WISDOM IN KNOWLEDGE MANAGEMENT STRATEGY

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Abstract: The end of the last and beginning of this century was marked by significant changes in planning assumptions and scope of activity of strategic management. Top management was firstly faced with intensification of dynamic environment, and then with increasing quantum of knowledge that is necessary and available both to the organization itself and its competitors. In such circumstances, it was necessary to include purposeful organizational knowledge management into the process of making strategic decisions.
Having in mind the fact that knowledge management requires the people that will be the carriers of the entire concept, managers are faced with new requirements. They are reflected in increasing individual competences of each manager personally, and then overall managerial competences of organization in a way that will provide successful management of various types of knowledge. Actually, the process of knowledge management within the organization and process of developing managerial competences are complementary and they take place simultaneously.

Key words: information, data, knowledge, knowledge management

1. INTRODUCTION

Changes in knowledge dynamics over time brings to faster changes and development of different concepts of scientific-technological process. In today's development of society, that is, scientific-technical progress, application of knowledge on different areas of human work has led to revolutionary changes, so four different concepts are differed in society development [8-10]:

- **I concept of society development – agricultural society** (knowledge applied on means for enhancing physical strength of men),
- **II concept of society development – industry society** (knowledge applied on manufacturing processes and products),
- **III concept of society development – information society** (knowledge applied on knowledge, that is, on means for multiplication of power of human mind) and
- **IV concept of society development – knowledge society** (knowledge in function of creativity).

Phase development of society observed according to concrete data in time dimension of space, in last 300 year, now goes to a new wave **K**nowledge **S**ociety (*KS*) or **K**nowledge-**B**ased **S**ociety (*KBS*).
Foundation of knowledge society will be development of technologies on base of renewable sources of energy and way on which a man will better use knowledge – fortune that is most important and widely spread. In that society man will be able to return to himself, to science, culture and spiritual growth more then ever. Science-technological progress directed to **K**nowledge **S**ociety puts personality in center of activities and its knowledge with application of information technologies, especially **I**nformatics-**E**xpert **S**ystems (*IES*), computer networks an Internet. Knowledge society has new approaches from various aspects: knowledge, products, quality, technology, informatics-expert systems, time, space etc.
Positive changes in creation of knowledge society can be achieved only by development of own methodology and through permanent and constant processes of education, which are adjusted to our country or even local environment, having in sight our cultural, psychological and natural characteristics.

The one that is the basic of scientific-technological progress is sight of global developing aspects of new technologies. This fact confirms Draker, 1996, where in his book: "Innovations and management" says that new technologies are not only new materials, processes or technologies but that they are new knowledge of manufacturing processes and new company management.

2. INFORMATION, DATA AND KNOWLEDGE

The main components that support the knowledge are information and data, which affect its portability and general coherence.

Information is defined as the first term (the registration number in standard 01.01) of international standard: ISO/IEC 2382-1:1993   Information technology -- Vocabulary -- Part 1: Fundamental terms. This standard of information (registration number ISO / IEC 2382-01.01.01) is defined as [8-10]: "knowledge which refers to objects such as facts, events, things, processes or ideas, including concepts, which in particular context has a special meaning ".

The word information comes from the Latin phrase "informatio" (meaning: a concept, a message, a set of knowledge), as a nouns and the verb "informare". The expression consists of two words, namely: "in" and "forma". They mostly determine the primary meaning, which is: in aspect, to give the form, in form, appearance, shape.

Serbian word *informacija* in English, French and German language corresponds to the word *information*, and in Russian the word *информация* etc.

A variety of documents and publications show that people ever since know the expression information, especially for the influence and importance of information. However, it should be noted that during time the information as a concept had different meanings. New definition of the expression information was set by an American mathematician C. E. Shannon in his scientific works in 1948. In his papers, Shannon did not directly use the expression information, but did it through the words "message - the news". Shannon is considered the creator of the foundation (base) of information theory, which allows us to research of measuring the amount of information that contains a message or issue of an organization of information and communication systems, in such a way as to allow greater amounts of information in the shortest possible time. That is how the research of the concept of information within the information theory made this term and an expression penetrate almost all the science, both theoretical and technological. He gets the importance primarily because the development of information theory, cybernetics and related sciences not only indicates the importance of information but also its possible application in the process of decision making and management process.

The word information has experienced a strong explosion of its meaning. So in the professional scientific literature of different countries, there are many different definitions and explanations related to the concept "information". Some of them are [8]:

• Information has the meaning attributed to the data using the conventions used in their presentation, according to the first edition of the national standard JUS I.A0.010 [8-11];

• Information has the meaning of a notification, explanation or a message, according to the meaning from everyday life;

• The term information implies the interpreted data, or the knowledge or meaning that the man credits to the data, so that the information increases the knowledge gained from the interpretation of data;

• Under the information we include the news and information of all kinds, according to Wersig;

- Information in terms of probability theory, is the size of measure for uncertainty (indetermination) of an occurrence of events, according to Shannon and Weiver;
- Information is a message which abolishes or reduces some indetermination and reduces uncertainty, according to Ackoff, Poluskin and Jedziny;
- Information is sending and receiving certain data, and therefore each impact of any system S_1 to any other system S_2 is named an information (e.g. the thermostat sends information to heater or a boiler that the temperature in the room or water in the boiler, reached a certain level of temperature) etc..

All these definitions of the term "information" are spreading, being used and represent a more permanent scientific value.
Information is an abstract concept, and is shown with real-world elements, such as: letters, numbers, and values of some physical quantities. In accordance to that, data is a physical presentation of information.
Basic characteristics of the information, according to Diebold [7]:
- The information has a fundamental value, as well as money, goods, labor or raw materials and it has features that can be identified and measured, such as: method, the difficulty and cost of obtaining, the purpose in which it is used (usefulness) and the various forms and means by which it is created, rules how to be acted with it and principles how is it processed;
- Information exists in various degrees of purity and usefulness, and it can be refined and processed to maximize its value,
- The information passes through many hands that transmit it and change it from collecting, through improvement to the use, and
- Investments for obtaining information as resources can be typically charged as a cost, and sometimes, depending on the objectives of the company, as a capital investment.

Regardless of the theoretical explanation of the concept of information we accept that it is important to know its, now already widely accepted understanding as a resource. This actually means that the information is considered a resource such as traditional resources: money, material, equipment and people. For a business system, namely, it has become clear that accurate, timely and complete information became a resource of great importance in making decisions, maintaining and expanding the market position, competitiveness and even survival in the market. It is one of the key reasons of extremely rapid development of *Information System* (IS) based on fast and reliable hardware, reliable and high quality software, communication technologies, databases, knowledge bases, etc.. Even somewhere in the 1970s the term "*data*" was replaced by the term "*information*". The point is not, of course, in the switching of the terms, but in exchange of data as facts, numbers, symbols, etc. (which are almost useless for decision making and management) with the information that are the basis of decision making and management. This trend has continued and it was intensified in late 1980s and early 1990s in which the words "*information*" and the word "*management*" as terms retained, but the "*system*" was replaced by the word "*resource*". What comes directly from the statement that the information is an important resource of a business system is the knowledge that the information as well as other resources, must be planned, organized and that they must be managed. Particularly large expansion of production and use of information recorded in the world was recorded in the past 10 years, with the development of Internet and Web technologies.
Foundations of information theory were set by the American mathematician Clod E. Shannon. Information theory allows us to study measuring the amount of information that a

message contains or an organization of communication systems problem, in such a way to allow greater amounts of information in the shortest possible time.

Data is defined as the second term (the registration number in the standard 01.02) of international standardISO/IEC 2382-1:1993 Information technology -- Vocabulary -- Part 1: Fundamental terms. This is standard of information (registration number ISO / IEC 2382-01.01.02) is defined as [8-10]: "explainable presenting information in a formalized manner suitable for communication, presentation or processing". Or the term data in the most general sense means the representation of concepts, isolated and discrete facts and meanings in an aspect, situation or a phenomenon, which do not need to be certain when viewed separately. Presentation of data should provide the necessary work with the data: transmission, transformation, data storing, etc.

Serbian word *podatak* in English language corresponds to the word *data*, and in Russian the word *данные* etc.

Data can be processed by humans or by automatic devices. One of the most modern automated resources is certainly a computer. Data in computer technology can be numeric or non-numeric data.

From the above it follows that the data is processed, and the term *data processing* means connection, transformation and interpretation of data that provide information in the form of specific and useful statements according to which can be managed. Thus, the data processing includes all activities related to the collection, storage, maintaining and manipulating data. In the field of technical sciences, for solving specific numerical task, the data processing usually involves the execution of one or more of operation of calculation or logical operation of data by pre-determined (given) order. Use of computers in data processing gives the definition of automatic data processing. Hence it is obvious that the higher level of knowledge allows reducing of uncertainty of process flow and reducing the uncertainty and the speed of decision making. Basic characteristics of knowledge are: structure, coherence and relative permanence, unlike information, whose characteristic are: fractions, fragments and most often the temporality or brevity.

Knowledge is a key information resource in the narrow sense and a key factor in problem solving and decision making in general.

Spiral of interconnection of data movement cycles during its exploitation is shown in Figure 1 [5].
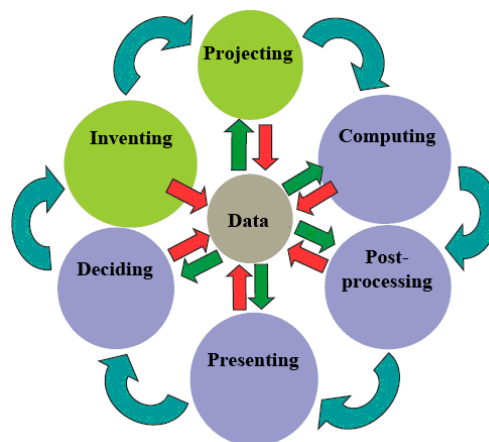

Figure 1. The spiral of interconnection of data movement cycles during its exploitation

If the data is a raw non-analyzed fact, information is a processed data, presented in the form suitable for decision, then the knowledge is the capacity of usage of information, it interprets information and uses them in decision making.

Knowledge is defined as one of the first three terms (registration number in the standard 01.03) of international the standard: ISO/IEC 2382-1:1993 Information technology -- Vocabulary -- Part 1: Fundamental terms. In this standard, the knowledge (registry number 2382-01.01.03) is defined as [8-10]: "Knowledge is the amount of information, perception or understanding that a person or a system has".

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Knowledge is a fluid mix of experience formatting, values, related information and expert opinions that provide a framework for evaluation and inclusion of new experiences and information. It flows and is applied in the minds of experts [8].

In organizations, knowledge often lies not only in documents or repositories (knowledge bases) but also in organizational experiences, processes, practices and norms.

Basically, we distinguish two types of knowledge:
- Explicit knowledge (universal knowledge) and
- implicit knowledge (heuristic knowledge)
  - empirical (opinion models),
  - technical (competences).

Explicit knowledge is a public knowledge, that can be repeated or it is possible to provide a form which allows its portability and general coherence.

The main components are:
- data, information, documents;
- models, tools;
- policies, strategies, directives, procedures, instructions.

Implicit (tacit) knowledge is private knowledge:
- placed in the brain,
- motivated thinking (by a document),
- ideas and views,
- creative thinking,
- objection,
- opinions.

Tacit knowledge is a knowledge that is unsaid, intuitive, experiential and practical. It can not be transmitted without delay because no verbalization is comprehensive enough (playing the piano, riding a bicycle, sales ability).

We can mention:
- highly personalized and not formalized,
- it presents a practical wisdom of experts, very busy with work and disciplined, and that is very difficult to "catch",
- the focus of interest of those who are interested in an organization management that is based on knowledge, or those who are involved in intellectual capital,

- goal of each company is to transform any tacit knowledge into the material, explicit knowledge that is owned company and is not alienable.

Knowledge is the heart of every expert system accumulated in the process of building this system. The knowledge of an expert system consists of facts and heuristics (experience and feeling for the decision selection) [13].

The facts are the main part of the data on the nature of the system, its activities and goals that the system realizes through those activities. Certain phenomena and manifestations of regular and non-regular state in the system have their causes and consequences, also described by sets of data. All these data may be generally available, documented and verified in the field of expert system.

Heuristics are personal rules of reasoning and skills in selection and decision making which concerns the change of the system's state. It is generally poorly documented and it is a property of the top specialists in the area covered by the given expert system.

3. INFORMATION, KNOWLEDGE, WISDOM

In order to speak about knowledge management, firstly it is necessary to analyze and define the term knowledge. That would not be much of the problem if there would exists one universal and generally-accepted definition of knowledge, but numerous thinkers and practitioners couln not reach the consensus about what is exactly implied by knowledge and where are the limits of knowledge in the sense of differentiating it from close categories – data, information and wisdom.

From all above-mentioned categories, it is most difficult to draw a clear line between the knowledge and information. Describing the difference between information and knowledge is difficult since these two categories are mutually permeated and often used as synonyms. In addition, there are different attitudes about whether the particular parts of recorded information are actually „knowledge" and whether the recorded knowledge contains numerous information.

Summarizing the above-mentioned overview and relations shown in it, the following can be concluded (Figure 2) [13, 14]:

- *Information* are related to descriptions, definitions or perspectives.
- *Knowledge* includes strategy, practice, methods or approarches.
- *Wisdom* embodies principles, insight, moral or archetype [2].

In other words, data are observations or facts out of the context, and thus they do not have any meaning by themselves. Information are obtained when the data are put in the context that has a meaning, very often in the form of message. Knowledge represents our beliefs and evaluations that are based on meaningfully organized set of information (messages) that are reached through experience, communication or drawing conclusions [13, 14].

The problem that existed in defining the knowledge category is directly transported into the problem of defining knowledge management. Non-existence of universal definition of knowledge category has resulted in pluralism of possible approaches to explaining knowledge management. Additional problem is also the disagreement about what is knowledge management – concept, strategic tool, business practice or something else.

Starting from the information as main factor for the constitution of knowledge, knowledge management can be defined as systematic process of collecting, selection, organization, destiling and presentation of information in a way that improves the understanding of employees in specific fields of interest. Knowledge management helps the organization to accomplish gain on recognizing and understanding its own expertise. Specific activities

within knowledge management help the organization to focus on acquisition, preservation and use of knowledge for problem-solving, dynamic learning, strategic planning and decision-making.

Figure 2. Overview of relations [13, 14]

World Bank has implemented the system for knowledge management for potential borrowers in order to spread its own expertise and it has formed its own committee that deals with this problems. Experts of the World Bank treat knowledge management as a process of systematic connecting of people (people to people) and connecting people and information (people to knowledge and information) in order to act effectively and to create new knowledge. The aim of starting initiative of knowledge management is the imrovement of performances of organization and individuals through the identification, gaining, validation and transfer of knowledge [3].

Rudy Ruggles, one of the leading thinkers and practitioners in the field of knowledge maangement has identified the following elements as integral components of knowledge management:

- Generation of new knowledge
- Availability of useful knowledge from external sources
- Use of the knowledge available for decision making
- Embedding the knowledge into processes, products and/or services
- Presentation of knowledge in documents, databases and software
- Facilitation of knowledge expansion through organizational culture and initiative
- Transfer of existing knowledge into other parts of organization
- Measurement of knowledge value and/or impact of knowledge management [6].

Previous definitions indicate that knowledge management is systematically and organizationally specified process for collecting, organizing and communication of employees' knowledge so that other employees can use it in order to improve the effectiveness and productivity of their work [1].

4. GENERAL STRATEGY OF KNOWLEDGE MANAGEMENT

General strategies of knowledge management

Day and Wendler (1998) [4] from consulting company McKinsey & Company identified five strategies of knowledge management that big corporations use. The mentioned classification has a flaw, which is the fact that it favours big organizations, but it was already determined that in previous development of the implementation of knowledge management in practice, no concepts were developed that would support a wider knowledge management in smaller organizations than the one that is provided by generic strategies of knowledge management.

Strategy of development and transfer of better practice
As the name itself says, strategy is focused on identification of the best practice within organization and its spreading over a dispersed network of locations. Idea of identifying the best practice is not new, but only within the concept of knowledge management it obtains its theoretical foundation. Strategy can be applied complementary with the concept of benchmarking.

Strategy of creating a new industry from previous knowledge
This approach refers to the observation of knowledge that an organization possesses and that can be used in another, i.e. new way. The existing knowledge in combination with expressed needs of consumers can result in market gap for new products.

Strategy of shaping corporative strategy around knowledge
Regarding this strategy, it is all more than clear. By the review of the current conditions of environment and strategic options, the corporative strategy that is based on the existing knowledge of organizations is formulated. Corporative strategy also formulates the needs for knowledge so that constant upgrade of organization's knowledge is done in accordance with strategic priorities. Process is irreversible in the sense that it can create new possibilities by newly-acquired knowledge, which requires reformulation of corporative strategy.

Strategy of generation and commercialization of innovations
Strategy is focused on strenghtening competitive position through the increase of the number of technological innovations. In addition, the aim of the strategy is to reduce the time necessary for the development of a new product and its commercialization. This is especially important in industries in which life cycle of the products is extremely short, where the needs of buyers are constantly changing and where the intensity of competition is very strong. Strategy was successfully used by Japanse car manufacturers, especially Toyota.

Strategy of standards creation by releasing own knowledge
Strategy is widely applied in software industry. Examples are numerous. Famous web browser Netscape has began to encounter with the problem of market share decrease. The company that has developed it has decided to make the source code of the browser available to the public at no charge. In that way, the number of Netscape users was increased, beacuse the majority of serious programmers were very interested to enter the essence of the software itself, which also implied its usage in browsing the Internet. Netscape increased its market share, improved its image, created users' loyalty and in the end, what is perhaps the most important, obtained the feedback from the users about the way in which it is possible to perform the improvement of the software itself. The feedback of users was transformed into useful knowledge that contributes to the increase of product's value.

The example of Microsoft also witnesses that the strategy was extremely successful in knowledge management, Microsoft has also given a source code for its most important product – Windows. In fact, Microsoft has limited the access to the source code only to its partners that have signed the agreement, since it did not have any problems with market share. Howere, the essence of the strategy is the same as in the previous example.

5. CONCLUSION

Although serious efforts in formation and theoretical foundations of the discipline of knowledge management were not observed before the 90's of the previous century, the significance of discipline keeps increasing. Objectively speaking, discipline itself is still in transition from the establishment stage to the development stage, but that is no obstacle for its successful application in daily operations of the enterprise. It can aslo be noticed that some companies successfully manage the knowledge, although they do not have a precise attitude about the fact that they want to manage knowledge and use it in practical purposes. This supports the conclusion that theoretical completion of discipline is not over yet and that in the future significant funds need to be collected for those purposes, both from the part of enterprise and from the aprt of the state through financing the scientific institutions [12].
Inclusion of all levels of management in the process of knowledge management requires the increase of manager's competences, and thus also the increase of managerial knowledge. By strenghtening managerial competences for knowledge management, a more purposeful knowledge management is achieved within an organization, as well as the increase of its competitiveness.

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