

Knowledge Management and Intellectual Capital

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Abstract In the modern economy knowledge is definitely the most important resource of today's business systems. If it is possible to transfer knowledge into some kind of material value on the market, then it is called the intellectual capital and it is one of the main challenges of the management.

Keywords – knowledge, economy, management, intellectual capital

I. INTRODUCTION

New solutions in the field of telecommunications, information technologies and biotechnology, together with the use of new engineering materials, production technologies and design, have enabled the creation of new products and services. The value of information and knowledge is increased in those products, services and production technologies compared to the value of invested work or material capital. These facts are closely connected with the current trend of change in the field of qualification structure of the entire working population in favour of employees with secondary and higher education, as well as with the influence on the structure of economy growth in the developed countries that is being based more on service trades, and less on the material production.

Knowledge is becoming more important for the newly created value, which is the basic characteristic of the transition from the industrial economy into the new economy which is called 'knowledge economy'. Pieces of information and knowledge are the key element of business success in such economy, while information and communication technology are the basic infrastructure of the business systems.

II. TYPES OF KNOWLEDGE

There are many definitions of business knowledge. According to one theory, it is a dynamic mixture of a limited accumulation of knowledge, values, contextual information and an insight of experts [1], and according to the other theory, it is an image of reality expressed by ideas of a human being while observing the world around him [2]. Both theories agree that knowledge is an asset which has the potential to create new values.

Knowledge originates in the human mind and according to Michael Polanyi [3] knowledge can be divided into explicit and implicit or empirical knowledge:

- Explicit or codified knowledge can be codified and formalized by using some formal language or some other type of communication (documents, data bases, graphical data, schemes, programme algorithms, etc.). Due to this characteristic, explicit knowledge is suitable for use, gathering, storing and transmission by using information and communication technology. This type of knowledge can be reproduced and distributed through formal education.
- Implicit knowledge is usually called background or hidden knowledge that people have in their minds and it is pretty difficult or even impossible to formalize it. This kind of knowledge is also called tacit knowledge, and it usually refers to skills and abilities that the individuals possess. It is very difficult to express implicit knowledge, although various types of transferring implicit into explicit knowledge can be used when necessary. It is impossible to reproduce or distribute this type of knowledge, and it is acquired through experience, through attempts and mistakes, i.e. through practice.

It is extremely important for each organization to make a conversion of implicit into explicit knowledge. Knowledge conversion increases knowledge of the organization, which stays in the organization without the reference to the fluctuation of the employees. There are four models of knowledge conversion where implicit and explicit knowledge are in interaction. Those models are represented in Fig. 1 [4]:

- Socialization – an individual acquires implicit knowledge from other individual(s);
- Externalization – implicit knowledge of the individual becomes explicit knowledge of the organization;
- Combination – combination of some parts of explicit knowledge through different media. Reconfiguration of the existing data can create new knowledge;
- Internalization – explicit knowledge of the company is internalized into implicit knowledge of the individual.

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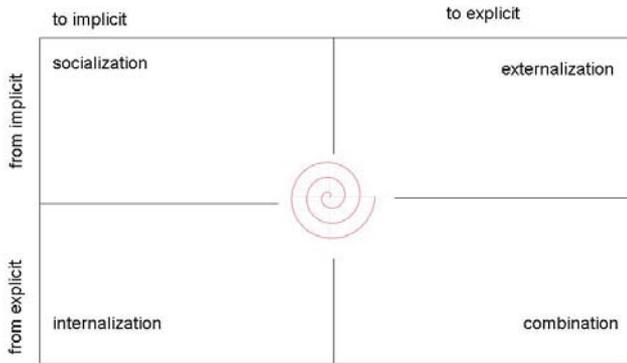


Fig. 1. Spiral of knowledge

When individual knowledge (at the level of the individual) is socialized with other members of the company, we are talking about the new spiral of knowledge.

III. CHARACTERISTICS OF KNOWLEDGE AS ECONOMY GOOD

Knowledge is an asset, and if we use it, the amount of knowledge is not reduced in any way, which is not the case with traditional goods. That is why the laws of scantiness, which are the basis of traditional economy goods, cannot be applied to knowledge. Since scantiness of knowledge is not in tune with classical economy theories, it is not possible to set up the usual market of knowledge. Knowledge is intangible and it depends on the thinking processes of human beings, and therefore it cannot be the object of the usual commodity transactions. Since there is no knowledge market, two additional characteristics of knowledge are possible:

- If there is no knowledge market, there is also no mechanism for setting the prices;
- Possession of more units of the same knowledge does not increase the total amount of available knowledge, because it is possible to extend and to compress the same knowledge depending on the medium or the type of storing.

It is difficult to determine the true value of knowledge, and it could be done only after the use. The value also depends on the context in which the user of knowledge is in. The value of explicit knowledge can be determined by estimating the possible profit acquired within the business process due to the use of knowledge. In order to determine the value of implicit knowledge, it is necessary to transfer it into the explicit form. From the company's perspective, knowledge has high fixed expenses and pretty low marginal expenses concerning the reproduction and transfer of knowledge within the company.

It is practically impossible to determine the lifetime of knowledge because it depends on new ideas and technological achievements. Depending on the category and type of knowledge, some types of knowledge can become unnecessary, while other types become a long-lasting and valuable asset of the company.

IV. KNOWLEDGE MANAGEMENT

It is a well-known fact that knowledge is more important for a good business than traditional manufacturing factors like land, manpower and capital. Since knowledge is so important for the survival of the company, a great effort is being put to increase the efficiency of that production factor on the global market. The best known way to take care of knowledge is known as 'knowledge management' [6].

In order to manage knowledge successfully, it is necessary to distinguish between data, pieces of information, knowledge and wisdom that exist in the relationship between the superior and the subordinate. The aforementioned information units are not just a sum of its basic parts but they also have additional synergy characteristics [7]. Figure 2 represents the correlation between these information units.

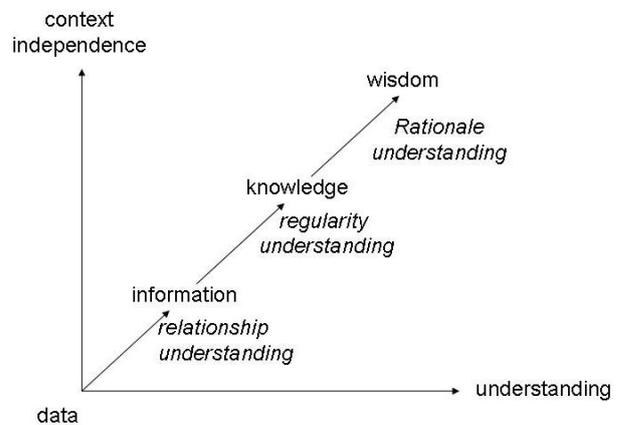


Fig. 2. Correlation between data, pieces of information, knowledge and wisdom

The general aim of knowledge management is to put together those who need knowledge with the sources of knowledge in the organization, and also to enable the transfer of that knowledge. The concrete aim of knowledge management is to determine and analyse the amount of available knowledge in order to fulfil the set goals of the company's business. Therefore, knowledge management is considered to be an organisational process that is used in the company to identify, choose, organize, expand and store important information and contents that are part of the organisation knowledge in a non-structured form [8].

The process of knowledge management is modelled through three levels:

- data level;
- knowledge level;
- level of action.

At the data level there are all data of the company which represent explicit collective knowledge, and the key activity is to enable data connection by using information technologies.

The knowledge level represents a non-documented, implicit basis of the company's knowledge and it refers to the areas where social interaction in a form of communication occurs. That includes also the memory of the employees. Both levels are connected by processes of documenting and informing. The employees generate implicit knowledge from data through context and information. This implicit knowledge transfers again into data and becomes explicit through documenting. By using the appropriate corporation culture, it is possible to expand and connect knowledge.

At the third level of action, there is the process of knowledge development and knowledge application in the processes of creation of values. During use and at the level of action, knowledge transforms into concrete acts that create values for the company. The cognitive process (determination of cause/effect) after the taken actions enables learning, which in turn expands the existing corporation knowledge. At the level of action only the appropriate form and organization of the business process can guarantee that knowledge, which is acquired through cognition from the previous projects, will be available to the team for the new projects.

V. INTELLECTUAL CAPITAL

In the market economy, the business result depends on the company's image, brands, tradition, customer relations, connection to suppliers, experience and business skill, and also on knowledge and capabilities of the employees. Knowledge of the employees, their business experience, ideas, innovations, motivation and readiness for team work enrich the corporation culture and improve the processes within the company and enable creation of the new value. The mentioned sources of the new value and asset are intangible and 'invisible' for the current computer metrics, but modern companies use intern reports to connect the financial result with the total intellectual potential to create the new value and it is called 'intellectual capital'.

The intellectual capital consists of accumulated knowledge that the company owns in their employees, methods, patents, designs and connections, and it is used for creating new material values [10]. This kind of capital can be divided into three segments [11]:

- Human capital;
- Organization capital;
- Client capital.

Swedish financial company 'Skandia' includes reports on the company's intellectual capital into their financial reports in order to show their investors that their potential and strength of the company are the result of knowledge, experience and other qualities of their employees.

The first annual report on the intellectual capital was done in 1994 and it was published internally in the company, and in 1995 it was published publicly for the first time. For those needs, a special value scheme was developed by the company

– 'Skandia IK Navigator' - which included five areas that create values. Each area is focused on a specific field of interest: financial focus, focus on clients, process focus, human focus, restoration and development of the focus and environment context. Figure 3 represents a model for measuring of the intellectual capital which is composed of five elements: financial, buyers, human capital, processes and development and research.

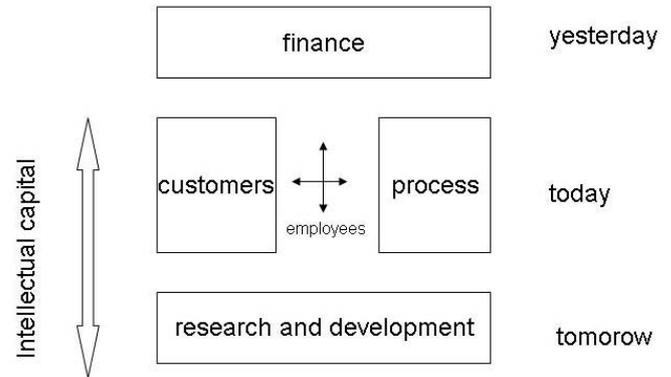


Fig. 3. Model used for measuring of the intellectual capital (Skandia IK Navigator)

While the classical accounting reports are used to show financial success in the previous period, the biggest potential of this new value is for the present and future period. Those are time dimensions which 'escape' the traditional evaluation methods and represent the essence of intellectual capital representation. Therefore, the main aim of the intellectual capital concept is to show the nature of difference between the accounting and market value of the company. The accounting reports show the business results in the previous time period, which represents a certain risk for the investors, because they can rely only on the previous indicators and expectations that usually do not correspond to the real possibilities of the company. The indicators of intellectual capital show the ability of the company to create new values and profit in the next time period, and in that way they supplement the existing accounting reports.

VI. CONCLUSION

At the present time, the supply exceeds the demand which causes a severe market competition. The competitors can gain advantage not by a large amount of the products but primarily by their quality and added value of the new product. Not only material and work, but also large amounts of new knowledge are being invested in the new products. Next to explicit knowledge which is stored in books and can be acquired easily through education and after that used and built into products through designs, technical specifications, etc., far more interesting for the company is empirical knowledge. This kind of knowledge is richer than the general, explicit type, but it is not easy to acquire it. It includes some intangible elements, e.g. instinct, personal conviction,

acquired skills. If the company manages to gather this kind of knowledge of the employees, and then to share and use it, it has a huge significance, because it usually means new value and it also represents an important element of the competitive advantage. One of the main challenges of management is to create the conditions for a successful generation of non-material values (knowledge, experience, quality, reputation ...) and their transformation into material forms like money, real estate or shares.

Systematic and aimed management of the creation of values assumes that that concept in the company is the aim of the business which must be used at all levels of business, and that it also must be encouraged, rewarded, measured and communicated.

The orientation towards the creation of values is long-term and does not include any short-term increase of the profit. The aim is to improve the company's ability to create values, and it can be achieved by investing in the resources, and the key element today is the intellectual capital.

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