Organizational environment for knowledge management

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Abstract. The research presented in this article is based on the modern concept of knowledge management and its dissemination. The concept is distinguished by complexity and considers the strong impact of organizational environment and organizational practices upon the process of knowledge management. The subject of the research is the impact of essential factors of the environment (culture, technology, practices) on the distinct stages of the knowledge management process in Bulgarian companies. The empirical study was conducted in 100 Bulgarian enterprises, 50% of which have more than 100 staff. The study is not representative, and is intended to present researchers and managers the problems of actual knowledge management systems in Bulgaria.

Keywords: knowledge management; knowledge processes; factors of knowledge processes; organizational behavior.

JEL Codes: M21

1. Introduction

We cannot deny that competitiveness of any enterprise depends on whether management has adopted the language of global economy and has set up organizational development adequately to the global challenge, i.e. has established a network of interconnected organized systems, capable of producing, keeping, sharing, and selling knowledge on international markets. Managers’ expectations of synchronized work of these systems raise the question of standardizing and regulating factors which influence processes of knowledge.

2. System approach to knowledge management

2.1 The essence of knowledge management in organization

It is known that knowledge management (KM) has become subject of research interest since 1986, when Karl Wiig introduced the term. The popular concept of information society is entirely built on knowledge and its management, and its use is perceived as the main resource of contemporary social formations. In essence, “knowledge management is creating, identifying, capturing and sharing knowledge. It is about acquiring the right knowledge in the right place at the right time, especially when it comes to influencing an action or decision.” According to Gartner Group, “knowledge management promotes an integrated approach to identifying, capturing, retrieval, exchange and evaluation of information assets of the enterprise. These information assets may include databases, documents, policies and procedures, as well as uncaptured, unshared knowledge and experience stored in the heads of individual workers.”

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Internet and globalization require a different mindset and completely new management tools. They allow the encoding, storage, and the broad exchange of different types of knowledge. Modern management continuously improves practices for design and implementation of integrated management systems with organizational knowledge with the understanding of the competitive force of this endeavor.

2.2. The system of knowledge management and organizational environment

The term "system" is defined as a set of objects that form one whole together with connections between them and their relationship with the environment. The system has an objective and specific characteristics. As regards the system of knowledge management, organizational culture, structure, and communication system of the organization it is the "external environment" which determines the context of its operation. Sources and users of knowledge and connections between them (technical, communication and social) are system components that make up the system's internal environment. When designing the system for knowledge management elements of the external environment, as well as some connections between them (e.g. existing communication channels of the communication system), can be integrated as internal components into the structure of the new system. This yields a complex new system whose complexity can be reduced by examining the importance of the elements and relationships of the system for the implementation of the process of knowledge. This approach presents the elements and relationships (internal and external) of the system for knowledge management in the role of factors that determine the quality of the processes of knowledge.

We can draw the conclusion that in the interest of the effectiveness of knowledge management, it should contain those elements and relationships that promote speed and efficiency of the processes of knowledge.

There is rich enough practice, whose research led us to the idea that it is possible to form hypotheses about the impact of key internal and external factors in the use of real systems for knowledge management in practice in Bulgarian enterprises. Factors were selected based on frequent assertions in research.

Systems for knowledge management are often limited to technological connections between their technical elements. Until recently, knowledge management was essentially creating databases, and their usage and update. Extending the objectives in knowledge management has led to their respective development and improvement. In popular perception today, the systems of knowledge management are a network of relationships created by human activity, technological and organizational subsystems. The purpose of these technological and structural elements is to support a better functioning system of human activities. This is the main criterion by which these elements are evaluated in this study.

The experience of a small part of the Bulgarian organizations shows that they did not take advantage of knowledge management deliberately. In this study we hope to prove that the first step to successful knowledge management is managers to create the optimal organizational prerequisites for running the processes of knowledge. The complexity of this task is determined by the need of developing the ability to control information that is not moving into familiar channels of command chains, but is moving in all directions of the organization. The challenge for every organization is the efficient collection, storage and use of this information for acquisition of new knowledge and quality of results, i.e. development of a process for becoming a continuously learning organization. This process subsequently involves: working together in teams, sharing best management practices, faster implementation of innovative practices through movement and exchange of knowledge within and outside the organization, acquisition and sharing of new knowledge, creating internal information system, creating supportive professional environment for ideas, an information memory of the organization with the best of its development in order to assist an easier integration of new employees in the team. Ensuring an adequate environment for the free movement of ideas, opinions,
impressions, requires trust between employees and a team approach and an appropriate organizational culture.

Knowledge management includes the critical aspects of organizational adaptation, survival and competence in the conditions of constant change in today’s dynamic environment.

### 2.3 Processes of knowledge management

To transform knowledge into a valuable asset to the company, knowledge, experience and expertise must be formalized, distributed, shared and applied. Knowledge management is considered an essential element of any strategy that uses the expertise to create sustainable competitive advantages in the current business environment. Many authors have proposed different models for knowledge management, ranging from 2 to over 8 different processes. All publications on the subject agree that the process of knowledge management generally goes through the following stages:

- **Generating (creating, acquiring) knowledge** – knowledge (for example as a combination of images, video and sound) is empirically created or acquired in another way.
- **Storage** – knowledge is kept in a form or format which can live beyond materials and time, as well as be accessible for employees in the future.
- **Sharing** – providing a limited access to knowledge to employees depending on their position in the organization and according to their needs.
- **Use** – knowledge is used for achieving a specific useful goal.

We refer to the following as supporting and transition processes:

- **Transfer** – transmission or communication of knowledge from one person or place to another
- **Translation** – knowledge is converted into a form more useful for a group of users or for achieving a new goal.

For the purposes of practical knowledge management, these processes can be itemized in accordance with the business processes of the organization.

Research analyses by leading researchers in this field form the thesis that there are significant factors in the organizational environment that determine the success of knowledge management process in its various stages. The correspondence between stages and the factors is shown in Table 1.

<table>
<thead>
<tr>
<th>Process</th>
<th>Factors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Creation knowledge</td>
<td>• Organizational culture&lt;br&gt;• Organizational design&lt;br&gt;• Degree of computerization&lt;br&gt;• Degree of structuring the communication system</td>
</tr>
<tr>
<td>Storage of knowledge</td>
<td>• Volume of information&lt;br&gt;• Participation of employees&lt;br&gt;• Technical resources</td>
</tr>
<tr>
<td>Sharing knowledge</td>
<td>• Information technologies&lt;br&gt;• Internal communication infrastructure&lt;br&gt;• Degree of computerization of archive&lt;br&gt;• Communication practices</td>
</tr>
<tr>
<td>Use of knowledge</td>
<td>• Length of career path&lt;br&gt;• Organizational Practices&lt;br&gt;• Organizational Culture</td>
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3 Empirical study of factors in the process of knowledge

3.1 General characteristics of the study

We conducted research on the practice of knowledge management in Bulgarian companies, so that we get confirmation of the presented factors by practice. The survey covered 100 organizations, 50% of which are larger than 100 people. Most of the surveyed organizations are working in the private sector (89%), and 47% of them develop their business internationally. In areas of business respondents are distributed as shown in Figure 1. The size of the target group is limited by the presence of a small finite number of objects that share some degree of knowledge and practice in knowledge management.

The study is based on modern management concept of knowledge and its dissemination, which is characterized by complexity and enables a modular approach. The distribution of companies by business areas is adequate to the structure of the Bulgarian economy and justifies the use of survey results for applied conclusions. The evaluation included the alternative for:
• Confirmation or rejection of statements;
• Determining the importance of various factors on a five-grade scale.

Confirmation of the statements can be interpreted as a validation of the model, i.e. as general acknowledgement of the importance of factors in each phase. The numerical evaluation of the importance of factors is analyzed in terms of comparison with other factors.

3.2 Factors of the organizational environment for creation of knowledge

Many existing studies focus on the origin of knowledge, taking into account the conditions that facilitate the creation of knowledge.

Organizational design, or a set of working groups and their location in the organizational space is considered to be a catalyst in creating knowledge. The presence of areas where people gather and participate in discussions improve the coordination between production, marketing, distribution and product design (Graham and Pizzo 1998). Organizational design can be used for increasing the episodic exchange of experience and making the group memory more easily understood.

According to some scientists close relations in the community restrict the creation of knowledge, because individuals are not likely to find new ideas in a coherent system of individuals having similar information (Robertson 1996). Other scholars argue that knowledge creation is easier for community groups with close relations as individuals share a common language for them is easier to openly discuss their ideas. In this theoretical dispute arises interest in the question: which type of communications resulting from the organizational design facilitates creation of knowledge?

Hypotheses that are intended to be assessed are:
A. Information technologies improve the creation of knowledge.
2. Access to external knowledge (good Internet connection, membership organization of professional
and industry associations, and active participation in trainings and workshops, etc.) stimulated by established
communication system motivates the creation of knowledge.

3. Shared close relations that are based on internal communications, prevent the uptake of knowledge
coming from outside.

Respondents answer the question ‘Is the statement "Organizational design is the most important factor
for creating knowledge in your organization" true?’ as shown in Figure 2.

Most of the respondents answer positively and confirm the statement that organizational
environment has a strong influence on creating knowledge. The average score of the importance
of the factor "organizational design" on a five-point scale is 4.27. This score will be used to
determine the relative importance of the factor among the general conditions stimulating the
creation of knowledge.

Respondents answer the question ’Is the statement „Computer Information System is the
most important factor for creating knowledge in your organization” true?’ as shown in Figure 3.

Despite the expectation that information technologies are accepted as a critical factor in creating
knowledge, the average score is 4.09, which defines a lower degree of influence of this factor than that of
organizational design. However, the predominant responses confirm the hypothesis about its impact on
creating knowledge at the current stage. According to Ts. Stoyanova, "emergence of new information and
communication technologies creates the preconditions for revolutionary development of "knowledge
economy”.

Greater specialization and the accumulation of vast amounts of information and knowledge scattered over
large distances and among many people require the creation of networks of communication and exchange
facilitated by the IT infrastructure. We should not forget that new technologies are primarily a means to
more efficiently and rapidly collecting, processing, managing and disseminating information and
knowledge, not an end in itself. Purchase and installation of cutting-edge technologies where there is no knowledge and skill to use them only ensures higher costs and losses and not better results. Information infrastructure in Bulgaria is the most advanced element of "knowledge economy", but it does not guarantee faster overall development. However, the existence of such infrastructure allows for rapid progress if good training and information are provided. "3

Figure 4 confirms the statement "Promoting access to knowledge outside the organization (good Internet connection, membership organization of professional and industry associations) is most important in the process of creating knowledge."

Obviously, the hypothesis that the promotion of access to external knowledge activates the process of its transmission and its development in the organization is supported by the overwhelming number of positive responses. The average score for the importance of this factor in the first stage of knowledge management is 3.99, which is almost equal to the score of the importance of the "IT". It is noteworthy that a large number of respondents give negative answers about the impact of this factor. The reason for the large number of negative answers is the relative isolation of small and medium-sized enterprises involved as respondents.

The assessment of the statement „well structured internal relations (regular staff meetings, internal information system, mentoring, coaching etc.) are crucial to creating knowledge in the organization” shows that the lack of shared relations is not an obstacle to acquiring knowledge from outside. Most of the respondents have indicated that well structured internal relations are conditions facilitating the perception of knowledge. Internal communications’ impact on creating knowledge is rated 3.62, which refutes the hypothesis that they are an obstacle to creating knowledge.

3.3 Factors of the organizational environment for storage of knowledge

Knowledge storage includes archiving knowledge of the members of the organization and/or outside sources, encoding and systemizing knowledge (for future use).

Often people do not realize what they have learned. In case they realize what they have learned, they sometimes cannot decide which parts of the learned is important for the rest of the people in the organization. The organization cannot use the process of creating knowledge effectively without systematic practices. We have to share experience about what incentives encourage members to store and process valuable information and share it with colleagues in order to systemize practices.

An important question about storage of knowledge is how much information we can keep to ensure the optimal cost. When an essential part of the created knowledge is not shared, effective storage is questionable. Lack of effective storage of knowledge may lead to loss of information (Zack, 1998). We have to also decide what volume of context information we have to save in order to store the knowledge.

Another concern for knowledge storage is providing access to organizational knowledge in the next stage. The complexity of this issue is determined by the requirements for company security and the resulting restrictions on access to information. If access to knowledge is easier though, chances that knowledge is used again are bigger. The possibility of easy access to knowledge may lead to abuse of knowledge, i.e. it can be interpreted in other contexts.

The extent to which respondents support the formulated hypotheses, aims to answer the questions:
1. What communication approaches and techniques encourage individuals to store and share knowledge?
2. What requirements must comply with stored information to serve the purpose of knowledge management?

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Respondents were asked to determine the extent to which the statements/hypotheses comply with their experience and knowledge management practice.

The statement „limiting the volume of information stored provides for its effective interpretation and storage” is confirmed by only 12% of the respondents. The experience of the respondents does not show that restricting the volume of information contributes to its effective storage. It is obvious that they have ignored the fact that too big volumes of information are hard to be stored technically. The factor “Volume of stored information” is rated 2.87 on a five-grade scale. The respondents have most probably meant storage of individual and collective knowledge which is not necessarily organized in formal databases.

It is interesting that a big part of the respondents reject the hypothesis that staff members have equal access to processing information. Practice refutes one of the main requirements of the theory for integration of knowledge management systems in this way, which is to provide equal access to organizational knowledge in all stages of its use. At the same time the factor “equal access to information” received high marks for importance – 4.05 out of 5. This fact in itself may become a subject of a further study.

Today’s knowledge can be neglected tomorrow, i.e. it is changing in time. That is why each system for knowledge storage has to be dynamic and updated. The system for storage of knowledge can be useful only if it provides easy and equal access to knowledge. An important aspect of the knowledge management strategy is creating easy to use and memorize access mechanisms (e.g. search commands). There is a variety of search and knowledge access instruments (e.g. browsers, search engines).

The challenge for the practical implementation of a system for managing knowledge is to provide easy and constant access to information, avoiding the possibility of overloading the system. Figure 5 shows the evaluation of the importance of factors associated with storage and access to knowledge.

3.4 Factors for providing knowledge

The concept of “providing knowledge” concerns several aspects.

One issue affecting the concept is the extent to which the knowledge could and has to be shared, which depends on the interdependencies between subgroups and individuals (Leonard and Sensiper, 1998).

A second issue affecting the provision of knowledge is the extent to which the provision of knowledge increases through the use of information technology.

The third important aspect concerning the knowledge providing concept is how to find the necessary documents and how to find the necessary knowledge in a big volume of documents (Dworman, 1998).

There emerge the issues to develop effective organizational and technical strategy for access to and providing of knowledge.

In this context we have sought confirmation or refutation of hypotheses derived from the analysis of previous studies of other authors and the many literary sources. These hypotheses were formulated as follows:

First hypothesis: Information technologies are crucial for effective distribution of knowledge among members of the organization.
Second hypothesis: Communication strategies and practices are a basic prerequisite for successful implementation and operation of the system for knowledge management.

Relevant statements were formulated for testing the two hypotheses. The following results were obtained:

Factor “use of information technology” in the delivery of knowledge gets 4.02 on a five-point scale of the importance of factors. The result confirmed the conclusion that whatever the stage of using the system for knowledge management, electronic communication is always directly proportional to the acceleration and improvement of ongoing activities.

There is debate whether information technology hinders or facilitates the creation and use of knowledge.

On the one hand, some argue that the perception of knowledge through knowledge management systems impedes learning (Cole, 1998) and may lead to the application of knowledge in other situations where its use is inappropriate. Opponents argue that information technologies play a limited role in the creation of information because information technologies are useful only if people know what they are looking for (Powell, 1998). In this case, a small amount of new knowledge is created. Furthermore, some scientists argue that the mechanical management of knowledge through information technologies cannot adapt to rapidly changing requirements for generating knowledge (Malhotra 1999).

These arguments have provoked our interest to the widespread theoretical understanding that developed internal communication infrastructure facilitates the provision of knowledge, but leads to a decreased activity in search of knowledge from external sources. The survey showed there are serious grounds in the above said (Figure 6).

In practice, developed and structured internal communications encourage sharing of knowledge within work groups and teams, thus making the effort to obtain external knowledge unnecessary to a certain extent. Information technologies truly appear as a key factor with their proven influence on the distribution and sharing of knowledge at this stage, which is well known by practitioners. Knowing the disparate forces of that influence is only an additional condition for the development of adequate communication infrastructure for the deployment of organizational processes.

The existing variety of systems for electronic documents further induces premature technical comparisons, especially when looking into integrating these systems with additional solutions such as workflow management and control tasks. 31% of respondents in the survey use an automated system for documents developed by their organization and 22% use a system developed by a Bulgarian company (fig.7). 11% of surveyed organizations (SMBs) do not...
use an automated system for documents. Solutions for document management are different and depend on many factors including the nature of business and the amount of documents generated.

To avoid one-sided linking of knowledge management with communication infrastructure, we have sought another aspect of sharing knowledge. In the study of the second hypothesis from this range of problems, we have made the assessment of the balance between technical and organizational level in the stage of sharing and dissemination of knowledge. The balance between technical and social factors is shown in Figure 8.

![Figure 8. Average rating for the influence of factors on providing knowledge](image)

Close values of rating are an important indicator of the effectiveness of the system at this stage. Ignoring suggestion boxes, exchange of experience, on-line conferences and many proven techniques for social contact and direct communication at the expense of technical means would lead to difficulties and delays in information flows which provide useful experience.

The answer to the question of the extent to which individuals rely on internal rather than external demand for generating new knowledge is the balance between information technologies and direct communication. Information technologies facilitate the process of encoding knowledge in group memory and improve interconnections between individuals. However, the individuals decide whether to rely on internal or external search of knowledge.

### 3.5 Factors for using knowledge

The processes of search, storage, access and provision of knowledge does not necessarily lead to increased efficiency of the organization. This is achieved through the implementation of knowledge. An important aspect of research on knowledge management is the detection of factors, organizational practices and systems to fill in the gaps in implementation of knowledge.

![Factor 0](image)

Here we studied the influence of factors:

- Length of career path
- Organizational practices (practical conferences, on the job training, etc.).

The statement "by creating conditions for faster development of competent and motivated employees, the organizations promote implementation of organizational knowledge", receives support from 57% of respondents. Although affirmative responses predominate in general, we will further study the large number of those who do not consider career growth opportunity as a factor for implementing knowledge created within the organization. We can assume that the hypothesis derived from theoretical research is confirmed, but the issue above remains for the future study. Obviously there is no common practice through which the logical arguments for the impact of career development opportunities on implementation of knowledge to be transformed into organizational mechanisms. This could be a reserve for accelerating and improving the process of knowledge use.

Respondents were almost unanimous in their acknowledgment of the importance of traditional forms of sharing and transmitting knowledge. Overall, it is noteworthy that there is no decisive superiority of the importance of technical
infrastructure over organizational practices. On the contrary, Respondents give higher priority to personal and group communication, the elements of organizational culture, and organizational events in the realization of the overall process of implementation and use of management system of knowledge.

The complex of these factors is contained in the widespread term "communication infrastructure" which on the basis of the survey we can define as "a set of organizational practices, organizational culture and technological solutions, which contains the key success factors for organizational communications and binds them to the basic elements of an effective system for knowledge management."

Arranged according to the assessment of the respondents, the importance of the factors of the communication infrastructure is summarized in Figure 9.

4 Conclusion

The present study reveals a part of the problems for knowledge management effectiveness resulting from organizational environment (design, technologies, and organizational practices).

Knowledge management contains different but interrelated processes: creation, storage, access, provision, and implementation of knowledge.) Organization and its members are linked in a chain of processes of knowledge management at any place and at any time. That is why knowledge management is a dynamic and constant organizational phenomenon, highly dependent and related to communications. The complexity, resource requirements, tools, and approaches of knowledge management vary according to the type, scale and characteristics of the process itself.

General issues about the organizational knowledge management and the role of communication techniques are studied. These questions can become the base of a future detailed study.

Organizational knowledge and knowledge management are popular themes in literature such as strategic management, organizational theory and information systems. Therefore, new studies need to be based on previously established scientific hypotheses. The research will contribute to the diversity of perspectives and approaches needed to study such a complex and diverse phenomenon.

The present research of the problem to implementation of knowledge management systems is original and unique in its subject since it examines Bulgarian organizational environment for knowledge management implementation. Systematization of such information for the implementation of knowledge management is a necessity for many innovative Bulgarian organizations.

Due to the actuality of the topic, there are different perspectives for future research in Bulgaria.

We can test specific Bulgarian organizational links between strategy, organizational culture, work processes of organizations and management system of knowledge for example. We would also be interested in testing problems that arise in a mature knowledge management system specific to the Bulgarian enterprises. There is a need of statistical surveys that accurately define the level of interest in knowledge management and how it is applied in different organizations.

5. References


