

USE OF INFORMATION TECHNOLOGIES IN APPLICATION SPHERE

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Abstract: When conducting their business, companies increasingly apply the use of information technologies, which are to facilitate the work of employees at all positions. This study deals with their use in quality management system, where it is important to apply the most advanced forms of management and use every opportunity to improve the quality in general. On a sample of three large companies in South Bohemia region (the Czech Republic), we aim to discover the current state of using information technologies in the application sphere. Two research assumptions were established and the purpose will attempt to confirm / to refuse them through two research approaches: interviews with managers of all 3 observed companies and a subsequently compiled questionnaire distributed to the total of 130 employees of the companies. The assumptions were as follows: 1) To achieve the required quality, companies must use information technologies; 2) Information technologies are used in companies with quality management system, regardless of their business. The results of research, concerning the quality and information technologies, confirmed a particular connection between the use of information technologies and the resulting quality.

Keywords: Information Technologies, Private sector, E-learning

Introduction

When conducting their business, companies increasingly apply the use of information technologies, which are to facilitate the work of employees at all positions. This study deals with their use in quality management system, where it is important to apply the most advanced forms of management and use every opportunity to improve the quality of supply (cp. Kožíšek & Stieberová, 2010; Janeček, 2001; Veber 2006; Nenadál, 2001). Eriksson (2016) reminds that large companies are ahead of small and medium enterprises in the race for quality progress. In general, it means that in comparison of public with private companies, private ones do better, and the practice of process management seems to be easier for private firms (Eriksson, 2016). Quality management may be a source of competitive advantage (Elshaer & Augustyn, 2016).

Information technologies are means and procedures, devices as well as systems that help one to work with information more efficiently. In order to perform the aforementioned functions, information technologies consist of computer sets and other elements. Therefore, the basic building block is hardware in the form of computer sets, printers, fax machines, telephones, etc. Other elements include software equipment, i.e. basic (operating systems, office applications, programming languages, etc.), application (programs for production control, trade control ...) as well as technology (e-mail, word processor, etc.) or communication networks, workstations, robotics and smart chips (Vymětal et al., 2006). According to Tvrđíková (2000), based on the levels of management, information systems are classified into transactional systems, information management systems, decision support systems and senior management support systems.

In their operations, many companies frequently use separate information systems (e.g. one for production management and the others for logistics, distribution, asset management, sales, billing, accounting, human resources, etc.) instead of one that is integrated (Odbor statistik rozvoje společnosti, 2011, 22). Integrated information system provides a comprehensive view and delivers a complete information package for professional positions in the given company (Zounek, 2009; Rábová 2008; Truneček et al., 1997).

Research goals

On a sample of three large companies in South Bohemia region (the Czech Republic), the authors aim to discover the current state of using information technologies in the application sphere.

Two research assumptions were established and the purpose will reside in an attempt to confirm / to refute them through two research approaches: interviews with managers of all 3 observed companies and a subsequently compiled questionnaire distributed to the total of 130 employees of the companies. The assumptions are as follows:

1. To achieve the required quality, companies must use information technologies.
2. Information technologies are used in companies with quality management system, regardless of their business.

Methodological Approach

On approaching the companies, it was necessary to select those having available quality management, and to create a questionnaire based on interviews with managers of the companies. The included questions mainly concerned the companies themselves, their attitude to quality and information technologies, and how these two elements are used by management of the companies to make their operations more effective.

When creating the questionnaire, the biggest effort was put in the answers' informative value, while maintaining a certain clarity for an average respondent without detailed knowledge of management terms. The data analysis objective was to evaluate the possibilities of use and the amount of benefits (or failures) of information technologies in quality management system in the South Bohemian companies. Therefore, it was essential to approach companies with quality management systems and to select those fulfilling the requirements of the ISO 9001 certification. Since the selections included companies with quality management systems that may be applied virtually to any area (field), the companies each have different core businesses.

Research sample

Company 1: The manufacturing enterprise in the field of telecommunication, founded in 1991 as a company dealing with automation and measuring technologies in various fields as industry, food business, energetic and health. The main interests of the company today are telecommunications services together with the construction of telecommunication systems, solar systems and software equipment. This company interest comprises also sort of e-commerce. Despite its focus, the company poses no integrated information system but several information systems are used for various activities such as warehousing or accounting. Despite the lack of integrated information system, the company deals with using electronic invoicing to make it easier for the accounting department (the need to improve quality by reducing error rates). This is also confirmed by the obtained quality certificate in that field.

Company 2: The franchisee company operating in the field of services. It entered the Czech market in 1998. The main subjects of business are providing services in the field of vehicle rental and operational leasing. This company uses an integrated information system for the purpose of effective company managing. The security of this system is ensured not only by using the strong passwords, but also by electronic signatures. An intranet is also very important part of the company's information technologies. The intranet is used for communication with employees and for controlling them. This company strategy comprises a complex e-commerce business. They offer for long years full services via Internet (booking and payment). Regarding quality, the company received quality awards for best services, best customer services etc.

Company 3: In the rail transport engaged company that focuses on a wide range of shipments. The company offers a specialized solution systems for almost every kind of goods, but they are specialized in transportation of solid fuels and construction materials. Liquid goods can be transported in tanks. Moreover they are able to transport also military consignments or engineering raw materials and machines. The company uses an integrated information system and an intranet. The Internet is restricted for some employees. It was also found that the company is seeking for obtain quality certificates and they also tries to implement new systems for improving their business.

The research data, which allow us confirm or avoid the determined research assumptions, represents the answers of 133 employees of the companies described above. Of these, 55% were male (73 respondents) and 45% female (60 respondents). The age of the respondents represent 14 persons under 25 years of age, 49 respondents are aged 26-35 years, the same number of persons (also 49 respondents) are aged between 36-45 years, 16 persons in the 46-55 age group and 5 respondents are aged over 55 years.

Results and Discussion

The three observed companies, albeit in different sectors (telecommunications, logistics), must use information technologies for their operations. The assumption – that companies working with quality management system maximize the use of computers and technologies in all workplaces – was confirmed, with the use of computer networks, namely Internet and Intranet, being at a very high level as well. However, it was surprising to determine the absence of Intranet in company 1. Likewise, this company lacks any integrated information system, as opposed to companies 2 and 3. These findings were all the more surprising, since company 1 has newer and hence more modern information technologies than the other observed companies. In comparison with them, this company (1) also differs in other aspects, such as not using any e-learning. According to the answers of the company 1 management, this is due to the fact that the company is completely housed in one building and thus there is no need to use this method of training or any further qualification expansions. From their perspective, centralization is the reason for the Intranet absence as well.

As the survey results show, 95% of respondents agree with the claim that the company they work for seeks for quality improvement by using, in particular, information technology. Only 5% of respondents (representing only 7 people), don't agree to this claim. Especially, in the company 2, 100% of respondents agree with the idea of improving quality with help of using of information technologies. It is quite understandable, considering the type of business and the age structure of employees, which are very young and thus closer to modern trends in the field of information technologies.

The extent of the IT using in work

The respondents used a scale from 1 to 5. Most respondents (66) chose highest value 5. The second largest number of respondents (61) chose value 4, which represents also a high rate of utilization. The remaining 6 respondents indicated the middle value 3.

Table 1: The extent of the IT using in work (comparison of Internet and Intranet using)

	Using of Internet for work		Using of Intranet for work	
	Yes	No	Yes	No
Company 1	47	0	0	47
Company 2	15	23	38	0
Company 3	15	33	48	0
Total	77	56	86	47

Documentation system used at the workplace

The combination of electronic and paper documentation form is the most used system in all three companies (78%). It is positively surprising that only paper form of documentation we can't find in any company. Companies are aware of the information technologies benefits in the sense of speed and economy as opposed to slow and non-ecological paper form of documentation.

Table 2: The form of documentation system at the workplace

	Electronic database	Paper form only	Combination of both
Company 1	20	0	27
Company 2	4	0	34
Company 3	5	0	43
Total	29	0	104

Using of e-learning at the workplace

The results we get are very specifically balanced. It's influenced by the fact e-learning is completely missing in the company 1. On the contrary, situations in the companies 2 and 3 are very diverse. The difference is probably caused by different positions of respondents. Few of them hardly know what's the word e-learning about, others use it very often. Nevertheless, the results illustrate the companies' effort for an effectiveness in the cost reduction

when we talk about the staff training and learning. The differences are also result of diversity in companies' sizes. Company 1 where isn't e-learning used in any form is quite small company and all employees work in one building.

Table 3: The purpose of using e-learning at the workplace

	Obligatory training according legislation	Vocational training	Qualification expansion	Other
Company 1	0	0	0	0
Company 2	27	7	0	0
Company 3	40	12	10	0
Total	67	19	10	0

Using of specialized programs for work

According to respondents' answers, companies use the mostly from 1 to 2 specialized programs This percentage represents 69 respondents. (52%). The need for 3-4 specialized programs for work has been expressed in answers of 52 respondents (39%). Multiple programs for work, i.e. 5-6 used by only 10 respondents.

The importance of information technologies from the employees' point of view

The respondents answered the question "How much would change the impossibility to use information technologies the quality of your work" and they used a scale from 1 to 5. The majority of the 70 respondents (representing 53% of respondents) thinks that the quality of their work would definitely suffer (answer "5" on scale) in the case if they could not use the information technology. The second largest part of respondents chose the answer "4". The result of these The answer to the question is the determination of respondents' dependence on information technologies, for quality job performance. The average response rate respondent is very high, namely 4,51. Respondents therefore believe that their work is greatly influenced by information technology. The average answer of company 1 respondents is 4,51, higher average was reported by company 2 with a value of 4,71 and company 3 has the lowest average of 4,25.

The results show that the use of information technologies in companies, pursuing a comprehensive improvement and quality control, is necessary as well as it is very effective. Each of the observed companies uses quality management system, and both the equipment and the use of information technologies are at a very high level.

Conclusion

The study aimed to find out the possibilities of using information technologies in companies that have available quality management system (see Nanda, 2005). It was also necessary to determine whether these technologies provide the desired effect. The objective was met as it turns out that the possibilities of using information technologies are virtually limitless and very effective, and the above information technologies are used by companies from all sectors for a great variety of activities.

Despite all three companies use the information technologies, their application remains in some aspects individual. Some companies can obtain bigger and some only minor benefits. However, the basic purpose in saving the budget and improving the quality in general benefit for all of them. As confirmed in the research, these information technologies save the time of the staff. Thanks to this savings, the companies are able to save also in reducing the number of full-time job positions that would have to be created without the use of information technology. More efficiency can be seen in communications, where new technologies have enormous benefits (cp. Rábová 2008; Truneček et al., 1997). For larger companies it's easier to communicate through corporate networks or Intranets among single departments, as well as sharing data. Of course, communication does not only concern the internal business. Internet is unnecessary form of communication with the world outside of company.

It is clear from the obtained data that the information technologies are used by companies, regardless of their business focus. This confirmed the first established assumption: Information technologies are used in companies with quality management system, regardless of their business. At the same time, the questionnaire survey results and interviews with the managers also confirm the other research assumption: to achieve the required quality, companies must use information technologies. The results of research, concerning the quality assurance and information technologies, confirmed a particular connection between the use of information technologies and the resulting quality. Nevertheless, how suggests research findings of Ahmad & Schroeder (2002), managers should not limit their attention to potential employees' technical skills.

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