marketing

1. INTRODUCTION

Political marketing is an emerging sub-discipline that is gaining increasing interest in the academic sphere and among the general public. The intense growth in election campaign costs, the relationship between social media and manipulation, and the convergence of populism and marketing tools are phenomena that draw attention to the role of political marketing in 21st century democracies, and raise the question of whether they strengthen or weaken the realization of democracy. It is a consensus that politicians employ the marketing approach and its tools, which not only involves political advertising, but also the use of tools necessary for meeting and shaping the needs of voters. The marketing approach and tools complement each other well in the nature of politics, as the targeting of certain communities - quasi-segments - the development of offers for them, and the promotion of existing ones can be observed in both areas. Therefore, it plays an important role in defining social goals and related resource allocation issues, and can be referred to as a political approach that determines state allocation. There are still few authors in the domestic literature who deal with political marketing, so it can also be considered a gap, unlike in political communication, where we can encounter more and more internationally recognized authors. Political marketing can be considered as non-business marketing activity and can be outlined through the extended marketing approach. Politicians and political organizations can adapt the marketing approach and tools on two levels: the mechanistic level, through the adoption of tools (e.g. advertising), and the strategic level, which represents the "philosophy" (O'Shaughnessy, 2001).
In my paper, I focus on the philosophical level and the aim is to attempt the conceptualization of political marketing based on selected authors in political economy. Through the works of Schumpeter (1942), Downs (1957), and Buchanan (1992), I interpret the role of exchange in politics, and from there, I conceptualize the notion of political marketing. I argue that according to the marketing concept, exchange is an essential element of conceptualization. Therefore, if we cannot identify the object of exchange - that is, the political product - we cannot speak of political marketing.

2. THE CHANGE IN THE MARKETING CONCEPT

We cannot find a uniform definition of political marketing (Scammel 1999, O'Shaughnessy – Henneberg 2007, Tóth 2011, Perannagari & Chakrabarti 2020), so we should treat the marketing concept as a starting point during conceptualization. In order to get to know the marketing concept in depth and to be able to interpret it in the market of politics, it is necessary to review the change of marketing thinking over time. In the middle of the 20th century, Alderson and Cox (1948) called for the creation of a marketing paradigm, through which the theoretical framework and methodology could be unified, but fifty years later, in a highly influential study, Brown (1998) already emphasized that the conceptualization of marketing and the argues for the need for a postmodern approach. The individual theories he calls modernist distinguish between three, four, and five periods in the development of marketing thinking, which reflects the evolutionist way of thinking, so production orientation is interpreted as a state of blissful ignorance, while market orientation is interpreted as enlightenment. Kotler and Keller (2012) distinguish four eras from each other, the oldest of which is called the production concept, during which the company focuses on reducing the costs of production, then on reducing the price and thus on mass sales. This is replaced by the product concept, according to which consumers will not prefer the cheapest but the best quality product. The third stage focuses on the sale of produced products, but production is not based on market needs. Finally, we come to today's marketing concept, where the needs of the customers dictate the company's activities and product development, so we are talking about more than sales techniques. The development of marketing thinking clearly points out that marketing can be defined on the one hand as a way of thinking, on the other hand as a management philosophy (Kotler 1998, Meffert 2000, Hoffmanné 2004) and as a system of related tools (Józsa et al 2005).

At the heart of the approach are consumers who buy goods with some value (e.g. product, service, idea, idea, feeling), so it can also be called exchange management (Bauer - Berács 1998, Józsa et al 2005, Kotler - Keller 2012, Rekettye et al 2019). Gummesson (1995) defines the object of exchange as an offer and basically considers it a service, just like Vargo - Lusch (2004) highly influential SDL (service dominant logic) approach, according to which, in the 21st century, instead of products, services are at the center of the exchange of goods. Based on SDL, the source of value creation is competence, that is, the seller's knowledge and skills, through which the product and service are created.

Bauer and Berács (1998) present three possible interpretations of the marketing concept (narrow, broad, extended), of which we use an extended interpretation in our study. The extended marketing approach can be linked to Kotler and Levy's (1969) founding article on nonbusiness marketing, which considers the phenomenon of exchange important not only in business activities, but extends it to the whole society, according to which churches and political parties also strive to provide value to believers and voters who pay for it with their time, support, donation or even vote. This approach can now be called mainstream, which is well illustrated by the latest 2017 definition of the American Marketing Association, in which marketing appears as an activity independent of the business world, and the effort to create value can be interpreted not only for consumers but also for society as a whole.

3. THE POLITICAL ECONOMIC ROOTS OF POLITICAL MARKETING: SCHUMPETER' THEORY AND PUBLIC CHOICE THEORY

In the following, I will first describe Schumpeter's thinking, since the authors of Public Choice Theory and political marketing that arise from it treat his work as a point of reference. The political economy roots of political marketing are traced back to Schumpeter's (1942) highly influential work, Capitalism, Socialism, Democracy (Orosdy, 2007, Sekerák, 2022), in which an oft-cited proposition is formulated, according to which parties compete for voters' votes in the same way that businesses compete for consumers' disposable income. Based on this, we can say that the marketing approach can be identified in the thinking of the parties, the primary cause of which is political competition, which means the struggle for voters' votes within a democratic framework. Thus, exchange also plays a central role in Schumpeter's approach, but he defines it differently from the mainstream, the primary reason for which is to be found in the different image of man, that is, in the criticism of the abstraction of homo oeconomicus. The image of man based on the philosophy of the Enlightenment - which appears in neoclassical economic thinking - also had a great impact on the theory of democracy. Schumpeter calls the 18th century conception of democracy classical, and defines his own position against it, the two connected key elements of which are the public good and the problem of preferences. He summarizes the theory of classical democracy as follows: "the democratic method is that institutional arrangement for arriving at political decisions which realizes the common good by making the people itself decide issues through the election of individuals who are to assemble in order to carry out its will." (Schumpeter, 1942, p. 250). In this approach, voters have ex ante preferences, that is, they are able to make decisions according to their own interests, and based on this, they will support the political force whose promises and program meet their will, thus market equilibrium is created through supply and demand.

Schumpeter takes issue with this interpretation of the common good on several points. According to him, there is no single common good, as it can naturally mean different things to different individuals and groups. Even if there were an exclusive common good, the question arises as to why some voters do not recognize it. Based on the classical theory, we can answer this by saying that personal stupidity or a lack of knowledge prevents them from doing so, that is,

political actors must strive to educate people. However, it also follows that compromises have no place in politics, because they can be interpreted as compromises and prevent the realization of the common will. Another problem is the assumption of this common good concept that the individual has a definite position on all political issues, so he knows all matters and has preferences in all matters. This can also be understood as a questioning of homo oeconomicus and means the use of a more sophisticated image of man. Thus, the common good is not interpreted as the result of the summation of individual wills, so it cannot be derived from individual preferences and decisions, but this does not mean the denial of voter preferences. In Schumpeter's (1942) formulation, voter preferences exist, but they can only be interpreted at the given moment: "...Historically, the consumers' desire for shoes may, at least in part, have been shaped by the action of producers offering attractive footgear and campaigning for it; yet at any given time it is a genuine want, the definiteness of which extends beyond "shoes in general" and which prolonged experimenting clears of much of the irrationalities that may originally have surrounded it." (Schumpeter, 1942, p. 258). According to Gedeon (2013), this way of thinking does not break with the mainstream of economics, as it is also characterized by methodological individualism, according to which it approaches the common good as a summation of individual decisions, but does not accept the human image of neoclassical economics and the theory of classical democracy. So, according to Schumpeter, there is a will of the electorate, but we have to imagine it differently than the mainstream does. According to his argument, democracy is based on the decisions of the people, and the will of the citizens is more than a set of uncertain, constantly changing impulses, which are easily influenced by advertisements and catchy slogans. One of the most visible examples of the manifestation of the will is the support of matters involving direct financial benefit (e.g. direct payments, protective tariffs, silver policy, etc.), which raise the problem of the enforcement of short-term and long-term rationality. So, in the short term, it is rational to support direct payment, but in the long term, it may involve greater sacrifices for citizens.

Schumpeter's innovation can be summarized by bringing the dynamic process of "leading or following" into the discourse. It complements neoclassical economic thinking with the role of innovation in the economy, the essence of which is that equilibrium positions may indeed exist, but these are constantly disrupted by innovations, resulting in the creation of monopolies. These innovations can also be understood as leadership, shaping individual preferences, the concept of innovation can also be interpreted in the political market. His conclusion is that preference and the common good are created through leadership, in which marketing communication plays a prominent role: "The ways in which issues and the popular will on any issue are being manufactured is exactly analogous to the ways of commercial advertising. We find the same attempts to contact the subconscious" (Schumpeter, p. 263). Democracy thus becomes inseparable from the concept of management, so marketing as a management approach and tool system also plays an important role in the system. The classical theory is issue-oriented and its starting point is that citizens have a definite opinion on all issues, so they look for representatives who implement this opinion, with the result that the personality of the politician becomes secondary. However, Schumpeter proposes to exchange these two elements, and in his interpretation, democracy is about the selection of leaders, and the decision of matters is secondary, so the role of the people is limited to the creation of the government. The classical theory attributed too much of a role to the voters regarding initiative, and the phenomenon of leadership could not be included in the theory, however, leadership and its acceptance is the dominant mechanism of every community. In this way, he considers manufactured will to be compatible with democracy, but emphasizes that leadership can never be absolute, and democratic leadership even less so, since competition is constantly present. The role of the election, the acceptance or rejection of the leader or group of leaders, however, during the cycle, the leaders can only be controlled and held accountable to a limited extent. Based on these considerations, he defines democracy as follows: "the democratic method is that institutional arrangement for arriving at political decisions in which individuals acquire the power to decide by means of a competitive struggle for the people's vote." (Schumpeter, p. 269). He considers democracy to be the rule of politicians, which he illustrates with a metaphor in which he compares the prime minister to a horseman who is constantly busy staying in the saddle, so he cannot plan for the long term.

Schumpeter's concept is exchange, as he derives the democratic process from the interaction of politicians and voters, where the people have the opportunity to accept or reject the leader with their vote, and in return they receive the service of managing common affairs. His starting point is that the voters' preferences regarding issues are often created as a result of the leadership, but he does not consider the people to be unlimitedly led, guided and manipulated. We can see a remarkable dichotomy in his argument regarding this topic, on the one hand, he accepts the existence of the will of the voters - even if it was created as a result of the leadership - and considers it important in everyday political matters. However, in addition to this, he also claims that certain preferences often lie dormant among the people for decades, until a leader appears who is able to bring them to life, turn them into politics - include them in his offer - and organize the will of the voters around him. Based on this, we can say that Schumpeter tried to grasp voter preferences on two levels, daily politics and a much deeper, "subconscious" level, but he did not dissolve this duality and did not pour it into a pure theoretical concept.

According to Gedeon (2013), two economic theories - Downs 's theory of community decisions and Buchanan 's constitutional economics - had a great influence on democratic theories, and both strive for the political application of exchange logic. Following Schumpeter's (1942) theory of economics and democracy, the Public Choice Theory or new political economy, a school based on methodological individualism, which derives the political and economic decisions of a given society through individual preferences. Anthony Downs (1957) can be considered one of the founders of the new political economy, according to whom we can also interpret the phenomena of the political market with the help of

the theory and methods of economics (Johnson, 1999). Its basic assumption is that the behavior of political actors, just like the actors of private markets, is characterized by rational behavior, so they want to maximize their own utility, but at the same time they also promote the realization of the common good and increase social utility (Downs, 1957). It should be noted that his approach cannot be narrowed down to the decisions of voters and includes the behavior of parties and politicians as well. The exchange therefore also appears in the political market, because in democracies, self-interested citizens are only able to maximize their own utility in this way (Johnson, 1999). According to Downs (1957), the main function of government is to maximize social welfare, which leads to two problems, the first is that it is not clear what social welfare (in other words, common good) means, and the second is that there is no agreement on how it can be maximized. If it is possible to define the common good and a public consensus is formed on the method of maximization, how can it be ensured that the government is motivated to achieve social goals. His central thesis is that political parties in a democracy shape their policies in such a way as to win the most votes.

He begins his analysis with a well-known abstraction, the perfectly informed environment, where information has no cost, so politicians and voters have absolute knowledge. In the model, voters are rational, so they vote for the party that they believe offers them the greatest utility. The basis of the election is the comparison, during which the performance of the current governing party is evaluated and compared with the assumed future performance of the parties. In a perfectly informed world, where party preferences are fully known to citizens and citizens' preferences are known to political actors, strategic considerations lead to serving the largest number of voters with the same preferences. In reality, the parties do not know exactly the will of the voters, and the citizens do not know exactly the ideas of the government or the opposition. As a result of these findings, the role of persuasion and ideologies is enhanced. If the voters were perfectly informed, they would decide rationally, persuasion would be incomprehensible, because they would know exactly who represents their interests. Ideologies can often appear to be one of the reasons for an irrational decision, however, due to imperfect information, the decision is uncertain, and voters long for simplification, in which ideologies help. These labels show the differences between the parties, and the potential positions of the parties can be inferred from them even in the case of the most diverse issues, which is why voters demand their existence. However, the parties were not interested in reducing this uncertainty, as they are able to select the information shared with the voters due to the lack of information.

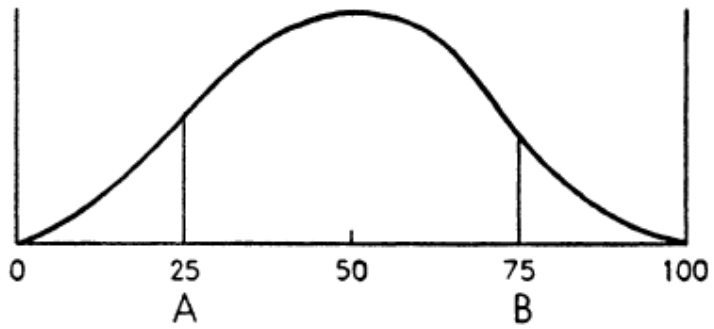

Figure 1: Hotelling model with a normal distribution in a two-party system
Source: Downs (1957, p. 143)

Downs (1957) examines the interaction of the party system and voter preferences with the help of the Hotelling model, and then interprets the strategic possibilities of political parties. In the case (Figure 1), if the voters' preferences are in the right and left ideological dimension - it is plotted on a linear scale from 0 to 100; 0 means the extreme left, 100 means the extreme right - they are formed according to a normal distribution, then the two parties (A and B) will fight for the "median voters" in the middle, since they have the most. Since every vote counts for one, parties can only have one goal - unlike traditional markets - to get the most voters. If one party (A) is at 25 and the other party is at 75 (B), then both want to move towards 50, because if they opened up to radical voters, they would lose centrist voters. It follows that in a two-party system, if voter preferences follow a normal distribution, changes in government are not accompanied by strong political changes. as governments want to satisfy the needs of centrist voters. These preferences are relatively similar, so we can talk about consensus and we can see a lower degree of polarization.

However, if their preferences are not normally distributed, but are at either end of the scale, it is in the parties' interest to position themselves towards the edges, as this is how they can get the most votes. This leads to a polarisation and instability in the party system, as in the event of a change of government, the focus of politics will be on satisfying the demands of radicals, which means rejecting the policies of the previous government.

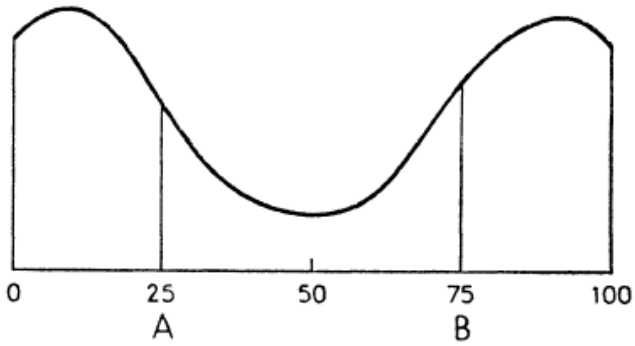

Figure 2: Hotelling model for polarized voter preferences in a two-party system
Source: Downs (1957, p. 143)

The hotelling model is a spectacular approach to exchange-based logic, which can be summed up by saying that voters, as rational actors, want to maximize their own utility, so they vote for parties and politicians who help them in this. The distribution of preferences determines the stability of the party system, its polarization and the variability of its policies. However, the primary problem is imperfect information, which is why voters demand ideologies that simplify political matters for them as cognitive labels. Based on this, we can say that both Schumpeter and Downs stand on the ground of methodological individualism, and both are critical of the abstraction of homo oeconomicus, but to a different degree, and as Körösényi (2012) highlights, they also draw different conclusions about the nature of joint decisions. He also points out that Schumpeter's work is often mistakenly confused with Downs and his followers who use an economic approach. Schumpeter's entire oeuvre can be understood as a supplement to, or as a critique of, neoclassical economics, according to which he considers the state of equilibrium to be momentary and, through his dynamic approach, the formation of monopoly inevitable. This leads to an elitist approach where the role of politicians is primary compared to policy matters. However, Downs and the Public Choice Theory deepen what Schumpeter called the theory of classical democracy, in which the subjects of exchange are social issues.

James Buchanan (1992) examines the relationship between economic and political decisions using the logic of exchange. According to Buchanan (1992), the role of the state is to provide public goods and services to the citizens, and it should do so based on the preferences of the citizens. He considers Schumpeter and Pareto to be the forerunners of the trend in the 20th century, and his starting point is that it is not possible to draw a sharp line between the economic and political spheres, just as it is not possible to draw a sharp line between the government and the market sector. Its approach can be called normative, and it tries to harmonize the relationship between voter preferences and policy-making, while treating human rights and the reduction of inequalities as priority values. Thus, those Pareto -optimal situations when no one's well-being can be increased without decreasing the well-being of others must be judged on the basis of these value criteria. Contrary to the thinking of Schumpeter and Downs, he considers the public good to be defined based on preferences and these values. Constitutional economics assumes that the aggregation of individual preferences leads to the common good, however, group action in many issues is based only on the agreement of a part of the entire group. He brings these conflicts into the theorizing, and he also tries to make the role of minority positions compatible with it. According to his opinion, economists have behaved in the past half century as if the economic theory based on homo oeconomicus is a general theory of social behavior, so it is a quasi-science of choice. He considers it the task of economists to think about the origin, characteristics and connection to institutions of broadly understood exchange. Its basic premise is that mutual benefits arise from the exchange, so through joint decisions we must create social rules and institutions that all citizens voluntarily comply with, as it is in their interest. According to Gedeon (2013), constitutional economics is not a positive approach that seeks to explain the true functioning of democracies, but rather a search for procedural frameworks through which the public good can be enforced.

Like Buchanan (1992), Elster (2001) also points out that the preferences of different individuals are difficult to compare and their intensity can be different in some issues, therefore he criticizes the procedure that finding the majority position for all political matters would realize the public good. Neoclassical economics considers the human image to be only valid in a limited way, since from the point of view of a self-interested voter who weighs benefits and costs, participation in voting cannot be interpreted and cannot be called rational behavior. The cost of time, attention, and energy spent on voting easily exceeds the expected benefit, while the vote of the given individual probably does not decide the outcome of the election. Since participation in elections cannot necessarily be derived from self-interest, the question arises as to why citizens participate in elections. We call this contradiction the paradox of choice, and in order to understand it, we have to leave the abstraction of homo oeconomicus and instead of material factors, we have to turn to cultural ones. Elster (2001) sees the essence of collective action problems in the fact that it is difficult to get people to cooperate and follow the rules, because short-term benefits are often overestimated. As an example, he cites littering in the park, where it is easier to throw away the litter - especially if others are doing the same - than to take it to the nearest bin, but if everyone follows the rules, then a clean park is a shared reward. Therefore, he considers institutions to be important phenomena of community cooperation, as they hold society together and protect against the destruction of selfishness, which he calls the "rust" of society.

4. THE CONCEPTUALIZATION OF POLITICAL MARKETING BASED ON POLITICAL ECONOMY

The thoughtful conceptualization of political marketing is not possible without an understanding of exchange processes. A common view in the literature is the product is a combination of the image of the party and its politicians, and the statements regarding each issues (Wring 1997, Simons 2020). Therefore, in this chapter, we examined how the object of exchange can be grasped based on political economy. According to these theories, we can say that democracy, based on two economic theories - collective decision-making and constitutional democracy - considers individual issues as the object of exchange, while based on Schumpeter's concept of leadership democracy, the person of the politician is seen as the object of exchange (Table 1). Based on Schumpeter, we can say that the role of parties is overshadowed, as voters identify the party with the characteristics of the leading politicians, and thus we can observe the growth of their power (Müller, 2018). Therefore we can see that media consumption and online news searching are fundamentally determined by social identity, which results in the emergence of cognitive biases (Knobloch-Westerwick, Mothes & Polavin 2017). Merkovity's (2018) attention-based concept, which links behavioural economics to politics, understands attention as a selection process between different stimuli and as a salient aspect of political struggle. Its essence is the politicisation of particular issues, through which politicians can direct attention to themselves.

The main difference between the two approaches lies in the methodological starting point, as political economic theories - by their very nature - are grounded in methodological individualism, while leadership theories consider community interactions. However, an important finding must be made here: the exchange-based interpretation, which is the basis of social and macro marketing trends, can also be found in political economic thinking and the leadership-based concept of democracy.

Table 1: Interpretation possibilities of the political exchange

Approaches	Public Choice Theory	Schumpeter's theory
Subject to exchange	issues	politician
Nature of preferences	rather materialistic (focuses on individual well-being)	Cultural (focuses on acceptance)
Voter preferences	ex ante	ex post
Process nature	static (equilibrium)	dynamic (process-like)
Methodology	individualistic	more communal (but does not break with methodological individualism)
Related theories	Downs (1957) Buchanan (1992)	Schumpeter's Theory of Democracy (1942)

Source: own conception

Based on these authors, we can say that exchange plays a prominent role in the conceptualization of political marketing. However, it is important to have a dynamic view of political processes, so the concept of leadership must be incorporated into the understanding. The concept of leadership assumes citizen acceptance, so the legitimacy of political decisions can also be interpreted. Therefore, political marketing can be defined as follows: *"Political marketing is a political leadership approach and communication tool system, which is centered on voter preferences in a democratic institutional system and is characterized by a dual goal system, on the one hand formulating offers to voters, and on the other hand getting them to accept political decisions, measures, and actions in the service process."*

Regarding the object of exchange (Table 2), we can say that the politician offers the continuous management of common affairs, their vision for the future of the country, policy promises, and the possibility of self-expression. Therefore, voters can pay for this service in many ways, such as with their vote, voluntary work, data, or even monetary donations, and ultimately, in extreme cases, even self-sacrifice.

Table 2: Objects of the political exchange process

Political offer	Voter's currency
Continuous service: managing the affairs of the country (e.g. governing ability)	Vote
Vision (e.g. Christian democracy)	Voluntary work (e.g. participation in the campaign)
Policy and functional promises (e.g. 13th monthly pension)	Donation, financial support
The possibility of self-expression (e.g. voting for the Green Party due to environmental protection)	Signing petitions and consultations (e.g. online petitions, national consultation referendum)
	Data sharing (e.g. mailing list, public opinion poll)
	Publicly supporting a politician, engaging in debates, commenting / sharing on social media
	Personal sacrifice (e.g. civil disobedience, self-sacrifice)

Source: own conception

5. CONCLUSION

In my study, I examined the role of exchange based on changes in marketing thinking and certain political economic theories. Based on the changes in marketing thinking, the extension of exchange to the entire society can now be considered a mainstream approach, and social marketing and macro marketing have emerged as independent areas of research. Political economy helps us understand the deeper meaning of political exchange, so, like political marketing authors, I started with Schumpeter (1942), and then examined the role of exchange with the help of two prominent authors of Public Choice Theory, Downs (1957) and Buchanan (1992). Finally, based on these theories, I defined political marketing and the various objects that can be the subject of exchange. In addition to material factors, which dominate in the case of Public Choice Theory authors, cultural and symbolic elements can also be interpreted within the exchange paradigm.

The main message of my paper is that political marketing theory should include the phenomenon of leadership. It means that shaping preferences and gaining legitimacy are part of the concept. So instead of Downs' Public Choice Theory, it is worth returning to Schumpeter. In addition, we see a blurring of the line between symbolic and policy promises, so we have to pay more attention to symbolic exchanges as they are essential parts of voter's interpretation of reality, thus play a prominent role in the process of leadership. Therefore future research directions could aim to gain a deeper understanding of symbolic exchange, for which postmodern marketing approaches can provide suitable guidance.

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MODELING USER'S PREFERENCES TOWARDS ELECTRIC VEHICLES. A DISCREET CHOICE MODEL APPROACH.

Abstract: Sustainability, and the demand for sustainable products came to the four in the last years. One of the most polluting acts of humanity is transportation. Even tough changing our location is an unavoidable part of the everyday life, we can choose alternatives which are less burdensome on the environment. Electric vehicles (EVs) present an environmentally friendlier solution in the future of mobility. The existence of these cars can already be seen on the streets of our cities, as they are available to the masses. At the same time, the spread of such vehicles is not so rapid, as there are compromises need to be made while using them. Since there is little information about electric cars, the range anxiety and high price tags also prevent EVs from spreading in large numbers. At the same time, besides being less polluting, there are multiple advantages of driving e-cars. However, the benefits of EVs will only come true if people will accept and use them. At present there are several car manufacturers who produce EVs, although people seem to still prefer internal combustion engine vehicles. In our research we use Choice Based Conjoint and Maxdiff analysis to understand people's preferences towards EVs. In our results, we determine the best combination of attribute levels, that present the most preferable EV and show which are the most preferred EV brands. Our online research was published in the beginning of February for three weeks period, and we have reached 206 people.

Keywords: Electric car, Sustainability, Consumer behavior, Preferences, Choice Based Conjoint, MaxDiff

INTRODUCTION

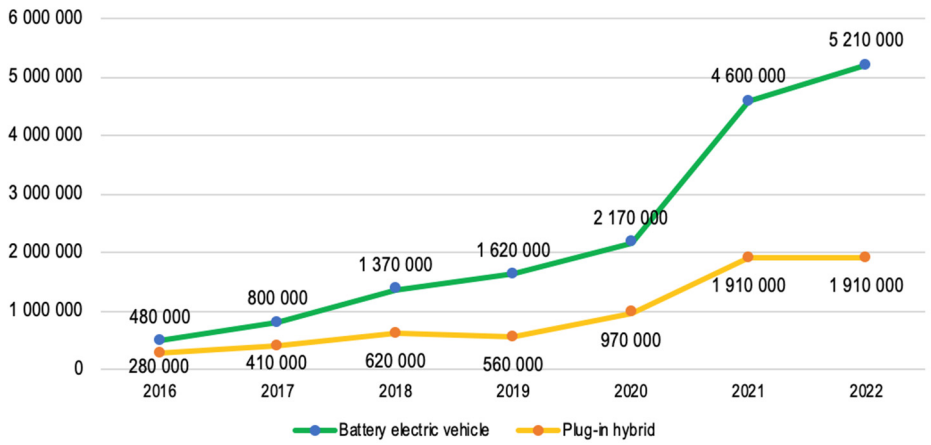
Unlimited transport and mobility, in addition to being an important factor in the global economy, result in an extremely high ecological footprint. Sustainable development, according to the Brundtland report, says that we should live our lives in such a way that the generations that come after us have the opportunity to use the same resources and opportunities that are given to us (Lele, 2013). This is relatively difficult to do in a world where we are constantly getting messages – through the media and the society – that constantly encourage us to keep buying the newer, nicer, better, and the bigger. The need for continuous growth is difficult to meet with the ideal world in which different aspects of sustainability could appear. It is not for nothing that the initiatives that try to guide not only consumers, but also companies (Brewer, 2019) in the direction of providing as many alternative solutions available to the masses as possible, with the use of which we exert a smaller burden on our environment, are popping up. According to previous researches (for example Wunderman Thompson Intelligence, 2019), people would like to do more for the environment, but it is not certain that in every case they will receive alternatives that can be adapted without compromise in everyday life (Verma, 2020). Companies are therefore forced at the governmental or even EU level to expand their product portfolio in such a way that they can meet consumers' sustainable consumption needs (Glass & Newig, 2019). The same phenomena can be seen in the automotive industry as well. With a quota system, large car manufacturing companies are

encouraged – or rather forced – to produce electric cars (EV), which is considered as an environmentally friendlier solution. As a result, it is now difficult to find a manufacturer that does not deal with electrification on some level, and even new entrants to the market, even tech companies are appearing. In addition, consumers are encouraged to purchase electric cars with local, financial allowances (K.R., 2022). At the time of the first passenger car that could also operate electrically and was available to the masses, there were no green license plates and the technology was rudimentary. The plug-in hybrid (PHEV) or mild-hybrid (MHEV) system cars of that time were equipped with an electric motor in addition to the traditional internal combustion engine, which meant that these vehicles were able to run electrically when the car started rolling or when idling in traffic. And then, when the technology deemed it necessary, the traditional – typically gasoline-powered – engine was started, which continued to move the car-body. As the years passed, new techniques appeared both in the field of battery production and their usability (Blomgren, 2016). In addition to the still available cars with PHEV and MHEV systems, you can now also buy vehicles equipped with purely electric technology, where the traditional gasoline and diesel engines do not appear at all, the cars can operate only in fully electric mode. Electric cars, which operate without CO_2 emissions, have brought a completely new era to the car-world.
The eco-conscious, quiet, dynamic driving, which can be purchased with the governmental state support from time to time, is also accompanied by the financial allowance provided by the outstanding (green) number plate found on such cars. In Hungary, since 2016, all vehicles that can travel 25 kilometers in pure electric mode receive such a registration plate. Battery electric vehicles have this distinguishing mark by default, as do most plug-in hybrids, which are able to cover this distance without starting their internal combustion engine. In Hungary, this registration number is important not only because of the distinction, but also because of the allowances. For example, you don't have to pay a registration tax, and in the case of purely electric cars, you don't have to pay a vehicle tax either. Parking is also free in most domestic cities, which is being withdrawn in more and more places due to the increase in the number of cars with green license plates, however, depending on the parking zone, parking discounts still apply locally (Bukovics, 2021). In addition to the fact that this innovation is indeed more environmentally conscious and in many other ways better than the usual, there are still many dilemmas for both those who are about to buy a car and those who are thinking about it. The technique has limitations – some of which we will explain in more detail later – which are difficult to overcome. Because of this, the phenomenon of rapid growth will certainly not be perceptible for quite some time. Leaving aside the detailed presentation of the limitations related to adaptation, the price tag of the currently available electric cars does not help the rapid spread either. A conventionally driven car in the same category can be purchased at a much lower price than its electric version. Year after year, the estimates are that the production prices of batteries will continue to decrease, but practice does not show this (Soulopoulos, 2017). The product range of available electric cars is not that wide yet, so even if the user is thinking about switching to an e-car, it is sometimes difficult to find a car with a structure that suits his preferences.
Considering the above described in our study we use a set of discreet choice experiments in pursuit to understand users' preferences towards EVs. We used choice based conjoint analysis where EV specific product features were randomly combined resulting fictive end products. 300 of these conjoint cards were created where every attribute was presented equally. Our respondents were shown 4 of these cards at a time and were asked to choose which one of them would they buy if those were their only options. After this using MaxDiff we showed our respondents 5 – out of 23 – brands at a time to see which brands are the most and least preferred when considering of buying an EV.
Our paper proceeds as follows. We define EVs and their potential of lowering the negative effects of transportation on the environment. Then we present our research method as well as the primary research. After the discussion of the results, we conclude our study.

THE RISE OF THE ELECTRIC CAR

Number of Battery Electric Vehicles (BEVs) and Plug-in Hybrid Electric Vehicles (PHEVs)

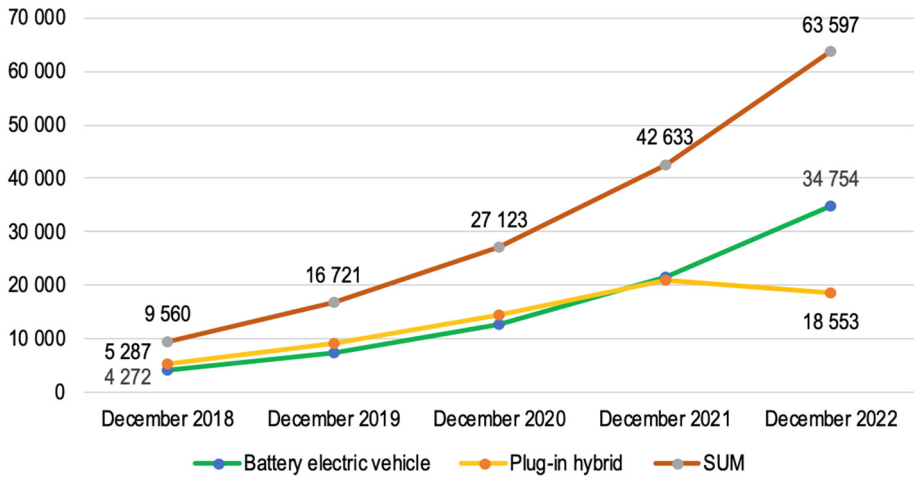
As we indicated earlier, the number of electric cars is slowly but steadily increasing both in Hungary and around the world. **Picture 1** clearly shows how the sales numbers of battery electric vehicles and plug-in hybrid electric vehicles have changed worldwide from 2016 to 2022. The increase is clearly visible, as also the fact that the growth rate of the sales of plug-in hybrids has fallen, while pure electrics has increased more and more. While in 2016 a total of 760 000 vehicles equipped with some form of electric technology found their owners, by 2022 this number will have nearly increased tenfold. It can be clearly seen that a slow growth was observed until 2021, after which there was a significant jump in terms of global sales growth. It is also worth noting that the number of plug-ins, which are less environmentally friendly, is always lower than the number of purely electric ones, and especially according to the trend of the last 3 years, it is constantly decreasing (45 percent in 2020, 41 percent in 2021, 37 percent in 2022 percentage). According to Statista's (2023) estimate for the future, in 2026, more than 13.5 million vehicles equipped with some kind of electric technology will be sold in the world, of which only 24 percent will not be fully electric. However, the estimates in this area should also be treated with reservations, since a period such as the current energy crisis can greatly influence the extent of the spread.



Picture 1: Number of sold Battery electric vehicles and Plug-in hybrids worldwide from 2016 to 2022
Source: own construction based on Statista, 2023

Number of Battery Electric Vehicles (BEVs) and Plug-in Hybrid Electric Vehicles (PHEVs) in Hungary

Picture 2 shows the change in the number of vehicles with green license plates in Hungary between December, 2018 and December, 2022. It can be observed that while at the end of 2018 there were less than 10 000 electric cars equipped with some kind of electric technology on the Hungarian roads, by the end of 2022, their number had increased to seven times the number four years earlier. In Hungary, from the examined period until 2021, there were several cars with plug-in hybrid systems. By the end of 2022, the number of fully electric cars had almost doubled compared to the previously more popular technology, with 34 754 of the former on Hungarian roads and 18 553 of the latter. In the case of Hungary, we have not found an estimate regarding the spread of electric cars, but we are confident that their number will increase at a similar or even stronger rate.

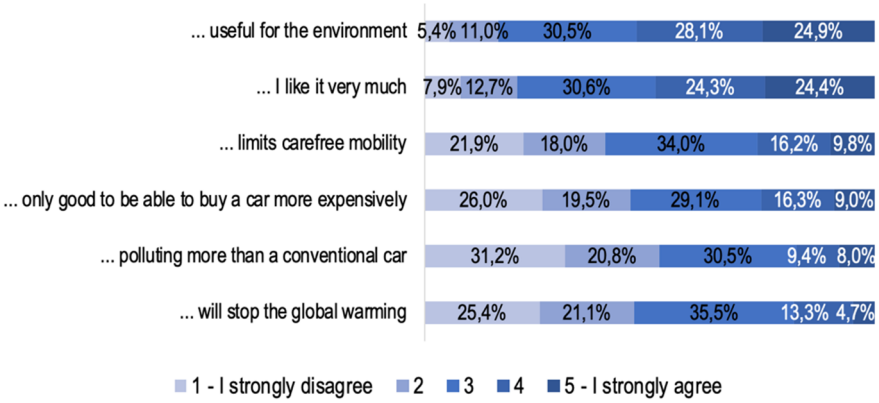


Picture 2: Number of Battery electric vehicles and Plug-in hybrids in Hungary from December, 2018 to December, 2022
Source: own construction based on Szűcs, 2023.

THE BARRIERS OF THE INTENSIVE SPREAD OF ELECTRIC CARS

A previous survey of 1 000 people, representative of the Hungarian adult population, which examined attitudes towards electric cars and electric car owners (Vereckei-Poór & Törőcsik, 2022), revealed that Hungarians generally support the existence of electric cars. **Picture 3** illustrates that there is no strong opinion regarding this technique, which is shown by the fact that a large number of respondents indicated medium values on the 1-5 Likert scale. The greater part of the respondents, more than half of them think that electric cars are useful for the environment, and a little less than half of the respondents also like this solution. They don't think it's more polluting than a conventional gasoline or diesel car,

but they don't think electric cars will stop global warming. Only 40 percent of the respondents thought that e-cars limit the carefree mobility.



Picture 3: Attitudes toward electric car users (n=999) – What do you think about electric cars? The electric car is...
Source: own construction based on Vereckei-Poór & Törőcsik, 2022

In the studies written on the subject and in the researches, we see that many dilemmas arise in connection with electric cars (Gelmanova et al., 2018). One such example is range. We are used to the fact that after refueling our car with an internal combustion engine at a gas station, we can travel up to a thousand kilometers with one tank of fuel. If the tank were to run out, there is a good chance that we will find a petrol station in our area where we can refuel our car. In the case of electric cars, with the current technology we can only travel a few hundred kilometers with a single charge (Philipsen, Brell, Brost, Eickels, & Ziefle, 2018). Even the e-car with the most advanced battery and the lowest energy consumption is only capable of a range of 400-500 kilometers, which is far less than what we are used to in the case of a traditional car.

Another problem is the charging speed and the number of public chargers. Charging an electric car takes much longer than the usual refueling, which takes about 10-15 minutes, and since the charging infrastructure is underdeveloped, access to the charging point is sometimes limited. The number of chargers does not follow the increase in the number of electric cars, and although many people charge their cars at home, public charging points are essential for those who cannot charge at home, or who travel longer distances with their car. While in the second quarter of 2021, there were 1627 public charging stations in Hungary, 1 year later, 2031 were available, which represents a 20 percent increase (Mekh.hu, 2022). This level of spread would not be a problem in itself, but since the number of electric cars increased by 38 percent in the same period, it can be stated that the development of the charging infrastructure in Hungary does not follow the growth of electric cars.

The next possible problem that delays the spread of EVs is that the reputation of cars with green license plates are considered problematic in Hungary. Although both types (BEV and PHEV) can get a green license plate, since they only have to meet the previously indicated criteria (covering 25 kilometers electrically), at the same time, in terms of environmental impact, plug-ins are much more polluting, since there is nothing that obliges their owners to charge the electric part of their car, and in most of the cases the driver uses the car with the internal combustion engine, while this technology was developed with the aim that the car can drive electrically in the city and with the built-in engine outside the city. A fully electric vehicle, on the other hand, can operate only in electric mode, which does not involve any environmental burden. Car manufacturers are making great use of this opportunity to produce plug-in cars under the aegis of protecting our environment, but they don't oblige car owners to actually take advantage of the electric motor while still offering the same allowances as actual electric cars. Therefore, it is quite an ambivalent sight when a green license plated, fully electric Fiat 500 small city car and a 450 horsepower Porsche Cayenne SUV, also with a green license plate, stand next to each other at a red light.

Also, another reason why the spread is not so fast, is the price of electric cars. In the USA for example, in 2021, an electric version was an average $10 000 (approximately HUF 3.5 million) more expensive than a version of the same type equipped with an internal combustion engine (Lindwall, 2022). Imagine, by the time it reaches Europe and all the necessary costs are paid, the price difference will be even higher. In recent years it was possible to apply for financial support from the government, with which the government subsidized the car buyer with up to 20 percent of the purchase price. The used car market can also come to the fore, where there are a lot of used electric cars for cheaper prices, but at the same time, you cannot apply for funding for such purchases. At the time of writing this study, there are 3 500 used e-cars on the website of the largest used car dealer webpage in Hungary (hasznaltauto.hu), where the cheapest purely electric model is a 2016 Nissan Leaf with nearly 200 000 kilometers for not less, than HUF 4.2 million. Although the maintenance costs of the e-car are extremely low, this alternative is still only a compromise solution. In Hungary, the electric car is currently not suitable for serving the needs of the family as the only car. Having paid the high price, it is true that although we drive in an environmentally conscious manner, the underdevelopment of the charging infrastructure and the relatively low range make everyday life difficult.

The last, but not the least important barrier is that the range of e-cars currently available is relatively low. The automotive industry strives to place as large a battery pack as possible in the bottom of the car, thereby achieving as much range as possible, but this also means that the dimensions of electric cars are constantly increasing. Although there are cars on the market that, due to their compact size, are a practical solution for urban traffic, they also have a shorter range. Since the product is expensive and customers want a longer range, they prefer larger electric cars.
Based on the literature review the aim of our study is to better understand users' preferences towards EVs. Therefore, we use two different choice experiments: choice based conjoint analysis and MaxDiff instead of a stated preference survey. The reason for that is, that these two methods are designed for measuring user preferences during product development and can help provide products that better meet market needs.

PRIMARY RESEARCH

With stated preference surveys we ask respondents how much they agree with certain statements. It is a great method for example to measure consumer satisfaction or loyalty, where people have experience with the goods or services in question. There are several validated research models that are used with stated preference surveys. In the literature of adopting new technologies the most common ones are different versions of the Technology Acceptance Model (TAM) (Davis, 1989) and the Unified Theory of Acceptance and Use of Technology (UTAUT) (Venkatesh et al., 2003). However, many scholars argue a significant boundary for using these models in pursuit of investigating user preferences with products that respondents don't have experience with (Palatinus et al., 2022). Until today EVs are at a very low-level market penetration so most people haven't tried them yet. Therefore, in our study we conducted Choice Based Conjoint analysis (CBC) and MaxDiff other known as best-worst scaling.

Choice Based Conjoint analysis (CBC)

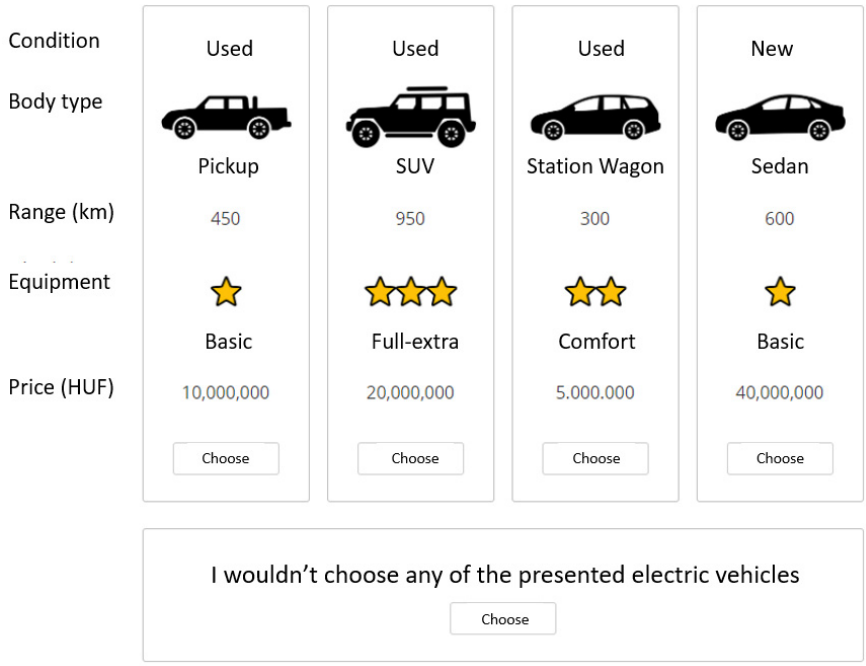
When buying goods users must decide which product or service will they choose over another. This decision is explained by the utility theory. Every product has different product characteristics like color, weight, size, smell, taste, brand, price etc. The partial utilities of these characteristics sum up to the total utility of the products (Eggers and Sattler, 2009). In Conjoint analysis these are called product attributes and each product attribute has different attribute levels. With orthogonal design we provide combinations of these attributes so each of the combinations represent a fictional product that can be presented on cards. Then we ask respondents to evaluate these cards in certain ways (DeSarbo et al, 1995). In CBC we show 2-4 cards each a total of 10 to 15 times to the respondents and ask them which they would choose if the presented products were their only option (Green et al., 2001). With the data gathered we can derive the relative importance of each attribute and the partial utilities of each attribute level. This information not only can help us better understand the decision-making process, but with it we are able to describe the most desired product (Eggers and Eggers 2022).
According to the literature review in our research we used a total of 5 attributes to describe EVs. Our first attribute is Condition with only two levels: New and Used, because in Hungary there is a very big market of used vehicles. The second attribute is Body Type with eight different levels: Hatchback, Sedan, Station Wagon, Minivan, SUV, Sport, Pickup and Cabrio which are the most common. The third attribute is the battery Range of the presented EVs from 150 km to 950 km. Our fourth attribute is Equipment with three attribute levels: Basic, Comfort and Full-extra each representing different level of in-vehicle convenience. At last, but not the least our final attribute is price in Hungarian Forints (HUF) (1Eur = app. 380 HUF) starting from 5 million HUF to 50+ million HUF. We summarize the attributes and their levels in Table 1.

Table 1: The attributes and their levels used in the research

Condition	Body Type	Range (km)	Equipment	Price (HUF)
New	Hatchback	950	Full-extra	5.000.000
Used	Sedan	600	Comfort	10.000000
	Station Wagon	450	Basic	15.000.000
	Minivan	300		20.000.000
	SUV	150		25.000.000
	Sport			30.000.000
	Pickup			40.000.000
	Cabrio			50.000.000
				50.000.000+

Source: own construction

In our research we used Sawtooth Software to create the CBC design and survey. With the random combination of the attribute levels a set of 300 cards were generated, where each attribute levels were presented equal times so our model was suitable for use. In the survey design 4 of these cards were shown at a time for each respondent a total of 12 times with a back-out option, so they were not forced to choose one of the presented cards if none of them met their expectations. This allowed our respondents to see each attribute level the same number of times so each of them was available to get chosen equally. The CBC exercise is shown in Picture 4.



Picture 4: CBC exercise for the respondents.
Source: From author.

MaxDiff (Best-worst scaling)

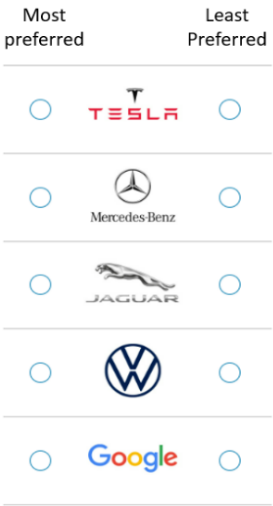
MaxDiff exercises are also choice experiments that are based on the utility theory and can lead to better understand user preferences (Kowalska-Pyzalska et al., 2022). It can be used when there are numerous products, services or brands available for satisfying the same consumer needs. With the use of MaxDiff we can determine which of these similar goods are the most and least preferred (Papadima et al., 2020). In the exercise we show our respondents a set (4-6) of the before defined list (20+) of goods in question. Then we ask them to choose which one of the presented list ex. brands is the most- and least preferred (Nickaar, Lee and Shin, 2023).
In our research we wanted to know which brands do our respondents prefer when buying an EV and which do they reject. In our MaxDiff exercise we created a list of 23 brands (Table 2.) including not only car manufacturers that are present in the EV industry but tech companies that are known for their research and development of vehicle innovation.

Table 2: The brands used in the MaxDiff exercise

Car manufacturers	Audi, BMW, Chevrolet, Ford, Honda, Hyundai, Jaguar, Karma, Kia, Lucid, Mercedes-Benz, Mini, Nissan, Polestar, Porsche, Tesla, Toyota, Volkswagen
Tech companies	Apple, Bosch, Google, Microsoft, Sony

Source: own construction

In the research design we showed 5 brands at a time for our respondents a total of 14 times. Their task was to choose which one of them do they prefer the least and the most when considering buying an EV as shown in Picture 5.



Picture 5: MaxDiff exercise for the respondents.
Source: own construction

Sample

An online survey with the above introduced CBC and MaxDiff exercises was designed with Sawtooth Software and published in social media platforms in February 2023 in which 206 respondents took part. 97% of them have a driver's license, and 87% own at least one car, or there is a car that they can use daily. Most of them own one or two cars of which 60% are petrol, 38% are diesel and interestingly 27% are electric, while 5% are Plug-in Hybrid. This may be due to the specific social media groups where we shared our survey. Only 21% of our respondents replied that they would never consider buying an EV, however 28% is not sure yet about the time when they would buy one, while 20% is still uncertain whether they would purchase an EV.
70% of our respondents are male, 29% are female and there is 1% referring their gender as other. Most of our respondents (41%) are between the ages 29-43, followed by those of 44-62 (31%) and those of 18-28 (25%), while the rest (3%) is between 63-77 years old. 59% of our respondents live in cities and 31% in rural areas. 54% have diplomas of higher education and 19% are students. 55% have a full-time job, 15% are entrepreneurs and 14% are managers.

Results

First, we analyze the results of the CBC exercise. With the use of Hierarchical Bayesian (HB) statistics we can derive the partial utilities of each attribute level. We found that our respondents would prefer their EV to be new instead of being used. The mostly preferred body type is hatchback, followed by sedan, station wagon and minivan, while the other body types are not in favor. Or respondents are open to consider buying an EV that can do distances between 950 and 450 km-s, however the mostly preferred range is 950km. Regarding the equipment of the vehicle they prefer is full-extra and comfort, and not surprisingly they would like to buy their EV at the lowest price possible. However, they are opened to pay up to 25 million HUFs. We summarize our results regarding the partial utilities of the attribute levels in Table 3.
Second, with the same statistical method the estimated relative importance of the attributes is derived. These percentages allow us to determine how much each attribute contribute to the decision-making process. We found that when considering of buying an EV the most important attribute is price (35,75%), followed by body type (33,56%), durability (19,68%), comfort (7,60%) and it seems that the least important is if it's new or used (3,40%).

Table 3: The partial utilities of the attribute levels

Condition		Body type		Range (km)		Equipment		Price (HUF)	
New	5.63	Hatchback	48.31	950	31.05	Full-extra	12.33	5.000.000	76.83
Used	-5.63	Sedan	44.22	600	19.86	Comfort	5.73	10.000.000	57.04
		Station Wagon	32.60	450	18.28	Basic	-18.06	15.000.000	48.28
		Minivan	3.64	300	-12.34			20.000.000	20.90
		SUV	-13.23	150	-56.85			25.000.000	5.13
		Sport	-26.98					30.000.000	-14.10
		Pickup	-29.49					40.000.000	-32.78
		Cabrio	-59.0					50.000.000	-75.97
								50.000.000+	-85.34

Source: own construction

Third, when analyzing the gathered data of the MaxDiff exercise we firs ran count analysis to see the times each brand was chosen as the most preferred and as the least preferred. All the brands were presented a sum of ca. 518 times with the minimum times of appearance of 516, and the maximum of 521. Those to step on the podium are Tesla (284), Audi (206) and Toyota (182), while those that were most rejected are Microsoft (265), Karma (227) and Chevrolet (181). Interestingly some of the tech companies such as Apple (63) and Bosh (35) were chosen as preferable over certain car manufacturers. Also, every tech brand was chosen as most preferred at some point with the lowest count for Microsoft (21). On the other hand, the brands that were chosen to be least preferred are Microsoft (265), Karma (227) and Chevrolet (181). We sum up the results of the count analysis in Table 4.

Table 4: The results of the count analysis

Shown each cca. 518 (min:516, max: 521)			
Best count		**Worst count**	
Tesla	284	Microsoft	265
Audi	206	Karma	227
Toyota	182	Chevrolet	181
Volkswagen	179	Google	173
Kia	171	Apple	168
Hyundai	166	Lucid	157
Mercedes-Benz	164	Sony	152
BMW	136	Polestar	120
Porsche	134	Bosch	105
Honda	115	Ford	89
Nissan	106	Jaguar	88
Ford	84	Mini	85
Polestar	77	BMW	74
Jaguar	63	Kia	70
Apple	63	Honda	64
Mini	59	Toyota	62
Lucid	44	Nissan	61
Bosch	35	Hyundai	53
Google	26	Tesla	49
Sony	25	Volkswagen	43
Chevrolet	24	Porsche	42
Karma	21	Mercedes-Benz	34
Microsoft	21	Audi	23

Source: own construction

We also used the method HB statistics when analyzing the results of MaxDiff to see which brands are the most, and the least preferred overall. We see the similar results as with count analysis. The main difference between the two methods

is that with count analysis we use the aggregate number of choices like it was made by one respondent. So, it is an excellent tool to see if our model performs well. While with HB statistics we use our respondents' individual utility estimates, that gives us a deeper understanding of which brands are most preferred and least preferred. We found that the top 5 brands that people are considering when buying an EV are Tesla, Audi, Volkswagen, Toyota, and Mercedes-Benz, while the least preferred 5 brands are Karma, Microsoft, Chevrolet, Sony, and Google (Table 5.). Again, two of the tech brands Apple and Bosh were able to finish in the middle of the list.

Table 5: The results of the HB statistics

Rescaled Scores (0 to 100 scaling)			
	Average	**95% Lower**	**95% Upper**
Audi	9.44882	8.69573	10.20192
Volkswagen	8.48231	0.76663	1.21474
Toyota	7.56955	2.95986	3.94713
Mercedes-Benz	7.34728	5.82414	6.99557
Hyundai	7.32534	6.72599	7.92469
Kia	6.97004	5.16481	6.50268
Porsche	6.73357	7.8782	9.08642
BMW	6.40985	6.94248	8.19663
Honda	5.83374	2.27252	3.12581
Nissan	5.26528	4.27757	5.38674
Ford	4.83216	4.64418	5.88637
Jaguar	3.4535	6.2671	7.67299
Polestar	3.18586	6.69112	8.00345
Apple	2.97557	2.72894	3.64279
Mini	2.72341	5.97125	7.49588
Bosch	2.69916	1.40161	2.2691
Lucid	1.84276	0.57742	1.06182
Google	1.83535	2.43545	3.51568
Sony	1.27885	2.15251	3.29431
Chevrolet	1.14035	1.52316	2.16236
Microsoft	0.99068	0.99114	1.56656
Karma	0.83693	0.89885	1.38186
Tesla	0.81962	0.57354	1.10032

Source: own construction

DISCUSSSION AND CONCLUSIONS

Mobility is one of the greatest polluters of the environment therefore there is a great need for a radical change in the way vehicles operate. The electrification of vehicles is a promising alternative to internal combustion engine motors because they don't produce harmful gases during operation. We understand that the advantages of EVs can be only achieved if people accept and use them. These cars are already available for purchase for end users. However, their market penetration is still very low for multiple reasons, as we indicated earlier. Therefore, in our study we conducted CBC and MaxDiff analysis to better understand users' preferences towards EVs. Our online survey was answered by N=206 respondents.

In our CBC analysis 5 attributes were used (Condition, Body type, Range, Equipment, and Price) with different attribute levels to create a sum of 300 cards each representing a fictional EV. We showed 4 of these cards to our respondents and asked them to choose which one of them would they buy if there were their only option. Also, we provided a back out option, so our respondents were not forced to choose every time through the experiment which was made of 12 sets. With HB statistics the relative importance of the attributes and the partial utilities of the attribute levels can be derived. We found that Price is the most important factor when buying an EV, followed by Body type, Durability, Equipment and Condition. According to the partial utilities our results show, that our respondents would like their EV to be new. The most preferred Body Types are Hatchback, Sedan and Station wagon. The preferred range is between 950km and 450 km, and the most preferred Equipment level is Full-extra and comfort. Not surprisingly the lower prices have the highest partial utilities, however our respondents would be opened to pay as much as 25 million HUFs for an EV.

In our MaxDiff analysis we used a set of 23 brands including car manufacturers and tech companies. A choice experiment was created where we showed randomly 5 of these brands to our respondents a sum of 14 times. Each brand was shown approximately 518 times. Our results show that Tesla, and Audi are the most preferred brands when considering of buying an EV. We also found that some tech companies also performed well. Apple and Bosh both finished in the middle of our respondents' preference list. Meaning that People already know that these brands are into vehicle development, and they are opened to buy cars from these companies when they are introduced to the market.
By combining the results of the CBC and Maxdiff exercises we can describe the most desired vehicle. For our respondents this would be a new Tesla, that costs 5 million HUFs, is a Hatchback, and can do 950kms with one charging, while it is equipped with all the possible extras (Full-extra).

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