Development of Information Technologies in Slovak Small and Medium Enterprises From the Point of View of a Learning Organization

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Abstract
This article deals with information technologies from the knowledge management perspective. A partial objective of the research within the project VEGA 1/0638/08 was to find out how much of the knowledge of information technology is used by managers, and thus the overall readiness of small and medium enterprises in the creation of a learning organization. In the current, constantly changing environment, it is essential to elaborate on the need for the development of information technologies in an organization.

Key words: Learning organization, knowledge, technologies, knowledge management

1. INTRODUCTION
Present time can be characterized by rapidly changing conditions of the environment that surrounds us. If we want to be successful, we need to quickly respond and adapt to these changes. Information technologies are one of the most important indicators of a country’s economic development, as well as the overall social development. Slovakia has taken the 34th place in the last year’s evaluation of competitiveness, which was prepared and administered by analysts of the Economist Intelligente Unit Organization. The competitiveness of the Slovak IT market is at an average level, considering the countries of the Central and Eastern Europe. Compared to the previous year Slovakia has dropped down two points (32 to 34), while having been overtaken by Baltic republics of Latvia and Lithuania.

With regard to the transition to knowledge economy, it is inevitable to place emphasis on acquiring, processing and sharing the knowledge in an organization among the employees, between the employees and management at all levels of company management, as well as between the organization and its customers. This process is very much helped by new and constantly developing technologies, used by managers in all types of small and medium enterprises. Technologies used in companies play an important role in the company’s transformation into a learning organization. The market with applications and technologies used in organizations is well-developed, and therefore managers need to carefully consider the steps to be taken within the process of choosing the right technologies. At the same time it is important to remember that without people technologies would not be so efficient and could not form a basis to a learning organization. Not even greatest emphasis put on information technologies in a company guarantees a successful creation of a learning organization. It is not right to place such high importance to only one of the four (organization, employees, knowledge, technologies) subsystems of a learning organization. Within the process of developing a learning organization none of the mentioned pillars can be neglected. Employees, knowledge, technologies and the organization must be equally important to us. In this article we present partial results of the research in which we tried to find out the level of knowledge
in information technologies of managers of Slovak companies and how well prepared they are for the process of building a learning organization from the mentioned point of view. We also identified the advantages of using technologies in an organization, as well as the biggest disadvantages. As a result we will suggest how the level of information technologies in a chosen group of small and medium enterprises can be improved in its way towards the learning organization.

Education is of no less importance, while it is being conditioned by the social and economic development of a society. Therefore knowledge management and learning organization are so significant in these days. The first step to company’s success is the implementation of measures leading to integration of knowledge management and the reorganization of company’s activities concerning knowledge and information. As an example we can mention a very frequently occurring situation when we know it is not worth to increase productivity of work on a certain product if we do not have the information that this product is what the customer really wants. It is also inevitable for an organization to perceive knowledge as a source and use it to create values in the company. At the same time it should focus its attention on innovation processes in the company, as well as on creating new knowledge.

After researching various sources on the topic, we have come to a conclusion that one of the most important driving forces of economy development is the knowledge, as well as the ability to create capital. Only education, collecting and sharing knowledge and experience help us acquire the ability to create capital and help in further company development, which creates a competitive advantage in the market.

The need of knowledge management results from more complex working processes, narrow employee specialization, size of companies which dominate the market, as well as a constantly growing number of information which an individual must receive and process to be able to make decisions on a daily basis.

2. BUILDING A LEARNING ORGANIZATION

In an article by Olivier Serrat named “Building a learning organization” (Serrat, 2009) we have found an idea through which the author highlights the fact that for organizations which want to become successful it is essential to be able to learn fast and learn right. Learning organization, according to the author, is composed of four main subsystems, as it is shown in Figure 1.
These are: organization, employees, knowledge and technologies. Each of these pillars somehow influences the whole system and thus contributes to building of a learning organization.

Technologies
The object of the research is the knowledge of managers in the area of information technologies. We focus on information and technology of a company and how the managers of small and medium enterprises in Slovakia are able to master it.

According to Kelemen et al. (2007), already back in 1970s information technology experienced a great boom in development. It reached such high level that it enabled people consider the option of keeping knowledge in computer memories and finding out effective methods how to use computers in problem solving. The emphasis was put on search for such organization of computer memories that they would be adjusted to representing the knowledge.

Tiruneh (Kelemen et al., 2007) states that information technologies are considered to be the main source for economy transformation and they have played an important role in gradual growth of economy. The world economy is getting more and more dependent on effective use of information and communication technologies. Current research in information technologies is considered to be the third most important phase of development of human civilization.

According to Bajgoric (2008) one of the most important steps in building a learning organization is definitely linking of the existing practices of organization management with the existing information system. Nowadays it is impossible to speak about the information and the management systems separately. It must be taken into account that the processes happening within the organization also run through the information system. Bajgoric (2008) says: “The term Information Technology is being slowly replaced by a new term Business Technology, as the information technology opportunities meet with the opportunities of an organization within the market. Also the risks and threats of the information technologies are at the same time the risks and threats of an organization.” (p. 23). This idea enables us to quickly and easily understand the meaning of information systems, technologies and their applications for company’s success.

As we know, each organization is actively working with knowledge. The difference is between the types of knowledge and different ways of use, as well as the area, type and form of information technology use, which depend on various factors. It is mainly the size of organization (according to the number of employees) and the industry which dominates in the company’s business. We cannot forget the criterion of localization, which in our case means the region in which the company is located.

Information technologies used in knowledge management are oriented on sending information via emails but also on tools which support cooperation and communication. It can be communication between employees themselves, employees and the management of the organization, communication between the employee and the customer or, generally, communication among public or communication between the organization and the public. Bureš and Hájek (Kelemen, 2008) emphasize the fact that it is expected from the fully and competently used information technologies that they will contribute to searching and adopting new sales methods and new, effective, ways of entering foreign markets.
The authors also state that the use of information technologies represents opportunities for acquiring knowledge as a source for competitiveness. However, there exist differences between industries, organizations and individuals in how they use these opportunities and how they process and use the information.

The extent to which managers of small and medium enterprises in Slovakia use information technologies varies. This fact was a springboard for our research.

According to O’Leary (Bureš, 2007) there is a number of examples when information technologies should be used in business. He gives several examples:

- conversion of individual knowledge to generally accessible knowledge – acquiring knowledge from individual employees, their sharing and presentation in such way that they enable further examination and repeated use,
- conversion of data to knowledge – it is an explorative way of obtaining knowledge and data using different statistical methods and tools,
- conversion of text information to knowledge – mainly intelligent tools based on full-text technologies,
- creating link between people and knowledge – what is important here is mainly technologies which help those who are interested in acquiring knowledge access to such knowledge they want or need,
- link between different types of knowledge – it focuses on automatic evaluation of content of individual pieces of knowledge and creates link between different groups of knowledge,
- link between people – it is based on the fact that man is one of the main “carriers” of knowledge, in most cases it is a specialist oriented to a specific area of knowledge and therefore having a link between the individual specialists is essential, as they can share and create the knowledge,
- link between knowledge and specific people – this mainly concerns the use of push technologies to enable access to knowledge to people who do not have it, need it or might need it in the future.

In small and medium enterprises different information technologies are used, depending on the specific purpose of use. It can be, for example, processing the economic information, such as wages and salaries, in-store management or accounting. It can also be electronic mail, electronic trade, management of the store, department or production and issuing various types of documents.

Forms of technology use are also different. Among the main trends in development of management information systems belongs using the computer networks. Internet is the first, very important, technology. To have the company’s own website is considered natural nowadays. It can be used differently and for many purposes. Intranet is another important computer network. It creates a good environment for information sharing. The information thus becomes more dynamic and mutually linked. An online source www.adaptic.cz (2010) provides a very brief characteristics pointing out several advantages of the intranet. Having intranet in a company may help to make company’s internal processes more effective, mainly if it concerns mutual communication, delegation of work, planning, organization of projects, and sharing
and filing documents. Their most important use is in eliminating excessive administrative work through creating an electronic substitute within the company’s processes. As an example we can mention technology of biometric electronic signature eSign and its application in creating secure documents. This innovative technology helps to make the process of document administration more effective and at the same time it minimalizes the risk of documents being subject to a malicious attack. At the present time there are some organizations which are using the push technology which is based on the internet communication. This technology “sever push” means that the server responds very flexibly and sends the websites of latest updates to all customers. The link between the customers and the server remains opened. This technology enables the server to send several sites as a reply to one single request or inquiry. Other important technologies which are commonly used in business practice are the systems of electronic learning, data and text digging, systems of text analysis and locating experts, so called TAEL systems, conference calls, groupware and workflow systems, help-desk applications, brainstorming applications, data storing and tools for data digging.

According to Tiruneh (Kelemen, 2008) the expansion of information technologies also stimulates the expansion of other sectors, e.g. services, and thus contributes to dynamizing of the whole economy. Another positive characteristics of raising the standard of knowledge use in the area of information technologies is the fact that the transaction costs of an organization in acquiring, processing and using the information about the markets, suppliers and buyers are substantially lower, which creates a very effective management and organizational environment. At the same time the author suggests that higher standard of company’s information technologies leads to rising competitiveness of organizations in the domestic, as well as international, markets.

Our article does not deal with the specific technologies and their applications. We are presenting a view of technologies which the managers of small and medium enterprises are using and comparing the frequency of their use, as well as the importance and preference of individual technologies by managers; and the reasons for their choices.

3. METHODOLOGY OF RESEARCH

The research was conducted in the form of questionnaires since September 2009 till December 2009 in small and medium enterprises in Slovakia within the project VEGA No. 1/0638/08 Learning Organization At the Economics Faculty, Matej Bel University In Banska Bystrica, Slovakia. We have distributed 1500 questionnaires within the whole Slovak Republic. We used electronic distribution of questionnaires by sending our respondents a link to an internet server where the on-line questionnaire was placed. The reason was to ensure high questionnaire returnability. Out of the total number of respondents we have received 1285 questionnaires of which 1192 were filled out correctly and could be used in our research. This represents 79.46% questionnaire returnability. The most important aspect in choosing the individual enterprises was their size, which we had found out from the number of their employees. Of the total number of addressed enterprises 51.43% (613) is represented by small enterprises and 48.57% are medium enterprises. Our respondents were mostly employees who have worked in the company 1 to 5 years. This was 504 respondents, which is more than 42.28%. Only 8.8% (105
respondents) have only worked in the company for less than one year. 31.8% of respondents were represented by employees who have worked in the company for more than 10 years. These numbers indicate that a large number of employees participating in our research are highly experienced; they know the company very well and have had a chance to observe the company’s development as well as the development on the information technologies used in the organization.

4. RESULTS OF THE RESEARCH

This paper presents partial findings and observations concerning the discussed problem. In our research we focused on analyzing situation in companies within two main areas. Firstly, we were interested in the official internet website of individual companies. Second area of our research was divided into several parts which analyzed the respondents’ views of information technologies’ use and the current situation in using information technologies in everyday processes. Therefore our evaluation is also divided into several parts.

In the first part of the research, concerning the internet website, we have found out that all participating companies have an official website which represents their business and is given proper attention from specialists in charge. Companies pay great attention to displaying general, administrative and statistical information on their websites. It was also found out that greater emphasis on publishing this information is put by managers of medium sized enterprises. It can be said with high probability that in medium enterprises there are more employees, which leads to delegating authorities of the management into specialist managers, while in small enterprises the situation is different. There is generally less that 49 employees working in these companies and the management is also comprised of a lower number of people whose responsibilities are larger and concern more areas. Managers of medium enterprises specialize in individual areas, have more time to follow all current changes and respond faster to them. They follow the latest development in general, as well as development of information technologies and all latest trends in this area. They also concentrate on the right choice of developed technologies which are suitable for the particular type of company. As to publishing the individual types of information, we find interesting the fact that managers of both small and medium sized enterprises do not focus on publishing statistical information (Table 1).

| Tab. 1 - Types of information displayed on the company’s website. Source: own. |
|-----------------|-----------------|-----------------|-----------------|
| Administrative information | Standard information | Statistical information |
| Response | number | % | number | % | number | % |
| Yes | 523 | 44 | 899 | 75 | 359 | 30 |
| No | 423 | 35 | 149 | 13 | 555 | 47 |
| Partial no | 246 | 21 | 144 | 12 | 278 | 23 |

As it can be deducted from table 1, this situation can be caused by the fact that statistical information is considered to be internal, i.e. something that should be only shared between the employees within an organization and the public should not have the access to. Another reason
might be that managers do not consider statistical information essential and publishing administrative and general information is viewed as more important for visitors of their website. With all three types of information it has been confirmed that it is managers of the medium sized enterprises who place greater emphasis on displaying the information on their website. The biggest difference between small and medium enterprises is in publishing administrative information, which was approved by 239 respondents of medium enterprises. As to updating the internet website, a relatively high number of 396 companies do not update their website on a regular basis, which we consider very negative in everyday decision making of both managers and company customers.

Quality of the company's website can be evaluated on basis of what options it offers. Due to variety of industries our researched companies come from, we have focused on the possibility to download messages and documents and possibility of filling out various forms online. We have found out that although many websites offer this option, there is still a number of companies whose website does not provide it. This means that some managers put emphasis on the possibility for employees and existing and potential customers to download messages and documents and fill in various forms online. This service makes the whole administration process substantially easier. In spite of the fact that most responses were positive, many respondents perceive it rather negatively, which means that some managers do not consider important to have documents available online and to enable their downloading. Probably, the fact that users will read the documents online is satisfactory enough for these managers. This is quite a negative attitude also from the point of view of students who very often download various document samples from the company's websites, which they need for their schoolwork or student papers. As to online filling-in of documents, the situation is much better. We can say that a lot of managers do care about having the option of filling in e-forms directly on the company's website. There can be different types of forms, e.g. supplier's e-catalogues with an option to choose the preferred product, accepting orders from customers, accepting payments from customers via internet banking through cooperation with banks, obtaining a feedback from customers. We have found out that it is mainly managers of SMEs in the western part of Slovakia who put great emphasis on the possibility to fill in the company's forms online. Managers in Central and Eastern Slovakia still need to improve this service. The research also showed some differences between individual industries. Most companies which use e-forms on their websites are operating in the field of health and social care and manufacturing industry. This can be caused by the fact that there is quite a large number of different forms that are used within various activities in these industries. In health and social care it is mostly applications for financial and material help, forms of medical and social insurance and other forms used in financial transactions. In the manufacturing industry it is mainly forms and orders for suppliers and buyers, product offer and other documents. This is a very important function of company's website and it makes organizing and evaluating of processes easier for managers to perform.

Another area we researched into and divided into several parts was how respondents perceive functioning of already existing information technologies in the company. Very positive is the fact that majority of companies have mechanisms to evaluate working experience with the use of available databases, and they are actively using them. Also these companies are using a wide
spectrum of mechanisms which enable knowledge and experience sharing among employees from different teams, sections and departments. It is obvious that managers really put great emphasis on using information technologies in their companies, as this helps to improve cooperation between employees within the organization as a whole, as well as between the individual company departments. This leads to improvement of corporate culture and at the same time to increase in the employee motivation. What is very important when evaluating companies is if employees communicate between one another and if they can choose a preferred way of communication. We have found out that over 50% of managers consider existence of effective communication channels between employees essential in a company as it improves the company’s performance. They also very much stress the need of information technologies which focus on improvement of company’s performance outcomes. In Table 2 we provide an overview of the respondents’ answers to two questions concerning their opinion about the positive influence of information technologies on communication in the company as well as the company performance. The research showed that the information technologies which lead to improvement of communication and company performance are being used mainly by managers of middle sized companies. We have further found out that nowadays respondents perceive information technologies as a way to improvement in knowledge and its spreading among employees.

Tab. 2 - Influence of information technologies on company performance and communication in the company according to the company size. Source: own.

<table>
<thead>
<tr>
<th>response</th>
<th>Information Technologies and improvement of company performance</th>
<th>Information Technologies and improvement of communication in the company</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>small enterprises</td>
<td>medium enterprises</td>
</tr>
<tr>
<td>I agree</td>
<td>435</td>
<td>70,96%</td>
</tr>
<tr>
<td>I don’t agree</td>
<td>57</td>
<td>9,30%</td>
</tr>
<tr>
<td>I partially disagree</td>
<td>121</td>
<td>19,74%</td>
</tr>
</tbody>
</table>

When evaluating the level of managers’ knowledge we took into consideration the form of recording of the working processes. Table 3 shows comparison of recording of the company working processes in written and electronic form.

Tab. 3 - Forms of recording the company working processes. Source: own.

<table>
<thead>
<tr>
<th>response</th>
<th>written form</th>
<th>electronic form</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>number</td>
<td>percentage</td>
</tr>
<tr>
<td>I agree</td>
<td>545</td>
<td>45,72%</td>
</tr>
<tr>
<td>I don’t agree</td>
<td>263</td>
<td>22,07%</td>
</tr>
<tr>
<td>I partially disagree</td>
<td>384</td>
<td>32,21%</td>
</tr>
</tbody>
</table>
Employees record their working processes in electronic form in 686 companies, while a relatively high number of respondents (545) stated that they also record the processes “on a paper“, i.e. in a written form. Positive is the finding that more than a half (57.55%) of respondents actively record their working processes in an electronic form, thus using the information technologies. By using the electronic form they save time, make recording of data easier, and through this they very much contribute to making the overall, as well as partial, company activities more transparent.

5. RECOMMENDATION FOR SMALL AND MEDIUM ENTERPRISES IN SLOVAKIA

The situation in use of information technologies in majority of small and medium enterprises is quite satisfying. However, we have found out several deficiencies. To be able to state that the level of managers’ knowledge is substantial, there will need to be made several changes.

After summarizing all responses, we can tell that one the biggest disadvantages is the deficiencies of the company’s website. It is essential for a company to not only make information available and update it on a regular basis, but also – and mainly – provide clear and understandable information. Managers need to focus on the simplicity of the company’s website, which should have a simple and clear design and graphics, and be substantially colorful, which helps the website visitors to distinguish between individual types of information the website provides. Information must be formulated clearly and arranged logically. Managers at all levels should pay more attention to the overall form and content by which they are trying to address the visitors of the website. Publishing statistical information on the company’s website is closely linked with the content. We didn’t try to find out the reasons why this kind of information is very unlikely to be placed on the company’s website, but we suggest two possible solutions. In case the company does not want to make the statistical information public because it concerns personal data of its employees, annual budget or other data which the company perceives as sensitive, they should consider an option of data protection. To process the information which should only be seen by the company’s employees, not the public, special information technologies could be used, but at the same time, this information should be displayed on the website. One of the suggested technologies might be the Secure Socked Layer Technology, which is used mainly to encode individual pieces of information. Each employee would be given an access code or a password, which would enable them to access the needed data or information. An example of statistical information which can be published on the company’s website is a website counter. Another possibility is using the cookies. It is a text file which enables identification of the website’s frequent visitor. This would give company an opportunity to see the frequency and the activities of its website visitors. The company might also display information about number of visits to their website, time the visitors spend browsing on it and that they are looking for.

One of the negatives appears to be a fact that companies do not enable downloading messages, news or documents. Managers should enable employees and customers to find and open documents in different browsers, but also download them if necessary. At present there are a lot of formats in which these documents can be saved, published and enabled to download.
Therefore is should not be a problem for any manager to create this opportunity for visitors of the company’s website.

As the companies’ internet websites in Central and Eastern Slovakia are lagging behind the western Slovak ones, which offer this option of document downloading, it is essential for managers to pay more interest to this problem, because it may also be one of the problems why companies in Western Slovakia are more successful. The electronic forms enable companies fill in, send out, accept and sell various kinds of documents. It can be. e.g. the tax return form, health or social insurance form, supplier’s e-catalogues, electronic orders, and many more.

The level on knowledge of information technologies of SMEs’ managers in Slovakia is quite high. The responses to our questions revealed that information technologies are frequently used in business practice and latest news in this area are regularly monitored. These steps that managers are making significantly contribute to a substantial progress of companies toward the concept of a learning organization.

If the best, most suitable and latest information technologies are going to be used in a company greatly depends on the personality of the manager and his/her personal involvement. If the manager does not pay enough attention to this area and concentrates on other activities, which he considers important for him, the company will not progress. The obtained results clearly show that Slovak managers of SMEs realize the importance of knowledge in the area of information technologies and that the only way to company’s success is a constant education, acquiring of knowledge, its processing and sharing. Since information technologies are continuously changing, and greatly improving, it is inevitable for a company to monitor the development, changes and latest news in the area of information technologies by persons in charge, i.e. managers at all levels. A continuous dynamic development of technologies indicates that this tempo will not slow down in the future. Therefore the fact that managers of small and medium enterprises in Slovakia realize this and try to respond to the changes is perceived as very positive. Managers are aware of the fact that also in the future the obtaining, development, processing and sharing knowledge will be one of the key factors at creating and maintaining the competitive advantage.

Economic life is firmly constituted in social rules and therefore the transition to knowledge economy requires changes in how the society is functioning. Knowledge society actively invests in development of personal potential of each individual by means of education support, research and science, through which it improves its innovative capacity.

It is therefore important to realize that knowledge is becoming increasingly important not only in the economy of a country, but also in whole society. It is inevitable for all employees to be more motivated in their personal development, obtaining new knowledge and its sharing, and not to be satisfied with the current knowledge they have.

6. CONCLUSION

One of the most typical features of contemporary life is a very fast life tempo. Therefore rapidly changing conditions become a part of everyday operations of most enterprises.

To raise competitiveness and to develop the enterprise, as well as to maintain its position in the market, it is inevitable to respond to current conditions in the right way and right time. This
can only be achieved by acquiring knowledge on a regular basis, processing and developing the obtained knowledge, and finally sharing it.

In our article we looked at a learning organization from the point of view of using information technologies. Our main goal was to analyze the situation and find out the level of using information technologies by managers, as well as determine how small and medium enterprises are prepared for the process of creating a learning organization. The partial objective of our research was to point out the need of using information technologies in an organization in the constantly changing contemporary economic environment.

Current level of managers’ knowledge in the field of information technologies is relatively high. We found out that individual managers consider information technologies quite important and try to advance in the given field by following the current trends in information technologies, applying them into their businesses and adjusting to new conditions. Official internet websites of mainly middle-sized enterprises contain all necessary information in most cases and the employees perceive the use of information technologies rather positively. On basis of our partial research we can state that Slovak small and medium enterprises are well prepared to use information technologies as one of the four important pillars (according to Olivier Serrat) in the process of creating a learning organization.

References

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