

STRUCTURE OF KNOWLEDGE MANAGEMENT

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Abstract

Knowledge becomes important element in today's business world. Organizations aiming to compete in knowledge society must learn to manage the knowledge they possess. This paper focuses on theoretical analysis of structure of knowledge management (KM). The aim of the paper is to analyse structure of knowledge management.

The paper discusses concept of knowledge management referring to findings of number of scholars. Further, the paper analyses advantages and limitations of KM. Analysis of structure of KM is performed by comparing KM concepts, offered by Bhojaraju (2005), European KM Forum (2002), Cong and Pandya (2003), Kucza (2001), Probst et al. (2006). Special attention in this article is paid to systematisation of KM processes as well as identification of major KM measurement problems.

Keywords: *knowledge, knowledge management, knowledge management structure, measurement problems of knowledge management, knowledge management processes.*

Introduction

During the last decades the environment, in which organizations act, has changed a lot. In nowadays organizational environment, various global and technological changes proceed, which stimulate organizations to change their behaviour and to look for more ways to adapt and effectively develop their activities. One of these ways is knowledge management (KM). It helps organizations to manage such essential resources as information and knowledge. In connection with this, knowledge becomes main organizational asset and strategic advantage.

If organization wishes to turn knowledge into strategic advantage, it should understand all knowledge management processes and use them properly in practice. However this becomes a great

challenge to organizations. If organization is able to use knowledge management processes properly, it can assess knowledge management, which allows it to find effectiveness of these processes and avert organization to right direction. Therefore the aim of the paper is to analyse structure of knowledge management.

Concept of knowledge management

Knowledge is resource which is captured during its use time (Probst et al., 2006, p.11). Due to the changes in markets, the growing number of competitors and the technological changes, organizations which act successfully are valued for their ability constantly to resume and to create new knowledge using it to create new products and services (Lithuanian Development Agency, 2002). According to Bieliūnas (2000), knowledge does not belong to any of the usual organizational resource group (for example: raw materials, labour force, finances).

The environment of knowledge in which an organization operates today, structurally is more complicated than the one that used to surround an organization a few decades ago. The most important factors which influence business environment are fast growth of knowledge volume, the level of knowledge fragmentation and growing knowledge globalization (Probst et al, 2006, p.15). The competitors are close. The market becomes more global, thus, knowing how organizations develop in other continents becomes more important, but also more complicated and time-consuming (Lithuanian Development Agency, 2002). Organizations that wish to survive and compete in knowledge society must learn how to hold knowledge. In other words, for organizations that want to gain a long-term competitive ability, it is not sufficient to use only internal and external sources of information (Ruževičius , 2005).

So far there is no universally accepted definition of knowledge management (KM) because KM as academic and training discipline is currently being developed. What is KM? Samonis (2006) maintains that KM is inclusive method and modern look at nurturance of business. The author accents that KM means optimal use of theoretic and practice knowledge in business processes in order to achieve more advantages against competitors and to realize benefit of an organization. KM is similarly defined by Girard cited by Kaupelytė (2005): KM describes how organization gains competitive advantages by knowledge creation, transfer and exchange. Ruževičius (2005) states, that KM is effective use of organizational resources striving to avoid secondary “discoveries”. According to Rumizen cited by Wikibooks (2006), “KM is a systematic *process* by which knowledge needed for an organization to succeed is created, captured, shared and leveraged”. For

this reason, KM involves leadership establishing processes, also defined as activities or initiatives, to help organizations adapt to constantly changing environment. Successful KM depends on processes that enhance individual and organizational ability, motivation, and opportunities to learn, gain knowledge, and perform in a manner that delivers positive business results.

Govil (2007) highlights, that it is important to understand KM in a broader context. KM is a process by which companies organize themselves to generate value from their intellectual and knowledge-based assets. These assets include the intellect and knowledge that has been acquired, created and consolidated by employees, customers and partners over the years working in the organization. Rabenstine (2001) argue that KM is a contradiction in terms, being a hangover from an industrial era when control modes of thinking were dominant. Thus knowledge is not only an explicit tangible “thing”, like information, but rather information combined with experience, context, interpretation and reflection. Knowledge totally involves person, integrating the elements of both thinking and feeling. Hence some authors object to the implication of the term “knowledge management” that knowledge can be managed. This reveals a fundamental misunderstanding in the nature of knowledge. According to Rabenstine (2002), KM is increasingly seen, not merely as a latest management fashion, but as a signal of the development of more organic and holistic way of understanding and exploiting the role of knowledge in the processes of managing and doing work, and an authentic guide for individuals and organizations in coping with the increasingly complex and shifting environment of the modern economy.

As the analysis shows, there is no universal definition of KM, and there is no specification what constitutes KM. That is why it is useful to analyze properly how KM improves organization’s activities. In particular, how does it improve operational (process) activities? This is the question that mostly matters many top managers and executives. They need answers that would justify and reinforce the importance of integrating and institutionalizing KM in their organizations. In that connection, further we analyse advantages and limitations as well as structure of KM.

Advantages and limitations of KM. According to Krivaitis (2003), modern organizations’ value depends on its non-material capital. Knowledge which is captured by organization is a part of nonmaterial capital. If organization learns to handle and use its nonmaterial capital, it enables to raise its material capital value. Organizational knowledge even has greater importance than other resources, such as the capital, natural resources and labour force. Knowledge becomes a tool which helps organization to adapt to changes in market, to understand the reasons of these changes and to

forecast them in the future. The knowledge helps organization to change its products, and KM allows it to do that on time or to stop projects which are damaging for organization and begin new projects which secure it's growing (Lithuanian Development Agency, 2002). One of the most noticeable KM benefits is a chance for organizations to avoid unnecessary job duplication and repeating mistakes (Krivaitis, 2003).

Knowledge helps to make necessary decisions. Knowledge from earlier projects, attempts, failures and successes can become a base for decision-making. While employees or their groups intercommunicate and exchange knowledge, the organization can make right decisions and begin their implementation faster. Kaklauskas and Kanapeckienė (2005) suggest that there are nine advantages of KM (see Figure 1).

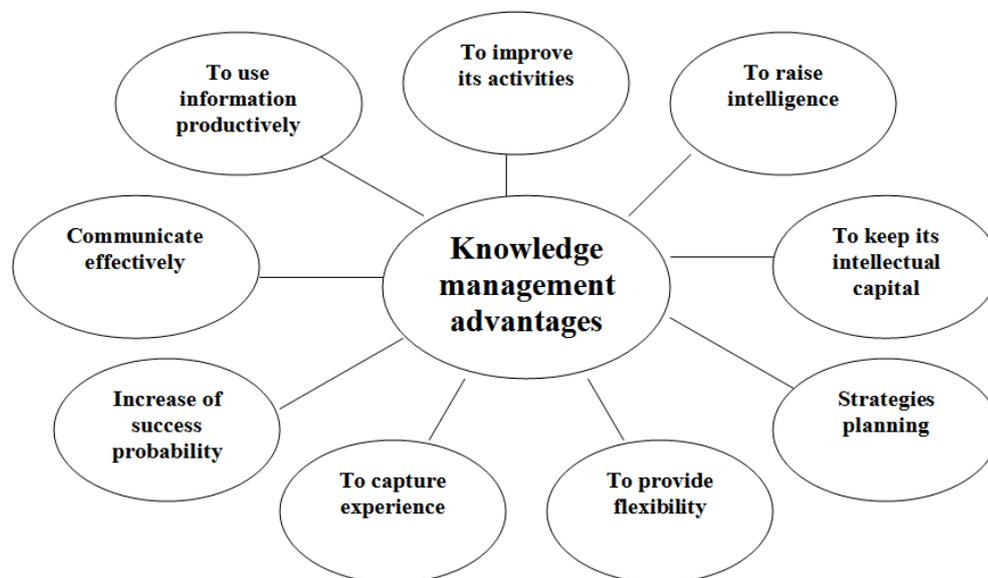


Figure 1. KM advantages (Kaklauskas and Kanapeckienė, 2005)

KM is increasingly adopted by modern organizations as an effective management tool to achieve organizational change because, as we can see from Figure 1, it has a lot of advantages. However, many KM initiatives fail as a result of inappropriate relational information processes (Hubpages, 2007). Effective employment of KM requires primarily credible information sources such as interaction with customers of different levels of workforce. Moreover, it requires development of a learning organizational culture, appropriate information processes and the provision of incentives for information sharing. For instance, a lower ranked employee may not recognize that a higher ranked employee does not have the same knowledge base and/or feel

uncomfortable telling the higher-ranked employee about the implications. Interdisciplinary differences may also arise. An expert in one discipline may not know that an expert in another discipline does not understand implications of information that is considered basic in one discipline but not in another. Individuals may not realize that they have specialized knowledge or skills that allow them to understand the implications of information in unique ways and/or that others may not have the time to develop that understanding. Collison and Parcell (2001) reveal a negative aspect of KM: it requires willingness to understand culture and to deal with process issues – it's not just a technology quick fix – it's a holistic approach. These authors maintain that it is easier to demonstrate immediate benefits in larger, distributed organizations. They also note that KM is "often misunderstood by technology vendors peddling information management technology". Lepeška(2006) highlights that essential KM "product" is environment, which encourages employees to create, share, protect, and use knowledge. The main aim of KM is to increase organization's effectiveness, and to improve three essential processes: learning from success and mistakes at individual, team and organizational level; learning from colleagues; learning from external parties: partners, suppliers, customers and competitors.

In summary, KM is set of methods which help organizations to recognize, properly use, collect and transfer knowledge. Organizations which manage their knowledge must comprehensively and effectively use not only what they have but also what they know. Organizations should understand the importance of KM and implement it in their everyday activities.

Nowadays big attention is paid to KM processes, as organizational knowledge is considered an organizational asset and main source of organizational strategic advantage. Before starting to speak about KM process within an organization, it is very important to determine its place in all organizational system and relations with others KM elements.

Analysis of KM structure: elements and components

Analyzing KM elements and components we can distinguish two main sources where KM structure is detailed. They are as follows: Bhojaraju (2005) and European KM Forum (2002).

KM structure according to Bhojaraju (2005)

Basing on actual experiences of the leading global KM case studies, Bhojaraju (2005) distinguishes components of KM that can be broadly categorized into three classes – People,

Processes, and Technology (see Figure 2). While all three classes are critical to build a learning organization and get business results from KM, the majority of organizations worldwide implementing KM have found it relatively easier to put technology and processes in place, whereas the component “people” has posed greater challenges (Bhojaraju, 2005).

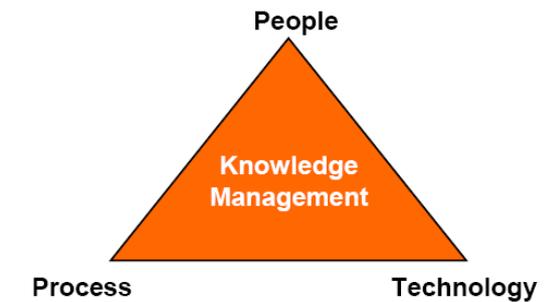


Figure 2. Components of KM (Bhojaraju, 2005)

Cong and Pandya (2003) express similar opinion by stating, that KM focuses on people and organizational culture to stimulate and nurture the sharing and use of knowledge; on processes or methods to locate, create, capture and share knowledge; and on technology to store and make knowledge accessible and to allow people to work together without being together. So it is quite evident, that attitudes of both source authors almost concur, except one thing: Cong and Panyda (2003) attribute organizational culture to “People”. According to our opinion, such segregation is not necessary as organizational culture is a result of people interactions within the organization.

The biggest challenge in KM is to ensure participation and collaboration of the people or employees in the knowledge sharing, and re-use of achieved business results. In many organizations, this requires changing traditional mindsets and organizational culture from “knowledge-hoarding” (to keep it hidden or private) to “knowledge-sharing” (to share it among team members) and creating an atmosphere of trust. This is achieved through combination of motivation / recognition and rewards, re-alignment of performance appraisal systems, and other measurement systems (Bhojaraju, 2005).

Argote et al. (2003) have noted that members of an organization are unlikely to share insights and ideas within the organization if they are not rewarded for the knowledge sharing. The authors point to the impact of social rewards as being just as important as monetary rewards. A strong social culture within an organization can promote the transfer of knowledge. Within this strong culture desire for social cohesion and genuine spirit of reciprocity develops. Argote et al.

(2003), point to a less altruistic and a more egocentric motivation for knowledge sharing within an organization with a strong social culture. Often an employee is willing to transfer knowledge in order to protect his / her own social standing. Demonstrating uncooperative behaviour or attitudes might damage one's reputation. Thus, in order to avoid this social and professional risk, knowledge sharing increases.

A key to success in knowledge management is to provide people visibility, recognition and credit as "experts" in their respective areas of specialization - while leveraging their expertise for business success (Bhojaraju, 2005). Cong and Pandya (2003) also share Bhojaraju's (2005) opinion; according to them „people are the most important component part, as KM depends on people wish to share knowledge and reuse them”.

Other component of KM is technology, which enables KM to function well. The KM process requires technology to support the capture and sharing of people's knowledge, promote collaboration, and provide unhindered access to an extensive range of information. Technology must support all activities involved in the knowledge life cycle (e.g., capture, organization, retrieval, distribution, and maintenance) (Duffy, 2000). Atkočiūnienė (2006) points, that technology could be used for dialogues, to motivate negotiations or for communication, but it is not the essence of KM. Technology doesn't create knowledge, it only processes information. Thus, technology is not a purpose but rather an instrument. However, one of the famous KM experts Skyrme (1999) predicts: "...artificial intellect will make favourable opportunities to computers to be symbiotic partners of knowledge workers by making future forecasts and collecting information”.

The third component of KM it is the process. The "Process" component includes standard processes for knowledge-contribution, content management (accepting content, maintaining quality, keeping content current, deleting or archiving content that is obsolete), retrieval, membership on communities of practice, implementation-projects based on knowledge-reuse, methodology and standard formats to document best-practices and case studies, etc. It is important for processes to be as clear and simple as possible and well understood by employees across the organization (Bhojaraju, 2005).

Knowledge management process is an activity or initiative, which enables and promotes creating, sharing and using knowledge. It is associated with general infrastructure and processes within organization as well as knowledge management processes and their infrastructure (Dalkir, 2005, p. 48).

Concluding from opinions of the above-mentioned authors, processes could be divided into organizational processes and infrastructure which is related to ability to promote or stop KM.

To be of practical value, KM should affect what is done, how it is done, and how well it is done. Clearly, then, one critical link between KM and business results is through business processes. The impact of KM on key business results might well be the greatest through its potential for improving the performance of business processes. This suggests that the design or redesign of business processes should factor in an understanding of where and how knowledge plays a role in the performance of the process. In turn, this is accomplished by identifying the knowledge needed to make the decisions or take the actions that make up the process, as well as addressing considerations related to the knowledge generated by those decisions and actions (e.g., capture and distribution to name but two) (Nickols, 2000).

Above-mentioned components' interaction gives new attitude to KM structure proposed by European KM Forum (2002). This structure describes not components but rather detailed KM elements. KM elements express actions which are results of components interaction.

KM structure according to European KM Forum

KM structure offered by the European KM Forum consortium is represented in Figure 3. It shows how the aspect of KM processes may to be seen in the context of the whole KM framework.

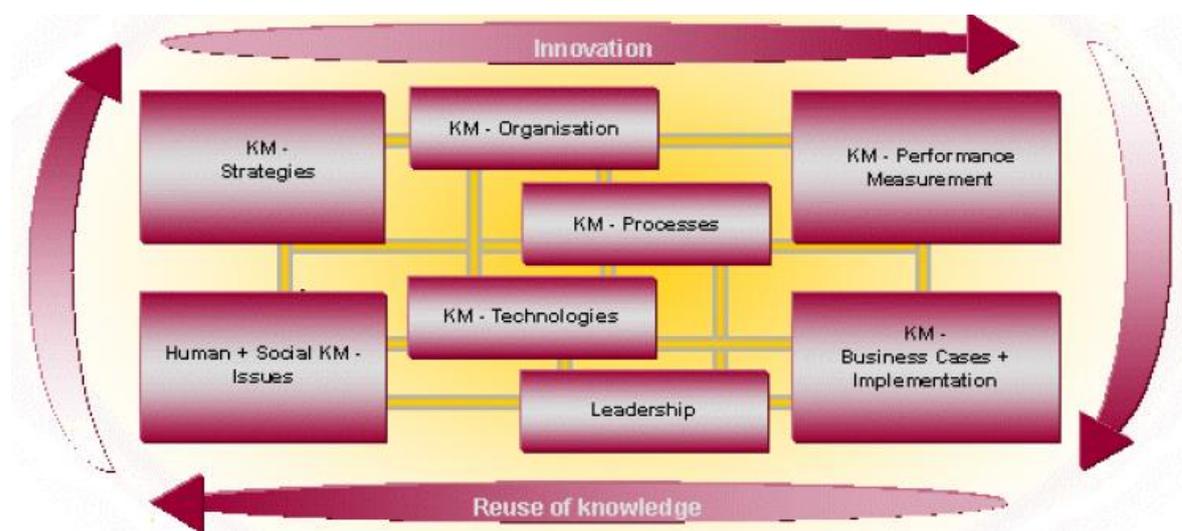


Figure 3. KM structure (European KM Forum, 2002)

The KM framework developed by the European KM Forum consists of eight major elements: (1) KM strategies, (2) Human + Social KM issues, (3) KM organizational aspects, (4) KM processes, (5) KM technologies, (6) KM performance measurement, (7) leadership, and (8) KM business cases + implementation aspects. In relation with Bhojaraju's (2005) structure of KM, (2)nd and (7)th elements could be assigned to class "People", (5)th element – to class "Technology" and (4)th element could be assigned to class "Processes". All eight KM elements offered by European KM Forum (2002) are closely interlinked on the one hand to support the innovativeness of the whole system, and on the other hand to secure the aspect of reusing existing knowledge within the system. Specifications of these elements are discussed below.

KM Strategy. Before starting any kind of activity, one has to be clear, which way to go and what goals have to be reached. The goals have to be clearly defined, likewise the direction and the manner of reaching these goals. It is important to declare a strategy especially with regards to KM (European KM Forum, 2002). According to Hansen et al. (2005), organizational KM strategy should reflect its competitive strategy: how it creates value for customers, how that value supports an economic model and how the organization's staff delivers the value.

Human + Social KM issues. Hereby, the roles of persons should be defined. A clear definition of specific human-oriented KM issues is the result of this element (European KM Forum, 2002). These issues mainly concern how to collect existent individual knowledge in organization and to use it in a right way for organizational goals implementation.

KM organization. With regard to the organizational aspects, the KM framework provides important hints to create, run and maintain a knowledge friendly organization. This includes the structure of a 'KM organization' as well as the roles within such an organization. It has to be seen as a guideline to align existing organizational structures towards KM (European KM Forum, 2002a). Wohl (2001) states, that KM lets organizations preserve expertise inside a knowledge management system and share that resource to train additional professionals as well as to permit workers to access and apply information that is normally outside of their field of competence. This can be invaluable in saving time, avoiding reinventing solutions to already solved problems, and, helping to start the next generation of experts.

KM technologies. What technology for what purpose? This fundamental question should be answered while speaking about the KM framework element 'KM technologies'. It is useful for organizations to overview existing KM technologies in order to take the right decision in this 'hard'

issue of KM. Dawson (2005) adds, that although KM is not just about technology, new communication channels make sharing knowledge and expertise much easier. Companies can save time and drive innovation through sharing information electronically with clients, and can also tap expertise through online interactions with professional service firms. Dawson (2005) also highlights, that technology improves knowledge sharing, expertise location, collaboration and document creation.

KM processes. This element gives answers concerning the business processes and their adoption to KM. Not only served as business processes also as general processes of activities in organizations, this element is helpful for the whole target group to be more efficient in acquiring, sharing and maintaining knowledge (European KM Forum, 2002).

Kuczka (2001) has offered a substantial KM model, which shows the main KM processes and their basic dependencies. This model introduces main KM processes, sub-processes and the way these processes are refined to tasks. The KM process model can be separated into two major parts: the co-ordination processes and the operational processes. The co-ordination processes represent the management tasks related to KM. They include analyses and planning of KM, dealing with organizational issues, etc. The operational processes present carrying out KM, i.e. knowledge collection, sharing, update, etc.

According to Kuczka (2001), the general concept of the process model is that within the coordinating processes the operational processes are planned and initiated. Together these make up the KM system. The main processes are described in the following. The first process is related to “Identification of Need for Knowledge” and its determination. After that, “Sharing” is initiated in order to find out whether knowledge that already exists in the system can be used. This covers both: search for knowledge by a person who needs the knowledge (“Knowledge Pull”), and feed of knowledge to recipients who are known to be in need of it (“Knowledge Push”). If the needed knowledge is not available yet, “Creation of Knowledge” is initiated. Consequently, the new knowledge (the result) has to be collected – this is done in “Knowledge Collection and Storage” phase. Besides, while sharing knowledge, new knowledge is often created throughout the combination of the shared knowledge with the receiver's existing knowledge (Nonaka and Takeuchi, cited by Kuczka (2001)) – this shows interaction between “Knowledge Collection and Storage” and “Sharing”. Both “Creation of Knowledge” and “Sharing” may have external links. “Creation of Knowledge” may utilize knowledge from outside the organization. This external input

is connected to the main process creation, because knowledge has to be adapted to the needs and context of the organization. The external link of “Sharing” on the opposite side enables knowledge brokerage, such as selling knowledge to the outside world. In fact, this is what consultants are specialized in, however it can also be applied to organizations developing software components, which they sell to others.

Probst et al. (2006) divide the KM processes into knowledge identification, knowledge storage, knowledge use, sharing and distributing of knowledge, knowledge development and knowledge acquisition. In comparison with Kucza’s model, this model considers only operational processes and omits coordinating processes. We think that KM model offered by Probst et al. (2006) is too simplified and does not reveal all substantial KM processes.

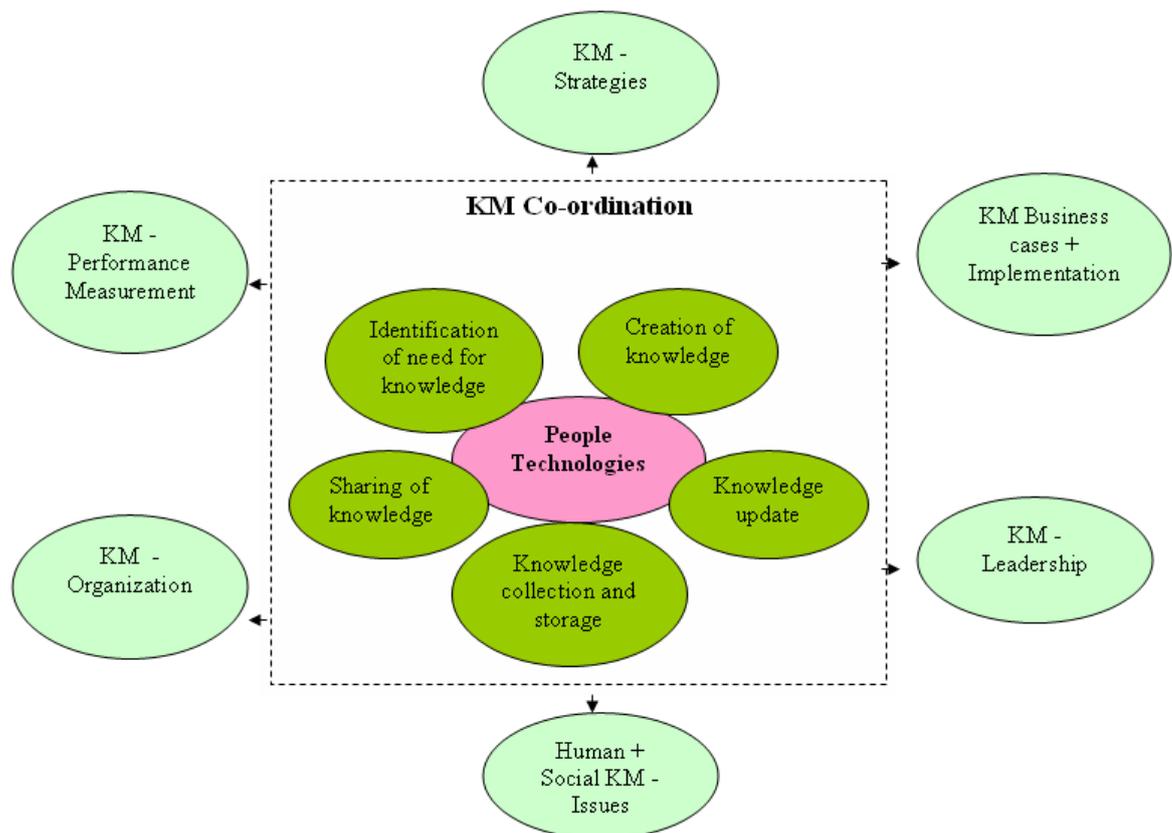


Figure 4. General KM structure

We decided to supplement Kucza’s (2001) model by some KM elements and components in order to make full KM structure. Kucza (2001) analyses only KM processes but we added new field which indicates KM technologies and people referring to the KM structure components offered by Bhojaraju (2005). Besides, we added six elements from KM structure presented by

European KM Forum (2002) (we excluded two elements-KM Process and KM Technologies- because they coincide with KM components from Bhojaraju's model (2005)) (see Figure 4)..

From the analysis of KM process models we conclude that main KM processes may be divided into three levels according to their difficulty and performance dimension: coordinative (difficult processes, which demand predominantly intellectual abilities), operational (they demand less intellectual abilities, as they are associated with precise action performance) and sub processes (the most precise and parallel processes, which appear during implementation of operational processes). In general, we advise organizations that wish implement knowledge management, to pay the biggest attention to the coordinating processes that are most complicated and need most efforts to run effectively.

Leadership. The KM leadership refers to the persons responsible for the development of a KM strategy. It is closely linked to the organizational objectives, marketing of information sharing, management of disseminating knowledge projects within an organization, and the related technological infrastructure management. KM leaders possess a different mix of hard and soft skills (Nadeem, 2006). Anantatmula (2007) states, that leadership is the main driver for successful KM implementation. KM leadership is primarily responsible for supporting and sustaining learning environment in organizations. Aligning KM initiatives with organization's strategic plan may direct KM efforts towards improved organizational performance such as customer satisfaction and business growth. KM initiatives promote customer satisfaction through better product or service quality. In turn, these outcomes promote new products and services, and increased revenue.

KM performance measurement. A KM system cannot be improved, if its performance is not measured. There is a need for metrics to get an overview over the maturity of organization's KM system (European KM Forum, 2002a). According to Management Centre (2004), one of the key challenges of developing metrics for KM concerns "cause and effect". Organization can measure many its activities, but what does the measurement represent? Does the measured activity have an undisputed connection to other established business metrics? And how credible and actionable will any resulting numbers be? These questions must be answered by each organization striving to measure its KM performance.

The issue of measuring the value of knowledge management remains one of the enduring challenges in KM. With the growing realization that financial measures "look backwards and at

physical assets only”, organizations need to get a grip on measuring what is perhaps their most valuable asset – knowledge (Skyrme, 1998).

When there is need to measure the success of knowledge management, first of all there’s need to measure knowledge. It looks impossible because knowledge’s value depends on situation (Probst et al., 2006). Measurement of organizational knowledge assets is necessary for determining the effectiveness of knowledge management initiatives (Freeze, Kulkarni, 2005). For measuring knowledge, first of all we need to define it as an object, and then we have to separate it from time, people, and situations (Probst et al., 2006).

Table 1. Knowledge management measurement problems (Probst et al., 2006)

Important aspects omitted
<ul style="list-style-type: none"> a) It is important to explain difference between organization’s market value and value, stated in financial reports. In existing accounting systems knowledge is rarely fixed as an asset, thus it remains hidden. b) Knowledge, which is very important for organization’s competitive ability, sometimes can be expressed not as explicitly as it should be or not expressed at all. Therefore organization cannot formulate right knowledge goals and reach them. c) Knowledge which has critical competitive importance may not be defined as such and measured. d) There are no monitoring systems which could be used for measuring changes in different knowledge management blocks (for example: knowledge development).
Wrong aspects measured
<ul style="list-style-type: none"> a) Attention is focused on aggregate financial indexes which do not show causalities. Thus, it is not clear how those aggregated figures are influenced by changes of knowledge base. b) Only internal indexes are used; there are no measures that can show how organizational knowledge resources develop in comparison to those of the competitors. c) Measuring personal skills and abilities, while omitting common knowledge. d) Measuring only contribution, and not the results.
Wrong measures used
<ul style="list-style-type: none"> a) Material and nonmaterial assets are measured in different ways. b) Priority is given to quantitative measures, but qualitative measures remain unrewarded. However, qualitative information, such as clients’ satisfaction, can be more meaningful for organization future plans. c) Measurements are related to internal reporting system; there are no opportunities to compare the results with ones of competitors’ or advanced organizations’.
Inexpedient measurements
<ul style="list-style-type: none"> a) People measure things which are easy to measure, but do not think about who will use the results. b) Measuring variables, which are impossible to interpret. c) Measures are done automatically.

Knowledge management measurement is a systematic method of analyzing an organization from knowledge perspective. The results of such assessment can then be used to identify possible fields of action, i.e. areas where measures could be introduced. The knowledge management provides a chance to improve the utilization of knowledge in organization (Sammer, 2007).

Measurement is an operational analysis of the knowledge management initiative compared to the organization's objectives and industry's best practices (IHS, 2007).

While measuring knowledge management, some problems may arise: important aspects may be omitted, wrong aspects and aspects may be measured and inexpedient measurements could be made (see Table 1).

These possible problems show how it is important for organization to have a good knowledge assessment system. While planning this system, organization should know, what is measurable and what aspects should be measured.

KM business cases + implementation. It is important to analyse best practices in the different areas of KM. This helps organizations on their way to install and establish their own KM systems. Although there is certain KM implementation methodology, each organization should customize it paying attention to its specific requirements and needs (European KM Forum, 2002).

Soliman and Spooner cited by Alsadhan (2006) looked at KM from an human resource management perspective and indicated that there are eight Critical Success Factors in KM implementation, namely: alignment of KM with business directions; identification of KM benefits; choosing the appropriate KM programme; implementing a know-how strategy; creating supportive environments; use of enabling technologies; creating the KM team; creating KM leadership.

Therefore, KM may be analysed through eight typical elements offered by European KM Forum (2002), and three classes offered by Bhojaraju (2005), including point of view of Kucza (2001), Cong and Pandya (2003), Argote et al. (2003), Duffy (2000), Atkočiūnienė (2006). Summarizing KM models, we can state, that implementation of KM brings together people, processes and technology with aim to reach organization's targets and vision.

Conclusions

The paper deals with KM structure, including KM components and elements. KM is new science discipline which involves processes that embodies management, in other words called actions and initiatives, which helps organizations to conform to changing environment. In this case, conformation to environment proceeds through value creation of existing intellectual and knowledge-based assets within organizations. In connection with this, organizational management should regard KM, which structurally consists of eight interrelated elements. These elements not only ensure innovativeness of KM system, but also facilitate reuse of existing knowledge in a system. KM may be structured not only according to these elements, but also categorized into three

classes: people, processes and technologies. The biggest challenge for organizations appears in management of “people” component, as processes and technologies could be adapted relatively easily. Therefore, people and organizational culture are in the centre of KM. “Processes” as component of knowledge management contains standard processes associated with activities or initiatives that enable and promote: knowledge creation, knowledge exchange and use, focused on organization use reaching. Additionally it is crucial for organization to measure effectiveness of knowledge management proceeding, which is implemented through knowledge management processes. KM is systematic method which analyzes knowledge perspective of organization and gives possibility to improve use of knowledge. Unfortunately, today in many organizations KM acts just as another well-sounding term, rather than a real conception that forms basis for many organizational activities.

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