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Do Start-ups in Czech Republic use Cloud Computing?

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Summary

It is almost unthinkable to operate business processes without support of information and communications technology (ICT). Cloud-based technology is a modern way to provide corporate IT services. This technology is particularly suitable for start-ups (new companies) due to savings from the purchase of ICT equipment and thanks to speed of cloud service deployment. Article highlights the advantages of using the cloud for new businesses and primarily explores the use of cloud computing in new companies (start-ups) operating in business incubators in the Czech Republic. The research results show varying extent of use of the cloud, depending on the type of used service and quite frequent use of cloud technology especially in companies operating in the IT sector.

Keywords

cloud computing, start-up, service, Czech Republic

1. Introduction

Services covered by the term cloud computing are already receiving attention of not only information technology managers, but also of the top management. Method of providing information technology services called cloud computing turns out to be beneficial to any company and it is gradually starting being used by large number of customers.

The most significant positive of cloud computing is the simple and rapid service deployment, and zero capital costs of deployment. The easiness of deployment would be in line with the needs of most start-up companies. One of the first tasks for management of these companies is to provide information technology support for the newly formed business processes. They may (in theory) achieve this goal much faster and with lower costs thanks to cloud technologies.

In this article, we set ourselves the task to examine whether start-up companies (start-ups) in Czech Republic actually use/need the technology of cloud computing in order to provide computational support its processes, or whether there is still a room for innovation on this field.

2. Theoretical background

2.1. Cloud computing

Cloud computing is a relatively new way of providing IT services that does not require investment costs and ensure quality services accessible to customers over a data network, usually the Internet (Armbrust et al. 2010). The overall concept, pros and cons of this type of service have been described in many articles (Armbrust et al. 2010; Briscoe & Marinos 2009; Feuerlicht, Burkon, & Sebesta 2011).

Core of cloud computing is provision of a virtual infrastructure to the end-users. Thanks to virtualization (Matyska, 2007) the hardware may be optimally used and the prices are often lower in comparison to classical hosting or owning its own hardware (as described in (Velte, Velte & Elsenpeter 2010)).

The most significant positive of cloud computing is the simple and rapid service deployment, and zero capital costs of deployment. The easiness of deployment would be in line with the needs of most start-up companies. One of the challenges for start-up organization, being it a private entrepreneur, small business or non-profit organization, is to provide IT support for emerging business processes. There are two basic solutions to this problem:

- choose services of another economic entity (outsourcing), or
- buy your own hardware and ensure services on your own.

The difference was introduced (Voříšek 2008), however, both options are now extended thanks to a new approaches included under the concept of "cloud computing".

One of the biggest obstacles for cloud computing deployment of already established organizations is their own hardware (investments - hardware must be utilized). However, start-up does

not own any hardware; it is rather an obstacle for them to purchase non-outsourced information system because it means a considerable investment in new hardware, and hiring a crew, who shall ensure the operation of the hardware.

As a result, it should be quite tempting for start-up organization to take advantage of IT services outsourcing in the form of cloud computing. This method of IT services operation can eliminate both; investment costs (which are relatively high for starting organization even without the need to purchase IT hardware) and reduce the burden for management, so they do not need to worry so much about the operation of the newly formed IT Department.

2.2. Science-technology Parks

The very concept of science-technology parks originated in the United States of America (USA) in the early 50th of 20th century. By that time began to shape the foundations of California's Silicon Valley - today certainly the best known and most successful example of Science-technology Park in the world.

Thanks to initiative supported by funds from the European Union, which was aimed to support small and medium-sized enterprises the scientific, technological, business and innovation centres and incubators are numerous in the territory of the Czech Republic and it's count almost tripled during years 2000-2006 (Sochor, 2009). Considerable number of companies is located in these science parks including start-ups. And it's because science and technology parks provide relatively cheap residential premises and other services that businesses can use to reduce the cost of running the business.

Right now there are around 41 certified science parks as mentioned in (Čížek, 2013). The goal of all these institutions is not the only - to give space and opportunity for new start-up companies to realize the idea of building a strong and functioning company, but in a broader perspective these centres provide the ability to link emerging companies with innovative ideas to already well-established and experienced companies, and the academic and scientific community. This approach should prepare ideal future prospects for scientific and economic growth. For example the objective of the Technology Incubator VUT is to help create a new company with more than a billion-dollar turnover by 2020 (JIC, 2009).

It must be mentioned that most start-ups are small organizations. These are often enterprises 1-10 employees and it is not common for start-up enterprise to have more than 50 employees during the first three years since the establishment.

To achieve its primary target – to support innovative start-up companies the business incubators are using several strategies (TIC-ČKD, 2012; Inovacentrum, 2013; TCHK, 2011). Leading among them is the provision of space and services to start business on favourable terms. The facilities are offered at a significant discount, the discount usually decreases over time. Furthermore, the start-up company has got shared spaces available, such as meeting rooms, kitchen, reception, toilets etc. Sharing and thereby reducing costs is another noteworthy feature of incubators. Apart from shared spaces is full range of other services. Among them the most important is the legal and administrative services, tax and accounting consulting, security, grant consulting, patent counselling, intellectual property protection, marketing, IT support and other commonly used services such as internet or phone connection.

Some centres also offer assistance with developing an idea or business plan and advice in areas of creation, management and financing of start-up enterprise. The important part is also the emphasis on self-improvement, leadership of the company in the form of self-education, training, mentoring, and consultation with experts. Emphasis is also placed on developing business contacts in a broad scope that means contacts in the area of potential employees, contractors, clients and financial partners. Another advantage is the possibility of cooperation with leading experts from local universities, but also with students (the possibility of elaboration of diploma theses in cooperation of the student and the firm).

The main advantage of all these centres is, however, a synergic effect of all mentioned services. The concentration of start-ups at one point, sharing ideas, getting contacts, potential link with scientific projects, making it easier to obtain the necessary funds and large economies of scale facilitated by sharing the most important space and services, these are the main preconditions which make the start of the company easier and successful (Veber, et. al., 2012).

2.3. Hypothesis and research objectives

As in the Czech Republic cloud computing is being used by low percentage of companies as referred in research by (Veber, 2013), approximately by 12% of them (year 2012-2013). The authors of this article expected higher demand for these services

between start-ups. Reasons for their anticipation are mentioned above and so they carried out research that should confirm this hypothesis.

As we mentioned above our objective is to find whether start-ups in Czech Republic are using cloud services, however we'd like to find how many of them (percentage) are using cloud services and what is the main purpose for using cloud services by Czech start-ups.

3. Research process

3.1. Research methodology

To reach our goal we used two strategies. First of them was interviews in randomly selected science and technology parks in the territory of the Czech Republic with start-up leaders. Second strategy was supposed to work with all other potential respondents who did not want to or have not time for interview and that was a survey questionnaire.

Potential respondents in our research were all entrepreneurs based in the scientific and technological park, focusing primarily on those that established company less than 3 years ago.

Not all addressed companies actually took part in the research – the success rate was approximately 30% and some of the companies polled were willing to participate on survey only.

3.2. Research progress

The research took part in mentioned science and technology centers:

1. Science and Technology Park Mstětice[1];
2. Business incubator Nymburk[2];
3. Science-technological Park Ostrava[3];
4. Inovacentrum CVUT (Prague)[4];
5. Technological innovation center CKD Prague[5];
6. Technological Centre of Hradec Králové[6];
7. South Moravian Innovation Centre[7].

Science and Technology Park in Mstětice is for the most part set up and managed by the "Automation of the railways" (AŽD Praha s.r.o.) company, but there are also small businesses including start-ups. Most business owners in this scientific and technological park are using traditional outsourcing of IT services, which is provided by one of the companies operating in the park. This company also participated in a managed conversation, and although they currently provide their services on dedicated infrastructure, they plan to deploy the cloud in the following year. So they will provide their services on the virtual cloud-based infrastructure by one of the IaaS services suppliers (provider from Czech Republic is expected).

Science and Technology Park in Nymburk was built and is operated by the town of Nymburk. This park is occupied by several different businesses and its developmental part occupies also the nearby firm Magna. We succeeded to get two respondents for managed interviews in this park: the entrepreneur, who sells cars and company for automation and robotized production. The first subject is start-up, but communicates with customers by e-mail only (cloud based e-mail services). Second subject was already on the market for longer period of time and they already have got hardware servers in the past and those they still use. So they operate their own IT.

Inovacentrum CVUT in Prague is a corporate incubator established by CVUT (University). Its main objective is to offer a place to facilitate cooperation between companies, researchers and students of the University. Three subjects from this incubator took part in managed talks. All of them were the companies operating in the IT sector. Within the incubator customers also received cloud-based infrastructure from O2. However, only one of the surveyed companies is taking advantage of this solution. This company is focused on developing information systems, database administration and ICT outsourcing, uses beside this cloud-based solution (O2) also their own servers. The other two companies are engaged in the provision of IT infrastructure and its optimization. Both offer their own cloud-based solutions and provide them to other subjects.

Technological innovation center CKD Prague is a facility created to support companies that are in the early stages of development. The main objective of this centre is to support business and economic environment in the Prague region. This centre offers rental of offices and laboratory space at competitive prices and also the possibility of sharing administrative services. The result is lower costs of services and assistance in the initial problems. Several start-up companies from this incubator took part in the survey (none took part in managed talks).

[1] http://www.vtpm.eu/
[2] http://www.inkubator-nymburk.eu/
[3] http://vtpo.cz/en/
[4] http://www.inovacentrum.cvut.cz/main/en
[5] http://www.tic-ckd.cz/
[6] http://www.tchk.cz/
[7] http://www.jic.cz/home

The goal of Technological Centre of Hradec Králové is to get novice companies over the first years of their existence. The centre offers a rental of offices, premises for light production including the basic equipment and services to the companies with an innovative potential. Clients can utilize consultations on starting new companies, creation of business plans or development plans. The experts from centre help with the implementation of research and development results into practice. One participant of our questionnaire was from this centre (none took part in managed talks).

South Moravian Innovation Centre is an agency that creates a favourable environment for innovative business in the region of South Moravia. This centre helps early-stage businesses grow, create jobs and compete on the market. The main aim is to support collaboration between industry, R&D institutions and public administration bodies. Companies from this centre participated in our research.

3.3. Managed Talks Evaluation

Most 80% of the companies in science technology parks who were willing to participate on managed talks did use or even provided cloud services. One reason for this finding is that all companies in start-ups are used to service provision as the science parks themselves are about service provision. So using other (outsourced) services including cloud is pretty common for start-ups.

However some of the companies were willing to speak with us only because they are IT related and our research is also IT related. So it might also mean publicity for them that is also necessary for them.

3.4. Questionnaire survey evaluation

Some participating companies (15 of them) were participating on questionnaire survey[8]. These were mostly small organizations consisting of 2 employees but also some companies with more than 10 employees. There were 15 respondents who participated on our online survey.

First question: „How many respondents do/did use the cloud?“

Might be divided depending on what we consider being cloud. In our first case (Figure 1) we count any kind of cloud so it's social networks, online e-mails; online accounting; cloud servers; network file sharing; online office services.

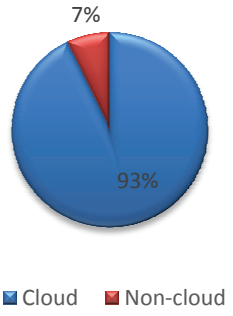

Figure 1 Number of respondents who stated using cloud

What cloud services do participants use? What is the main purpose of using cloud services?

The following graph (Figure 2.) shows results of the questionnaire, respondents do often use cloud services not only for one service but mostly for a lot of other for different services. Through, cloud is an integral part of IT for most of these companies.

Graph shows the percentage of cloud-based technologies in comparison with classic desktop applications or dedicated servers (depending on the type of area--in the chart legend to be marked as the classic solutions) for the most important activities of the companies. The "rest" option refers to the answers, which could not be unambiguously decided whether it is a cloud-based technology.

Figure 2 Comparison of usage of cloud and the classic technologies for start-ups

The chart shows that cloud is most frequently used in the area of e-mail services (more than 2/3 of questioned companies) services are provided by the large companies like Google.com, Seznam.cz ... There is also cloud-based technology used widely in the case of the data exchange – we may mention for example widely used Dropbox service.

[8] Online questionnaire can be seen at: https://docs.google.com/spreadsheet/viewform?pli=1&formkey=dDl4cFlCblY4eU5FOW13Y0NCakhpd2c6MQ#gid=0

On the other hand, office services are often used as software license solution. This is quite surprising if we take into account the cost of the classic desktop applications and the need for additional IT solution to provide sharing important and highly fluctuated documents.

Social networks were used also by more than 2/3 of the respondents; the highest representation got social networks Facebook (57%) and Twitter (57%) and Linked-In (57%), the social networking site from Google got 43% and one company mentioned another social network on GitHub (GitHub, Inc. 2014).

3.5. Research results interpretation

We were able to get about 10 companies for managed talks and 15 for questionnaire survey its total of 25 companies, however there is not so many start-ups in Czech Republic - server lupa.cz (Internet Info, s.r.o. 2014) records around 380 start-up companies. We are expecting that there is around 500 of them in Czech Republic thus 25 is around 5% of them.

It is important to mention that a lot of start-ups are software or precisely IT companies. Those companies are all well IT educated and thus they decided to join our survey. There is probably at least same number of non-IT companies also between startups however those did not want to join IT related survey. So we have learned an important lesson: The companies that do not operate in the IT sector are not willing to participate on the questionnaire, which deals with the use of cloud-based technology.

The addressed companies decided for involvement into science and technology centers for various reasons. The most common reason for this decision was favorable conditions for rental of office space and representative. Another common reason was the option to use shared services offered by the incubator – above all, legal advice, use of IT services and professional support option of a mentor. The last widely mentioned reason was getting contacts and the possibilities of reaching out to investors during company progress.

The survey reveals that cloud-based technology is quite often used by today's start-ups. Utilization rate differs with usage areas, of course. The most widely used are cloud-based technology solutions in email communications and the data exchange; by contrast, there is low use of this approach for office software. Generally speaking, however, there is predominance of the use of cloud technology over traditional competitors. With ever-sprawling Internet access possibilities and thanks to mobile devices and easy establishment of cloud-based service, it is very likely that the usage of cloud will further increase in the coming years.

Besides the established usage of the cloud services the survey revealed one more important fact, which is a lack of knowledge of cloud computing offers in organizations operating outside IT sector. These companies are dependent on their suppliers and their decision about how the services are provided.

4. Discussion and future research

Research was focused on the start-up companies that are minor to the total number of registered companies in our country. The authors addressed these companies due to the existence of science and technology parks. Unfortunately, not all start-ups make use of science and technology parks; moreover not all companies were willing to take part in this research.

Some startup companies may not have a general awareness of what is cloud computing and therefore did not want to participate in the research. By contrast companies operating in the field of information technology took part willingly. This ultimately leads to a distortion; because these companies know what the cloud computing is (through they use already it).

It would therefore be appropriate to do further examination of results obtained on companies outside the IT sector, however as mentioned above it would be no so easy to persuade them to participate in the research. We are planning to use also other sources to reach more startups and also we want to observe the development of cloud usage in later years.

5. Conclusion

This article offers insight into the use of cloud-based technologies by start-ups. The results of the research show that the cloud is often used by start-ups especially in regards to the most widely used services, such as e-mail or social networks. In other areas, the technology is only getting into the awareness of the general public. However, there is still room for further cost reductions on the basis of cloud usage in suitable areas (e.g. data exchange, office software). Many of new entrepreneurs do not know exactly what cloud can offer to them and they don't have notion about opportunities offered by cloud.

Mentor and professional support in incubators might introduce the new IT possibilities to start-ups in order to improve their competitiveness. However, we found that some start-ups are not aware about IT outsourcing possibilities. Of course companies operating in the IT industry have very good view about the cloud possibilities and they use these technologies very often for their own business, and also for the promotion of the business of its clients.

The company, which performs the outsourcing of IT services within the incubator, may effectively manage not only labor, but also resources, thanks to the use of cloud computing. For customers this means affordable prices and less concern about the operation of their emerging businesses.

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