Information Technology Infrastructure Management –
Understanding Human Element

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Abstract: - Information technology management challenges managers to create a robust platform for other systems in the organization. However, it is not only about robustness, the infrastructure also needs to adapt to changes in operations. It is also important, that technological platform can be managed with costs that fit the overall budget. Understanding resources that are needed and activities in information technology management are needed. Here we underline the importance of human element in technology.

Key-Words: - Information technology, infrastructure, human, management, development

1 Introduction
Infrastructure is used in information systems to refer to the basic systems that are shared amongst users of information systems. Infrastructure includes a wide range of technologies, computers and components together with applications and systems. Organization-wide email-systems can be seen as examples of infrastructure – they are common for all departments, users and provide communication services for a range of purposes. Infrastructure is expected to provide access to data at any time, with a variety of terminal devices [1]. It is also increasingly common that systems can be used independently of location, from a portable computer, tablet or smartphone.

In this article we look at information technology infrastructure management. Information technology is usually managed by organisation’s IT department. Other stakeholders in information technology management are users and management. It is also noteworthy that the role of external partners like application developers, providers of key technologies and systems can be significant in information technology management.

2 About Infrastructure Management
There are several dimensions which are considered important in information technology infrastructure. The most important issues are [2],[3]:

Flexibility refers to the possibility to make changes in technologies and systems. Flexibility makes it possible to adapt to changing requirements.

Modularity is manifested in ability to make changes in hardware and software components so that changes to one module are possible without the need to modify other parts of the system (Byrd - Turner 2000). Modularity makes it possible to make changes to changing business needs rapidly.

Integration which is about the compatibility of hardware components and applications. [3] Integration is result of connectivity and compatibility, it refers to the ability to access information across different platforms. [2]

Infrastructure should be a reliable basis for operations, but it should also be flexible, modular and tightly integrated. As a result, flexibility, modularity and could be considered as an organizational core competency [4], and cornerstones in information technology infrastructure management. From the business perspective they are critical, they allow organization to respond to new conditions rapidly. [5]

Let us look at organizational flexibility in more detail. From the business perspective flexibility is important for organizations in turbulent environments, possibility to make changes is a key element for survival. It is here important to understand that flexibility is not only a technical issue, there are also human dimensions.
Byrd - Turner [3] argue that skills and knowledge in technology management, in information technology itself, and overall business management, are required. Clearly, people in the IT department should have technical knowledge [6], but IT management demands also management skills and understanding of business requirements.

3 Human component

Information technology is more than state-of-the-art devices and components. Especially when it comes to evaluating the value and benefits of technology it is often noticed that technology alone does not guarantee good results. In fact, the importance of human component in information technology infrastructure is critical. Accordingly, the human component is a critical part of infrastructure. Human component refers to management of technology development, expertise in the IT department and skills of end-users [4], [3]. Here we emphasize:

- Attitudes
- Organizational fit
- Management support and
- IT department

Attitudes are here understood as the commitment and motivation of the people involved in development and use of information technology, especially the development group members and the attitudes of the management. Furthermore, user motivation has an important role in adoption of IT skills. Attitudes are among the most important success factor in infrastructure development and management [7].

Organizational fit refers to the way how technology adapts to the organizational structures of each company. Information technology should support and fit the organization and the way it works.[8],[9] Generally, ability to adopt technology is based on existing resources in the organization.[10] These resources can be technical or human. Technical resources include hardware and software that together form the installed technological basic infrastructure. Human resources refer to the skills and knowledge in using technology and systems for business purposes; and here also working practices and the way processes are organized are important.

Information technology has the potential to make changes in organizational processes, some of the changes are goals in the development and desirable, but some may be not known before. [11] Understanding technologies, their limitations and looking at other similar cases can decrease the possibility of unwanted results.[12],[13]

Organizational support and especially managers have a significant impact on utilization of information technology.[14],[15] Management support is important in the development of processes and implementation of new technologies. Managers make decisions, for example, on what should be developed and when. Managers have a relatively direct control on development activities, they assign people, time and provide funding for projects. Development activities change existing systems, process and habits. Here manager’s role is important because this is the time when management, coordination, conflict resolution among individuals and the organizational units is needed the most.[16]

Acceptance of technological changes is a process that involves two stages,[17] Firstly, management should inform about the change, why it is needed and what are the goals. Secondly, there is a need for breaking existing norms, encouragement and motivation are important. Here managers have a critical role, their encouragement impacts the adoption of technology.[18] Users need examples in order to make their own decisions on how to adopt technology.

The successfullness of change management depends of experience and management skills, but requires also understanding the role of information technology and potential that it provides in the development process.[19] Management and organizational support extends beyond projects. It can take a variety of forms, such as training, encouragement to use technology and experiment with it. [15]

IT department has a key role in development and maintenance of information technology infrastructure.[20],[15],[21] It is expected that IT department understands and develop information systems so that they support organizations’ operations in the best possible way. IT department provides user support and advice, and solves problems [15]. Unsurprisingly, expertise of IT staff has been found to have a direct impact on IT utilization [15]. Another important source of support is colleagues that are close to each user [22].

Motivated and qualified IT staff is not the only factor affecting IT usage in organizations. Communicative skills are also important, and have influence on users’ satisfaction.[23] It is not only about technical expertise of IT staff, the ability to understand the problems that users have, together with communication capabilities, all have a positive impact on IT utilization in the organization. The relationship between IT support arrangements and IT utilization is not straightforward [24]. Extensive
IT support does not automatically maximize IT deployment, and missing or non-organized IT support doesn’t mean that investments in information systems would not add business value.

4 Conclusion
The role of information systems in organizations is in most processes critical. Therefore, information technology and systems should be a robust reliable foundation for business operations [4]. For example, the reliability of the basic networking infrastructure in organizations is seen as a critical issue [25]. There are also other important that need to be taken into account. Firstly, information technology infrastructure should meet user needs. Secondly, management is in a key role as strategies, goals and resources impact directly decisions in infrastructure development.

The importance of information technology is affected by the nature of industry and nature of operations. It is also typical that organizations have different requirements for processing of data and information. [4],[26]

References:


