KNOWLEGDE MANAGEMENT AND IT'S APPLICATION IN CROATIAN COMPANIES

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ABSTRACT

Following the trends of recent business, emerges the need of managing, first of all in the context of Human Resource Management with reference to human knowledge, and secondly with reference to data and information management through the application of Expert Systems.

The goal of this article is to approach the notion of Knowledge Management, to see the ways of application in Croatian companies and awake the need of knowledge managing to those who don't manage with it yet.

Knowledge is the power of the 21st century. The key of company success in recent business conditions lies exactly in revealing and valuating the human knowledge.

Key words: Knowledge Management, ICT Management, Human Resource Management

1. INTRODUCTION

Penetration and survival on the market in the recent market conditions is harder and harder. The offer outstrips the boom considerably. Consumers can choose from a big palette of products. Which products will be their choice will depend upon the quality, innovativeness, functionality, design, their own perception and so on.

If we want our product to be unique and competitive, our task is to seek for new knowledge about how to advance our product so that it can be advisable for the consumer. Those who possess knowledge, innovativeness, creativity, experience and skills are the employees. Managing and guiding the employee's knowledge, skills and competences lead to competitiveness. If we want the process of knowledge transfer to be efficient we need to invest in informational communicational technology and enable and stimulate the employees to work in this way.

In the article it is given the definition of Knowledge Management, it is also given the description of knowledge sorts and the fields of its application. The list of Croatian companies that are managing the knowledge of their employees is given according to procurable resources. The ways of Knowledge Management in specific companies are shortly described in the article.

Efficient and effective Knowledge Management lead to sustainable competitive advantage.

2. MANAGEMENT AND KNOWLEDGE

In the beginning it is good to define two words found in the notion Knowledge Management.

Managing is guiding activities and development and caring about jobs of certain company and institution.1 Earlier, managing was consisted of direct relationship manager – subordinate, but today, management is consisted of teams that decide about business on low, middle and top level. There is a tendency for barking down function walls and informal organizational structure. As the result of that, some companies have made a new type of organizational structure, for example from function oriented to process oriented organizational structure (Shipyard Uljanik).

Knowledge is the sum of accepted knowledge about nature, community, history and man. It is acquired through education, introducing and experience, transfer of thoughts and learning. Knowledge is always expanding and changing alongside with the development of man and community where it belongs. It has a big importance in recent time and it is appearing and accenting as a leading factor of manufacturing, primarily if it comes out from the actual revolution of science and technics.2 There are different definitions of knowledge and recently it is a very modern notion, but often happens that it is misunderstood. In order to understand it correctly it will be better explained in sequence.

In picture 1 it is visible that data and information are on the 2nd and the 3rd step on the scale of knowledge, while knowledge finds its place on the 4th step of this scale. Hierarchically the bottom level is data that becomes information through adding meaning to it, which connected with context, experience and expectation, convert to knowledge. So, knowledge can't be equal to information neither information can have the same value as data. It is very important to understand the real meaning of these three notions. It is considered that data and information are enough to make a good decision. On the other hand, managing based on data and information that don't have the value of knowledge can't result as a good decision.

Michael Polany distinguishes knowledge as explicit and tacit or experience knowledge.3 Explicit knowledge is that knowledge that can be found in books and that can be learned through the education process, for example technical specification, drawing and so on. During employment, the explicit knowledge is not the only thing needed, this is understood, but there is also the need for explicit knowledge.

1 Dragičević, A., Dragičević, D.: Leksikon ekonomije i informatike, Informator, Zagreb, 1999., Page 724
2 Ibid., Page 780.
3 Frappaolo, C.: Knowledge Management, Capstone Publishing, Oxford, UK, 2002., Page 10
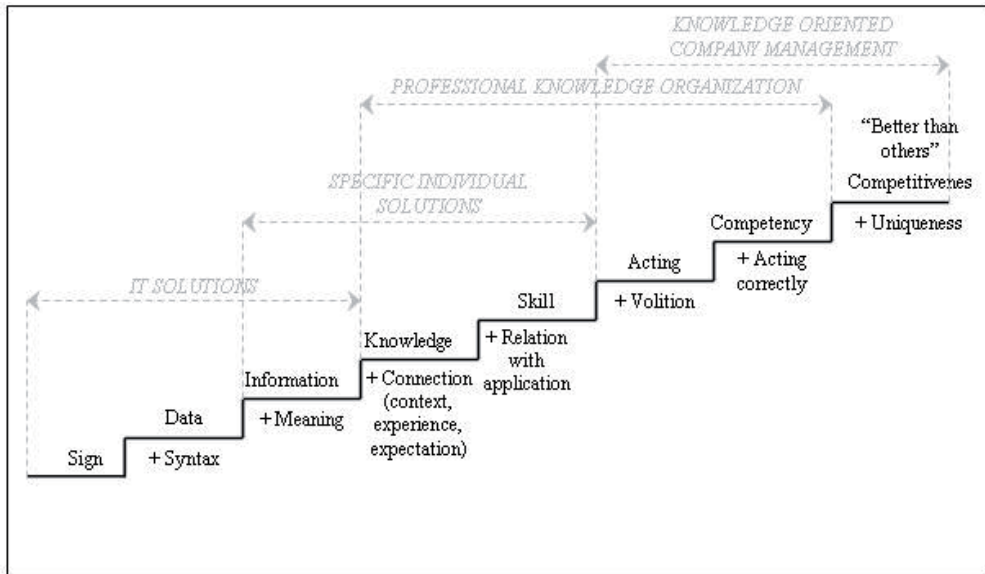
Picture 1 – Emphasis per steps of knowledge levels.
Source: North, K.: Wissensorientierte Unternehmensführung – Wertschöpfung durch Wissen, Wiesbaden: Gabler, 1998., Page 41

This knowledge is personalized, private and it consists of someone's experience, his/her own value, opinions and skills. It is very hard to uncover this knowledge because it is hidden in the person and it is not expressed even though it has a bigger value than explicit knowledge. On one hand, if it is not applied it doesn't have any value, but on the other hand, applied and not documented or transferred to someone else, losses it's value when the person is retired. In this way company losses because in the tacit knowledge of the employees lies it's own value. It is needed to answer a question: How to transfer and share knowledge and experience of employees and how to storage their knowledge?

3. KNOWLEDGE MANAGEMENT

Knowledge management refers to capturing, organizing, storing and disseminating the knowledge and experiences of individual groups within an organization.[4] The purpose of managing the knowledge is connecting those who need knowledge with those who posses knowledge. It must be in a function of fulfilment the company goals. When we talk about knowledge it can be found two ways of understanding it:

1.   Knowledge Management is Human Resource Management (managing human knowledge) and

[4] http://www.netlingo.com/right.cfm?term=KM, NetLingo The Internet Dictionary, September 2006.

2. Knowledge Management is managing data and information (ICT5).

Picture 2 shows us two different ways of understanding knowledge that depends of working area (track). Picture 2 shows that knowledge = object which is managed, in the IT track, when in the People track knowledge = process.

Knowledge Management		
Track/Level	IT-Track **Knowledge = Object**	People-Track **Knowledge = Process**
Organisation Level	"Re-engineers"	"Organisation Theorists"
Individual Level	"AI-specialists" "E-specialists"	"Psychologists"

Picture 2 – Knowledge Management matrix.
Source: http://www.sveiby.com/articles/KnowledgeManagement.html (September 2004.)

Even if this grid is to oversimplify things, it captures one essential issue: There are paradigmatic differences in our understanding of what knowledge is. The researchers and practitioners in the "Knowledge = Object" column tend to rely on concepts from Information Theory in their understanding of Knowledge. The researchers and practitioners in the column "Knowledge = Process" tend to take their concepts from philosophy or psychology or sociology. Because of their different origins, the two tracks use different

languages in their dialogues and thus tend to confuse each other when they meet.[6]

Depend on how we understand knowledge and how we define it, it's shape is different and also the product of it's application. For example, if we use our knowledge in the IT track, the product of this knowledge can be some software solution, when, application of knowledge in the People track can be a new solution for the organizational structure of the company.

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[5] Informational Communicational Technology
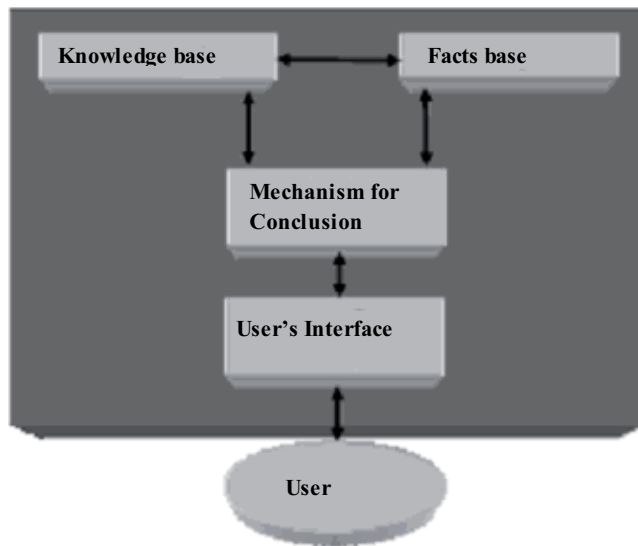[6] http://www.sveiby.com/articles/KnowledgeManagement.html, Knowledge Management, September 2004.

4. KNOWLEDGE MANAGEMENT IN THE CONTEXT OF ICT MANAGEMENT

Knowledge Management in the context of ICT Management refers to manage data and information. According to this, we can say that knowledge in this working area is an object that we can transfer, storage etc. What is important for managing data and information in this working level is that they are good structured and ready for analyzing, so that everything is ready for the decision process. For this purpose exists extra dimensional data storage which is a part of newer computer systems. Older computer systems had just the operational part and classical data storage based on relational model, which couldn't generate data in real time. That was retarding the decision process. Newer computer systems have incorporated extra dimensional data storage that poses all collected data from different sources that can be searched, analytically arranged, advised and so on, which simplifies the decision making. These kinds of systems are called Expert Systems and they are part of Artificial Intelligence – AI.

Expert systems are computer programs based on knowledge from some expert domain with the goal to help experts in solving the problem. They are part of decision support systems and they use the knowledge of experts. They come to conclusion using knowledge in symbolic way and can find approximate solution even though the data about the specific problem are not complete and can explain how they got the solution. They are suitable in situations where there is no an algorithmically solution, and those are weakly structured problems.[7]

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[7] Umjetna inteligencija i ekspertni sustavi, http://efzg.globalnet.hr/UserDocsImages/INF/varga/Umjetna%20inteligencija%20i%20ekspertni%20sustavi.pdf#search=%22%22Ekspertni%20sustavi%22%22 , rujan 2006.

Picture 3 – The Structure of Expert Systems.
Source:http://efzg.globalnet.hr/UserDocsImages/INF/varga/Umjetna%20inteligencija%20i%20eksp
ertni%20sustavi.pdf#search=%22%22Ekspertni%20sustavi%22%22 **(September 2006.)**

From the picture 3 is visible that the structure of expert systems is consisted from two different bases and the mechanism for conclusion. Facts base poses specific elements of knowledge about some problem, when the knowledge base poses documented solutions from previous problems. Those two bases are in interaction between themselves and in interaction with the mechanism for conclusion. Mechanism for conclusion uses rules and facts that exist in the system and on this basis concludes and solves the problem.

The purpose of expert systems is to support the deciding process. Solutions contained in the knowledge base are available in a conceivable way to everyone involved in the decision process. It is possible to get the response to an enquiry in the real time in few seconds.

In this way, installing the expert system, operational data base (of older version of computer systems) is not anymore burdened with complex enquiry so the system works faster and more effectively.

5. KNOWLEDGE MANAGEMENT IN THE CONTEXT OF HUMAN RESOURCE MANAGEMENT

Knowledge management in the context of human resource management refers to manage knowledge, skills and human competencies. On the picture 1 it is shown hierarchical relation between knowledge, skills and competency. Knowledge is on the fourth step knowledge levels and on half way to competitiveness. It means that individuals inside the organization, beside knowledge, must poses skills, must act according to them and must poses competencies so that the company in which he/she works would achieve the precondition of competitiveness. We can say that this is a strategy of knowledge management in the context of human resource management.

It is important, for companies, to find the experts for specific fields and to use their knowledge and experience that has to be transferred to the person that will continue to work in the same field. In this way, when someone is retired, collective company knowledge does not get lost because the expert has transferred his/her knowledge and experience to the younger colleague who continues where he/she has stopped. Working in this way is called mentoring and usually requires five to ten years of working together, so that knowledge and experience can be transferred in a bigger measure. Only in this way it can be possible to retain someone's tacit knowledge in the company.

There are also situations when it is impossible to work in this way because the company is situated in few locations. The solution for this problem is in different software, on – line communication, intranet and so on, which are the basic resources for information, knowledge and experience transfer through working in the virtual network. This way of communication functions through virtual network on which many people's work is based and they are connected through intranet and communicate by making enquiries. That's how is the group of people that are interested in the same specific field (job, projects) created, where they solve same problem through working together. When some problem is solved it has to be documented and saved in the knowledge base and it is always accessible in to the person that will need it in the future.

It is also important to say that beside knowledge there is a need for the development of the employee's skills so that company would develop on it's way to competitiveness.

6. KNOWLEDGE MANAGEMENT IN CROATIAN COMPANIES

According to procurable resource here is a list of companies that manage the knowledge of their employees:

- ✓ PODRAVKA[8],
- ✓ HRVATSKA ELEKTROPRIVREDA[9],
- ✓ ERICSSON NIKOLA TESLA[10],
- ✓ PLIVA[11],
- ✓ ULJANIK[12],
- ✓ KONČAR[13].

The companies from the list develop human resource management, valuate the employee's knowledge and increase the level of collective knowledge to generate

competitive advance. People make the company, create the image of the company, it's corporate culture and they are the reason the company functions, that's why it's important to see their qualities and work on their weaknesses so that they can improve and in that way develop the company and insure it's existence in the recent market conditions.

Using the list of companies above it will be shortly explained the knowledge management in Pliva. As a company, they made a web page with a purpose of developing knowledge management (www.strix-portal.com). Their way of knowledge management is based on the SNA methodology (Social Network Analysis[14]).

Picture 4 shows the virtual network based on the SNA methodology. The way they share knowledge and how is it created its simple:

- ✓ The network is active and in this way who ever connects to it will know what everyone knows,
- ✓ The network is available (the response on an enquiry is received in few seconds),
- ✓ There is a possibility of deeper understanding of the problem and it's interpretation,
- ✓ In the network there are secure and confident relations.

In this way it is formed the informal organizational structure which allows communication outside from the function walls, which improves communication in the company and decrease the number of mediators in communication.

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[8] http://www.hatz.hr/hrv/skupovi/znanje/matijevic.pdf#search=%22Upravljanje%20znanjem%20u%20Hrvatskoj%22, September 2006.

[9] www.hep.hr/publikacije/energija/index.html, September 2006.

[10] http://hgk.biznet.hr/hgk/fileovi/108.pdf, September 2006.

[11] www.strix-portal.com, September 2006.

[12] http://www.privredni-vjesnik.hr/index.cgi?A=I&SIF=00002&BR=003346&DA=20040405, September 2006.

[13] http://www.hatz.hr/hrv/skupovi/znanje/car.pdf#search=%22KON%C4%8CAR%20prema%20ekonomiji%20znanja%22, September 2006.

[14] Social Network Analysis, http://www.nelh.nhs.uk/knowledge_management/km2/social_network.asp,September 2006.
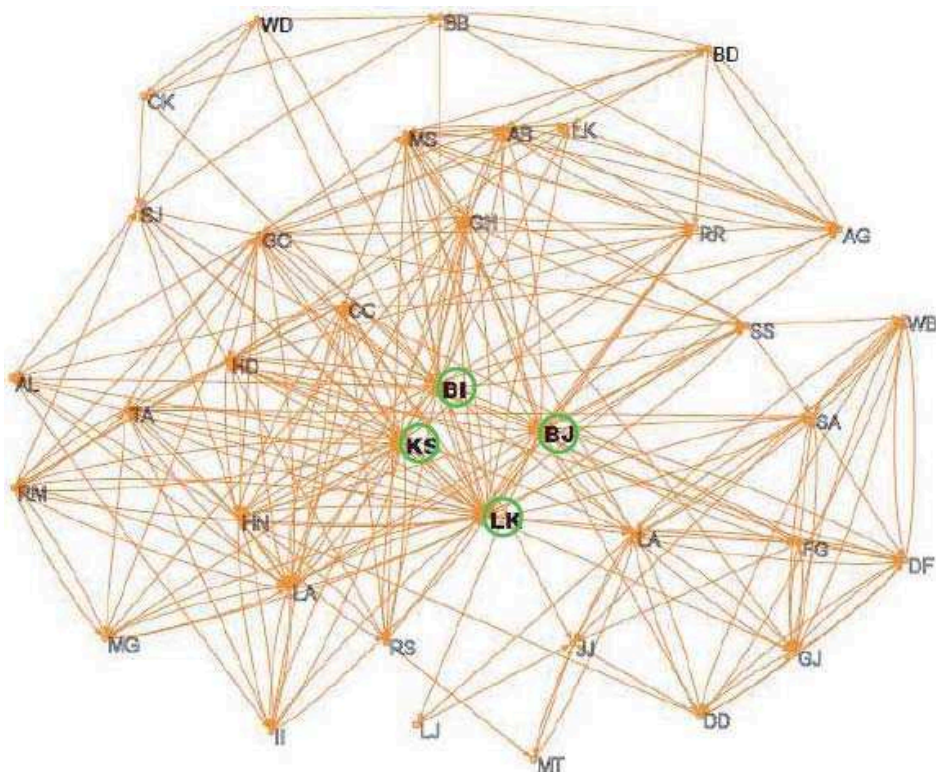
Picture 4 – The example of the virtual network based on SNA methodology.
Source:http://www.gbsit.hr/newsattach/94/HRKM.pdf?PLIVAweb=10b6be8643777cac468a9507a0fa
f3bd#search=%22Upravljanje%20znanjem%2C%20Pliva%22 (September 2006.)

Končar also activated the initiative in knowledge management through collaboration with the academically association, different faculties from the same field, through establishment of it's own institute and so on. Knowledge management of their employees functions through:

⊕ Acquiring knowledge through:
  ✓ Applied researches in the laboratory and in real conditions,
  ✓ Literature, conferences and fairs (the own networked library),
  ✓ Extra education through different seminars and postgraduate studies,
⊕ Applying knowledge through development of new products and services,
⊕ Valuation of knowledge by measuring the realized value added,
⊕ Responsibility for applied knowledge through the system of expert and science development,
⊕ Knowledge sharing with customers through diagnostically analyzing and studies,
⊕ Using knowledge from environment through the collaboration with academic associations,

⊕ Supporting creativity and competitive spirit through business organizations with institutes as profit centres with focusing on developing projects for now and future customer needs.[15]

Between these companies, there is also Uljanik that has a similar way of managing the knowledge of their employees and develops valuation of people and their knowledge, skills and experiences. Their applied method is called VAIC™[16] (Value Added Intellectual Coefficient), of professor Phd. A. Pulić. In this method there is a relation of investment and obtained and in this way is measured the efficiency of using physical, financial and human resources.

7. CONCLUSION

Human knowledge is the key of success in the recent market competition, as on Croatian also on a global market. Knowledge is the result of human work, experience and acting and there is a need of managing it because the winner is only the best, the one whose product is unique.

Strategy to attain the goals of the company lies in knowledge management and valuation of human resources. The differences between companies make the people with their competences, creativity and innovativeness. So our task is:

✓ To detect the employees potential,
✓ To motivate them,
✓ Encourage them in the things they do good,
✓ Guiding the employees with the purpose of increasing the level of their competences because they are the precondition of competitive company,
✓ To invest in their knowledge,
✓ To invest in informational communicational technology as a necessary infrastructure of every company and
✓ All said upward guide to realize the goals, mission and vision of the company.

Successful Croatian companies activate big initiatives in promote the human knowledge and knowledge management. There emerges the need for valuating the knowledge because it is the key for generating the competitive advantage on the market.

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[15] http://www.hatz.hr/hrv/skupovi/znanje/car.pdf#search=%22KON%C4%8CAR%20prema%20ekonomiji%20znanja%22 (rujan 2006.)
[16] http://www.vaic-on.net/start.htm, rujan 2006.

SOURCES

1. Dragičević, A., Dragičević, D.: Leksikon ekonomije
   i informatike, Informator, Zagreb, 1999.
2. Frappaolo, C.: Knowledge Management, Capstone Publishing, Oxford, UK, 2002.
3. Izvor: North, K.: Wissensorientierte Unternehmensführung
   – Wertschöpfung durch Wissen, Wiesbaden: Gabler, 1998.
4. NetLingo The Internet Dictionary, http://www.netlingo.
   com/right.cfm?term=KM, September 2006.
5. Knowledge Management, http://www.sveiby.com/articles/
   KnowledgeManagement.html, September 2004.
6. Artificial Intelligence and Expert Systems, http://efzg.globalnet.hr/
   UserDocsImages/INF/varga/Umjetna%20inteligencija%20i%20ekspertni%20s
   ustavi.pdf#search=%22%22Ekspertni%20sustavi%22%22, September 2006.
7. http://www.hatz.hr/hrv/skupovi/znanje/matijevic.pdf#search=%22Upr
   avljanje%20znanjem%20u%20Hrvatskoj%22, September 2006.
8. www.hep.hr/publikacije/energija/index.html, September 2006.
9. http://hgk.biznet.hr/hgk/fileovi/108.pdf, September 2006.
10. www.strix-portal.com, September 2006.
11. http://www.privrednivjesnik.hr/index.cgi?A=I&SIF=00002
    &BR=003346&DA=20040405, September 2006.
12. http://www.hatz.hr/hrv/skupovi/znanje/car.pdf#search=%22KON%C4%
    8CAR%20prema%20ekonomiji%20znanja%22, September 2006.
13. Social Network Analysis, http://www.nelh.nhs.uk/knowledge_
    management/km2/social_network.asp, September 2006.
14. Pliva, Upravljanje znanjem, http://www.gbsit.hr/newsattach/94/HRKM.
    pdf?PLIVAweb=10b6be8643777cac468a9507a0faf3bd#search=%22
    Upravljanje%20znanjem%2C%20Pliva%22 , September 2006.