

Change Management in Information System Development and Implementation Projects

Article Info:

Management Information Systems,
Vol. 5 (2010), No. 2,
pp. 023-028

Received 13 May 2010
Accepted 22 September 2010

UDC 005.51:004 ; 005.332.3

Summary

As demonstrated by numerous research studies, a major number of information system development and implementation projects tend to end in failure. As an inevitable factor of contemporary business operations, changes make a strong impact on the success of a project. As changes are inevitable, it is essential to identify them in advance, if possible, and manage them in an appropriate manner. Change management is a vital component of information system development and implementation projects, and, in addition to risk management and appropriate methodologies, increases the chances for success of a project.

Key words

change management, implementation, information systems, organisational changes

Introduction

Information system development and implementation projects often tend to end in failure. According to research conducted by Standish Group, as many as 40% of information system development and implementation projects fail to complete. Standish Group classifies the success in the realisation of information system development and implementation projects into three types:

- successful projects;
- failed projects;
- projects exceeding the set deadlines and budget frameworks.

As seen in Figure 1, the majority of projects end in failure. In addition to successful and failed projects, a “successful” completion of project which, however, exceeds set deadlines and budget frameworks is a frequent occurrence. Many projects fail, or are considered as failed in a particular aspect, but the issue is to what extent failure can be tolerated for the project to be still regarded as successful. Figure 1 (Martineau & Shumway, 2009) illustrates that the majority of projects belong to the category of failures. Looking at 2009 data, one can see that as many as 44% information system development and implementation projects ended in failure. This amounts to almost half of all the projects included in the research. On the other hand, the proportion of successful projects amounts to 24%, equalling approximately one-quarter. The remaining

“challenged” projects account for 32%. If we view this part of the chart from the positive side, we can say that 56% of projects are successful. It is a positive fact that the percentage of successful projects is increasing, which may be the result of the increasingly serious management of information system development and implementation projects, taking into consideration change and risk management.

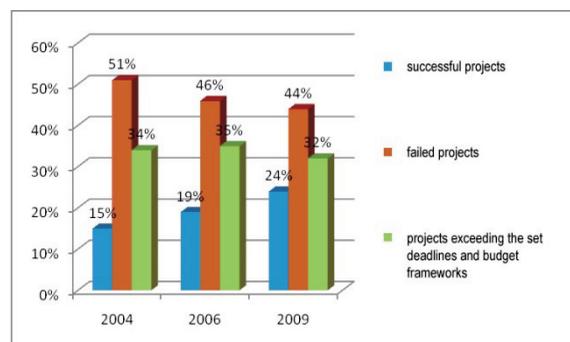


Figure 1 Success rates of information system development projects (Martineau & Shumway, 2009)

As a complex process, managing information system development and implementation projects deserves a very high degree of attention. Project management in general, and especially IT-related project management, is virtually impossible without taking change into consideration. The process of change is a commonplace of contemporary business, and progress is inconceivable without change, because, as Rita Mae Brown would say, “[an excellent] definition of insanity is continuing to

do the same thing over and over again, and expecting different results’.

Changes, therefore, are inevitable, and should by no means be neglected in information system development and implementation projects. The next section of this article will deal in more detail with changes and possible ways of their successful implementation.

1. Change management

As changes are difficult to predict, and tend to occur with growing frequency, change management is becoming an increasingly significant subject. Regardless of how a new information system is designed and how its implementation is planned, human potential represents a factor that should play the key role in dealing with changes.

Documented and functional change management is a decisive factor of project success, as changes are inevitable, especially in a complex, formative and evolving information system development project. James Taylor (2004) identifies two categories, i.e. types of changes:

1. The first type refers to changes initiated by the client's need evaluation. These changes occur primarily because the requirements were not clear at the very beginning of the project, due to change of technology, or the change in needs caused by certain market requirements.

2. The second type refers to changes caused by the information system development and implementation project itself. These changes are often referred to as developmental changes.

As developmental changes are mostly known in advance, it is necessary to find a way to monitor, i.e. control the change implementation itself. Lesley Partridge (2007) includes the following into the process of managing, i.e. controlling change implementation (Figure 2):

- setting and managing objectives so that they are linked to the vision and purpose of change;
- planning the details and required resources;
- implementing the plan, with continuous monitoring;
- possible adjustments of the plan or modification of actions based on information acquired by supervising change implementation, in order to ensure achievement of objectives or continue on the road towards them.

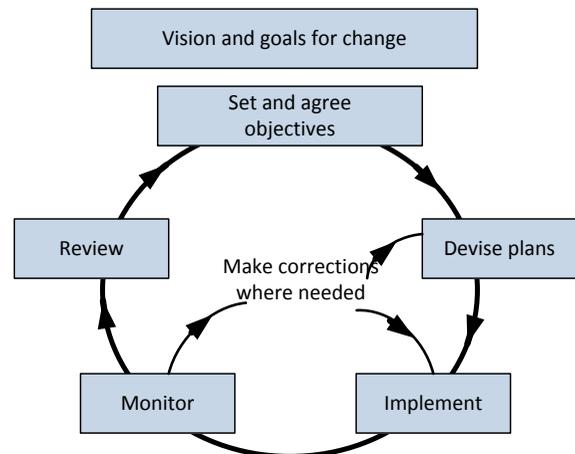


Figure 2 Monitoring change implementation (Partridge, 2007)

2. Organisational changes

Organisational changes condition the need for building a new information system. Cadle and Yates (2008) state four reasons for an organisation to invest in information system development:

1. Business survival – in this context, time is frequently the key factor of success;
2. Improving efficiency – in most cases, this means building a system that will provide high-quality information required for decision support;
3. Competitive advantage – rapid creation of prototypes and user solutions represent the strategies that are emphasised;
4. External factors – factors outside the organisation's control. It is necessary to avoid unpleasant surprises during the implementation stage, so it is necessary to devise a contingency plan.

Cadle and Yates (2008) also identify the time and scope of the changes required as very important facts in managing information system development and implementation projects. Consequently, it is necessary to analyse the number of staff involved in the change process, how radically they have to adjust their attitudes and behaviour, as well as the time period available for implementing these changes.

Table 1 shows the relationship between the length of the time period for change implementation and the type of change. A project bringing about radical changes over a brief period of time usually require changes of staff by way of employment. If the timescale is longer, and the changes are still extensive and far-reaching, it is necessary to re-engineer the business processes in order to secure the possibilities of the new system,

and sufficient time for upskilling of the existing staff. If the changes are incremental, their implementation implies providing a longer time period.

Table 1 Time and change matrix (Cadle & Yeates, 2008)

Change type	Short-term (3-9 months)	Long-term (1 year +)
Radical	Restructuring and redeployment of staff	Business process re-engineering
Incremental (gradual)	Process automation and refinement	TQM, innovation schemes

When managing changes, it is essential to pay special attention to the following:

- resistance to change
- organisational culture
- project participants, i.e. stakeholders

2.1. Resistance to change

When developing and implementing an information system project, one frequently encounters resistance of the staff to the changes, because project managers did not foresee the staff's response to the changes occurring under the influence of the new system. Daryl Conner (as cited in Cadle & Yates, 2008) classifies the staff of an organisation into two types:

- danger people (D-type) and
- opportunity people (O-type)

Project managers clearly belong in the O-type of people, because their job is actually to grasp new opportunities. On the other hand, the majority of new system users mostly belong in the D-type of people, because they see threats in these changes, and try to resist them.

Another, similar staff classification, based on their impact on project progress (Cadle & Yates, 2008), includes:

- promoters,
- opponents,
- latent opponents, and
- potential promoters.

Promoters have a positive attitude towards change in general, and implicitly, the specific changes brought about by the project. They see some personal benefits in these changes, or the possibility to use the advantages brought on by the changes. This category can be classified in the above mentioned O-type. Opponents are at the other extreme end, and they tend to have a negative attitude towards change in general, and

take a negative view of the changes in the project. These two types of staff do not represent a problem; problems, however, may be caused by latent opponents and potential promoters. The latent opponents are the staff that may cause the greatest problems within a project. This group of people supports the changes, but only „on the surface“, whereas potential promoters support change in general, but they need to be additionally convinced about the benefits of the changes brought about by the given project. Latent opponents tend to exercise passive resistance to change, for instance, they may agree to certain system functionalities, and then claim that the system is not doing what they want it to.

Cadle and Yeates represent the changes over the project life cycle with the curve shown in Figure 3. The curve shown in the figure demonstrates early enthusiasm for the changes, which gradually declines as problems emerge, followed by 'gathering new strength' for facing the changes. Initially, the staff deny the new project because they feel challenged, and are consequently very sensitive regarding the development and implementation of the new project. At this stage, they are still convinced that they can apply the existing skills and knowledge to the new situation. Subsequently, as they learn more information about the project, they notice that the changes are greater than they expected, and begin to resist. As time passes, the staff diminish their resistance and increasingly want to solve the problems caused by the changes. Gradually, users cope with the challenges through discussions with colleagues and designers, or searching for errors within the designed system.

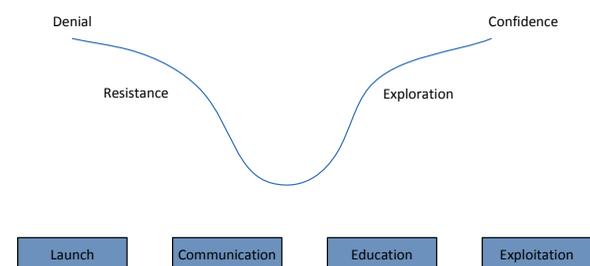


Figure 3 The stages of change (Cadle & Yeates, 2008)

2.2. Organisational culture

When planning change management in an information system development and implementation project, due consideration should be devoted to the culture of the organisation where the system is introduced. If the type of

organisational culture is established properly, it is much easier to develop tactics for overcoming resistance to change. Charles Handy classifies organisations in terms of centralisation and formality levels in business operations, into:

- **Power cultures.** Organisations managed personally by owners often belong in this type, although larger organisations may also develop this type of corporate culture. In these organisations, the key issue is to gain explicit support of top managers, otherwise the staff will not co-operate. At this point, one should not ignore the fact that, regardless of all the formal paths through which the system is designed, nothing will be done unless it is approved by the top management.
- **Task cultures.** In an organisation with task-based culture, tasks are delegated to the lowest level, but the formal frameworks for reporting and decision-making have not been abolished. These organisations use task-based groups or teams in their operation. These organisations are said to have the most suitable culture for information system development and implementation projects, because disciplines such as planning, supervision and team-based responsibility are already incorporated in the organisational culture.
- **Bureaucratic, i.e. role cultures.** The culture of these organisations is formal and centralised. All staff members have their roles, job descriptions and formal relations with other associated roles. In addition to formal relationships, one should not disregard the informal relationships among the staff either. If the project manager identifies informal relationships and uses some key contacts, he/she can obtain information and opinions much faster than through formal channels.
- **Individualistic, i.e. person cultures.** An organisation with individualistic culture is informal and decentralised. These organisations are points of challenge in building information systems. Formal mechanisms, such as presentation, specification of project plans etc. are very scarce.

It is, therefore, essential to determine the type of culture in which the organisation where the information system is implemented belongs. Based on this, it is much easier to predict customer behaviour, and the staff's possible reactions to change.

2.3. Project participants, i.e. stakeholders

Participants in a project are of key importance for the success of change management in information system development and implementation projects. The role of individuals in the project is, therefore, highly significant. It is essential for all project participants what the scope of their task includes and what they should do. Otherwise, they will try to do everything they consider to be appropriate, but will probably not complete their tasks. Project participants include (Baca, 2005):

- project managers
 - project sponsors
 - team members
 - change control board
- **Project managers**
Project managers are responsible for successful execution of the development and implementation of the project itself. They should supervise the complete project execution, and assist project participants. Project managers should identify the agents of change in an organisation, and to secure their involvement in the project. Project managers have a large volume of tasks, and are therefore forced to develop a plan of activities.
 - **Project sponsors**
Project sponsors finance the execution of the project and must be certain that the project corresponds to the vision that they are trying to accomplish. They must also be certain that building a new information system will help accomplish the set organisational strategic objectives. Sponsors very often supervise the progress of the project, to make sure that it is realised in time and within the agreed budget.
 - **Team members**
Team members are very important project participants. It is essential for the project manager to clearly present the tasks and objectives set before a particular team. It is, of course, important for the team members to understand what their specific tasks are.
 - **Change control board**
A change control board must be constituted in cases when the project is strategically critical, the scope of the project exceeds a few departments, etc. Basically, this board's role is to make strategic decision in terms of whether the project team should adopt certain changes or not. The change control board should include managers whose operation is influenced by the impact of the project.

Cadle and Yeates (2008) state that people involved in a project should be classified according to the competence/commitment matrix (Figure 4). People are classified in accordance with their competences (ability to create changes, implement them and cope with the process of change), and their commitment (belief in the need for change and their demonstration of this belief). People with high competence and low commitment can play a significant role in the change management process, but for some reason they are not willing to do it, or feel insecure about the changes. This situation needs to be examined and causes of low commitment have to be removed. The upper right-hand cell of the matrix includes people who are able, willing and confident. They are often leaders of change and can make a positive impact on project development. The worst combination is if people are unwilling and unable to face the changes. This group has to be removed from the project. People placed in the lower right-hand cell are keen and motivated, but lack competence to lead or implement changes. These people need to be trained, and provided with adequate support and supervision.

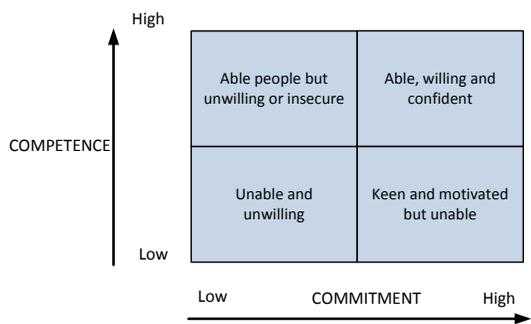


Fig. 4 Change competence/commitment matrix (Cadle & Yeates, 2008)

Conclusion

In information system development and implementation projects, it is vital to take change into consideration. In addition to change, it is essential to try and foresee the response of staff and team members to change, and try to manage it. In order to facilitate predicting the staff's response to change, it is very important to determine initially the type of organisation where the system is implemented. Staff in organisations with different cultures and organisation schemes may respond to change in completely different ways. Therefore, change management, together with risk management and different information system

development and implementation methodologies, can play a very significant role in successful project realisation. Of course, when managing change, it is not necessary to resort to extremes such as total resistance to change, or adoption of all proposed changes. Changes are necessary and must be managed if the objective is devising an information system that will meet the functional, time and budget frameworks set at the beginning.

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