

## **IMPACT OF INFORMATION TECHNOLOGIES ON BUSINESS COMPETITIVENESS**

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### **Abstract**

*The main task of applications supporting the managing is to analyze current data and on the basis of their analysis from different views to provide the managers with the possibility to identify also non-standard situations in the firm. The process of getting data, information and knowledge from the vast files is not only a technological problem but particularly a managerial one. That is why set technologies are used as the tools for meeting information needs. From the managerial point of view the aim of the process is to get as much relevant information for solving given matter of fact problem as possible.*

**Key words:** information system, data, information, competitive advantage, management information

### **1. INTRODUCTION**

Knowledge-enhanced data and information are the driving force of the present time. To succeed in fighting with competitors, data and information need to flow where they are needed in the whole decision-making process. The knowledge owner is usually the one who needs current data and information for its use. Information is a company resource with specific features. Unlike other business sources that are consumed in the process of use, it is a renewable resource that even generates itself. It can be said, therefore, that who does not have the necessary information in the required time and place, loses his position. In this sense, we can talk about critical information needs that define the necessary requirements of the controlling subject to ensure successful action. Those who owns information resources on a timely basis often creates the benefit of access to other information and increases the quality of its position throughout the market environment. In today's information overflow, their quality and their ability to communicate are fully dependent on the quality of the information system. Keřkovský (2003) states that we cannot further develop the business and increase its competitiveness without the information we have inflicted.

Modern management concepts attach great importance to corporate information and management. Information has become a strategic weapon for business, an important source of competitive advantage. The quality of the information system is directly related to the ability to create an information strategy in the enterprise that fully supports the requirements of individual users for information support of their needs - the needs of the economic unit, business department, production, human resources, management and others. The information strategy becomes an important document in each enterprise, which is an important element of the life cycle of the information system and plays a significant role in the quality of the implemented and operated system.

The process of creating the information strategy is influenced by a number of factors:

- By composing a team involved in its creation - the team should be composed of employees of the company and employees of an external company. Employees of the company should be represented by the management of the company - the IT department manager and the representatives of the users who will regularly work with the system at the operational level of the management.
- The economic situation of the business - the amount of funds that an enterprise can invest in information systems and information and communication technologies. In the early years of introducing a new information system, the investment often exceeds an average yearly invested amount in the field of informatics, ranging from 6 to 10 %. In the first year, the invested amount is about 25 % of all annual spending in the introduction of the information system.

- The existence or non-existence of documents needed for strategy formation - the information strategy must be based on company standards and must support corporate processes. The quality of the information system and the quality of the information obtained for the further existence of the company is fully dependent on the quality of the company documents - e.g. the organizational code, the financial order, the study and examination rules and others according to the business orientation.

The strategy must always be based on the specific conditions of the business. Each business must have its own information strategy developed, it is important to have it in the format of a document that will be used throughout the life cycle of the information system. The concept of the information system strategy can be understood as a set of the most important concepts and principles of operation concerning the functioning of the information system in the company, approaches to meeting the information needs and requirements of important partners and the development of the information system. Important aspects of the concept are integration and continuity. The information strategy should be set in such a way as to clearly define the different layers of management, authority and responsibility.

The quality of the entire information system is influenced, in particular, by the initial phases of the life cycle of the information system. There are many examples that are almost identical, and problems with the initial phases after implementation are also the same. In a number of companies, many informal information spreads over the implementation of systems, the quality of which is very diverse - from true to semi-truthful information. Managers must deliver a timetable for the timing of the solution, must not forget to the correct composition of the team involved in the whole process and must provide timely information on the training of all employees and the commissioning process. Tvrdíková (2015) says that cloud solutions can be used, but there is a problem that we put data out of our business (or that we use applications stored outside the company) and the data travels in "space" so we do not have 100 % control over them.

„IS management is today a specific but still integral part of corporate governance. Understanding of information technology as a purely servicing activity brings a number of problems for the further development of the company, as well as the superiority of the IT department to all other departments. In large companies, an information manager is perceived as a "second function" after the CEO. However, this situation is not ideal because it may appear to be a superior department to others, and therefore the position of computer science in the enterprise has a "more important function" - Cienciala (2011). It also deals with IT management issues in companies Drucker (2002), Hennyeyová (2010), Sodomka (2006).

The aim of the article is to confirm or rebut the established hypotheses:

**H1** - in the non-agricultural sector, there is an increase in the existence of the information strategy in the companies. In the monitored sample of companies, 65 % of the companies have developed the information strategy. In agricultural enterprises the information strategy is about 1 %.

**H2** - assumes that in the organizational structure the employee of the IT management in non-agricultural companies is ranked in the top management in 46 % of companies, in agricultural enterprises in 5% of the monitored companies.

## **2. MATERIALS AND METHODS**

### *2.1. Materials*

Information systems and information and communication technologies are an important source of competitiveness. The quality of each information system and the way information is obtained is determined by a number of factors that can be judged by measurable and unmeasurable benefits. One of the unmeasurable benefits is the quality of the information and management knowledge. This indicator is based on the ability of users to define requirements for their needs and the ability to use the information further and to work with them. The quality of the entire information system is fully dependent on the ability to manage the department of information technology, to manage the creation of information strategy, the information systems architecture and the life cycle of the information system. The aim of

the article is to define requirements for the organizational structure of the company in relation to the integration of the IT department manager, the ability to develop the information strategy, its existence, or the lack of information and the ability to obtain information. Requirements for integrating an IT worker in the organizational structure, ways of obtaining information, existence of an information strategy in the company will be presented on a survey carried out in a selected sample of enterprises.

The ever-increasing amount of information, both external and, of course, internal, creates requirements to ensure their quality. This requires effective set-up of intra-company information channels, appropriately aggregate data and determine distinctive values. In order to optimize and exchange data, information and knowledge between business units, business processes are supported by various modules of the information system and the associated organizational processes. The quality of the whole process is directly dependent on the way the company management manages the development and operation of information systems and information and communication technologies.

## *2.2. Methods*

The article was developed on the basis of scientific methods - using holistic methodology, analysis, synthesis, induction and deduction. The theoretical part was elaborated on the basis of study of secondary sources, study of scientific and professional articles. On the basis of the established hypotheses, a questionnaire was compiled, consisting of 10 questions - 7 questions were closed and 3 were open. A total of 148 companies were addressed, out of which 65 farms - 75.6 % questionnaires returned (questionnaire responded by 112 firms, 48 of which were agricultural). Based on the results of the questionnaire survey, there was still direct questioning in 76 enterprises. Direct survey enterprises were selected according to the results of the questionnaire survey. Questions for direct questioning were given to the respondents on the basis of the long experience of the authors of the article (cooperation with practice) with the issue of corporate management of information systems. Outputs from the questionnaire survey were used to draw conclusions of established hypotheses and suggestions for an optimal solution supporting the development of companies.

## **3. RESULTS**

What is the position of the IT department in the company? Historically, the main task of the data processing department was to ensure the timely processing of bookkeeping, payroll, warehouse and similar agendas, depending on the company's focus. During this data processing period, it was necessary for the data processing unit to be directly subordinated to the economic unit. Most of the data processed "came" from the Economic Unit. At that time, the data processing department mostly had the name of the information system unit and provided data to the user at a certain time interval (batch processing). The length of the time interval was directly dependent on the company's focus - in the economic department the most frequent processing interval was a decade or one month. The development of information and communication technologies has shown that the potential of data processing is completely different - the amount of data stored in the company has grown and it has been possible to use this data to perform analyzes, forecasts, decisions. In a number of companies, they responded to this situation by keeping the IT department in the hands of the economic unit where it belonged historically. The situation was solved differently in companies, mostly the IT department remained part of the department that was directing it, or in the area of the department that used the most information technology. This also implies the organizational integration of the IT department:

- the IT department remained within the economic unit,
- the IT department was included under another department in the company - business, technological, manufacturing,
- the IT department has become an independent unit with its head directly in the top management of the company.

Welch and Welch (2007) state that the management of the whole company significantly influences the correct integration of the IT department in the organizational structure of the company and the existence of the information strategy according to which the whole informatics in the company is controlled.

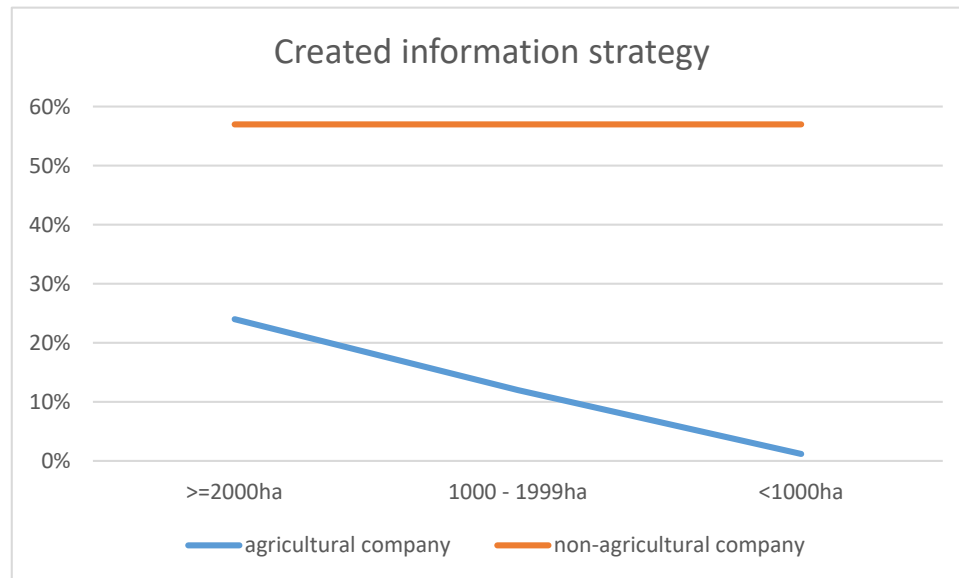


**Fig. 1.** Created information strategy

The results of the questionnaire survey on H1 show the situation in non-agricultural and agricultural companies. It is clear from Fig. 1 that the information strategy in the non-agricultural sector is created in 57 % of the surveyed companies. For farms, the situation is very different. Enterprises with a size of over 2,000 ha have developed the information strategy at 24 %, enterprises with a size between 1000-1999 at 12 % and businesses up to 1,000 ha at 1.2 %. The mostly developed information strategy is based on multinationals, large companies (measured by the number of employees and turnover of companies) and companies where they are interested in using up-to-date data, information and knowledge. For companies that do not have the information strategy developed, direct polls were conducted. Questions were focused on the way of informatics management in the company, the processing and use of data and information and the development of information and communication technologies. Based on the poll conducted, it can be stated that the situation is very similar in both agricultural and non-agricultural enterprises. The management of these companies (with no elaborated information strategy) is subordinated to the economist at 75 %, the remaining 25 companies manage computer science at random, according to current needs - e.g. the necessity to change the software on the basis of the legislative requirement, the inadequate hardware (e.g. insufficient memory capacity or impossibility of communicating with the outside environment). Companies without developed information strategies do not put much emphasis on further processing and use of data and management information.

In the organizational structure of the company, the IT department should be directly part of the top management, but should not be superior to the other departments (as already mentioned), i.e. directly under the "general manager" of the company (who represents the company and bears responsibility for it). If the "informatics" department is directly under the general manager of the company, then there are often situations where the other departments (e.g. economic, human resources, manufacturing, business, etc., depending on the company's focus) undergo the suggestions of the IT department. Because of the requirement for quality information for the individual departments of the enterprise, it is desirable for the IT department to support the other departments of the company and not to impose "blindly" employees on the requirements of artificially created IT staff. The whole area of informatics is only a supportive activity in the enterprise. It has to meet the demands of the company's employees on data and

information, it cannot happen that the employees of the enterprise are subject to the processes set up in the information system, they go through the "acquaintance" stage and try to use the maximum functionality of the system. In this case, business processes are often adapted to processes set up in information systems.

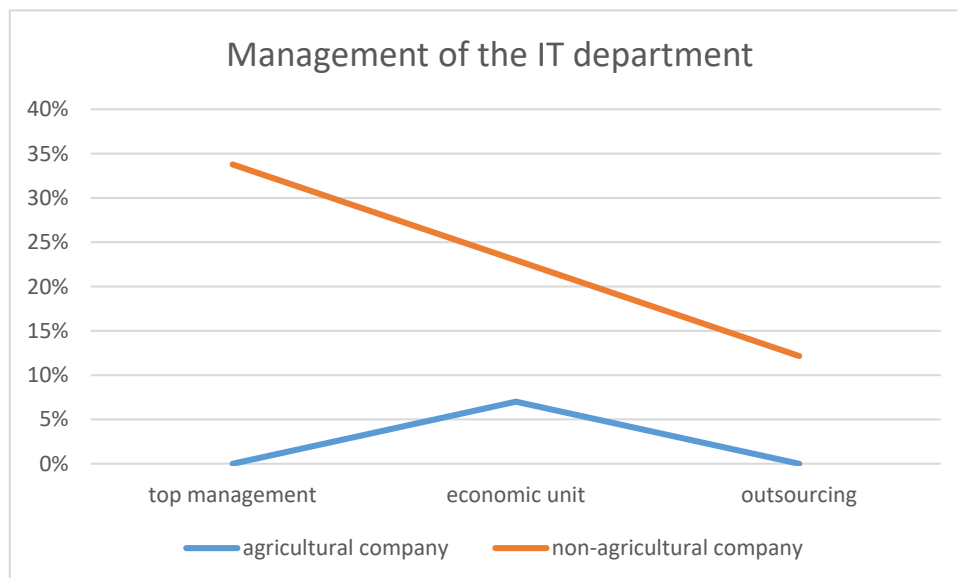


**Fig. 2.** Management of the IT department

Fig. 2 shows the organizational integration of the IT department in companies. It is clear that the management of the IT department is very different in some companies. In large companies, the IT department is most often a separate unit, whose manager is directly in the top management - 33.78 %. Historically, one of the highest representation of IT department is still part of the economic unit where it is incorporated - 22.97 %. There is also a high percentage of displacement of IT management from a company (preferred by 12.16 % companies) and does not need to manage IT in the company. Such firms only control the relationship with the supplier. The further integration of the IT department into the organizational structure of the company is entirely random, depending on how the company evolved, who worked in the IT business, and, of course, the owners of the company leave the IT department in its own right. On farms, the situation is very different. The employee who manages IT is only in 7 % of the companies surveyed and is included in the department of economics. The individual position of the information manager is not in the top line of the monitored companies.

All managers require quality information for their decisions, which should be as responsive and relevant as possible. Information without context has little value. Context is given by a specific content or question that requires active intervention.

Another question the respondents answered was - how companies are getting management information. Businesses that do not have developed information strategy do not even have a staff directing IT. When asked how they use data and information from the information system, the answer was – “the stored data and information have only a record character and we use them most often only to produce the required reports.”

#### 4. DISCUSSION

For H1 can be stated that was fulfilled only in the part of the existence of the information strategy for agricultural holdings, where it has 1.2 % of the monitored enterprises. For non-agricultural enterprises, 57 % of the companies surveyed have an information strategy, the hypothesis assumed 65 %.

In H2 was assumed inclusion of employee of the IT department in the top management of the company at 46 % in companies and at 5 % in agriculture companies. The assumed hypothesis was not met - in non-agricultural firms, it is only 33.78 % and in the farms it is not at all included in the leading role of the role of computer science. In the monitored sample of enterprises, it is directly subordinated to the economist at 7 % of companies, in other companies the management is very random (mostly an employee who is interested in information and communication technologies).

Information needs in companies and institutions are directly dependent on their focus and on the skills of those who use information resources as a tool for management and planning. The focus of companies and institutions' activities has long been given by the corporate strategy, mission and goal of each entity. Just from that is the process of information strategy development is developed.

The goal of the IT department is to provide the right information at the right time. If the IT department is included in the organizational structure at the correct level of management, then the information and knowledge will get in time for the right user. The method of management of the IT department is also reflected in the financial complexity of the department, in the complexity of the user's knowledge and ability. The quality of the information system of the information provided is fully dependent on the way and the quality of ICT management.

Companies need to build a system that allows managers to develop their queries based on a specific situation:

- contextual information - managers should be provided with information on the situation that is being created to make them effective,
- individually generated alerts - each manager must have a specifically addressed warning to act on the basis of the situation,
- developing rules and practices based on experience.

To create a corporate value paradigm, it is necessary to create an information infrastructure that respects the central role of managers. Managers should be able to personally choose the way they want to participate in the co-creation of this corporate value. Access to information systems is currently geared towards implementing portal solutions that enable web access to information and applications with efficient management and administration capabilities. There are groups of users with relatively specific information needs for which a specialized portal is very suitable. It offers "all in one place" practically all the services and information they need for their activities - so they do not have to waste their time searching for this information and services elsewhere, and they can devote more of their own activities.

Information systems strategy is an important part of the life cycle of the information system. The quality of the entire system is also significantly influenced by the observation of the individual steps of the life cycle methodology. In enterprises where emphasis is not placed on creating information strategies and IS / ICT architecture, support for all business processes is also smaller and vice versa. From M. Della's quote: "If you take a bad business and do it online, it's a bad business online." Every change in the business information system must therefore be based on the corporate strategy and must be embedded in the information strategy. Otherwise, even in a well-functioning business, problems may gradually occur. The role of each information system module increases significantly with the use of information and knowledge provided by the system for management. According to Vymětal (2006), the correct organizational structure is necessary for the correct management of the IT department.

## **5. CONCLUSIONS**

Agriculture is becoming a knowledge industry where what employees know (what data and information they get) is a key factor in profitability. In particular, managers require up-to-date data and information for their decisions. The quality of the data and information obtained depends on the quality of the information system and depends on the quality of the correct management of informatics and the existence of an information strategy. Stail and Reaynolds state that the quality of the information system and thus the quality of the data obtained depend on the quality of the information system. The survey

concluded that the quality of the management of the initial stages of the information system lifecycle significantly affects the quality of the information system, i.e. the existence of an information strategy and the correct inclusion of the information manager in the organizational structure.

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