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Knowledge Management System

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Abstract: Over time, organizations have invested in knowledge, knowledge representing an essential aspect of their development, developing concepts such as knowledge management and knowledge management systems (KMS). Knowledge management is a branch of knowledge management that involves capturing the explicit knowledge of individuals or teams within organizations, extracting tacit knowledge, and sharing it through various methods to all members of the organization for use. The contribution of information technology in the organization's knowledge management is the knowledge management system (KMS) that captures, stores and disseminates important expertise throughout the organization, generating a series of positive effects related to the knowledge sharing process.

Keywords: Knowledge bank; KMS; IT; decision; organization

Introduction

In the past, the first knowledge repositories that emerged at the organizational level simply listed best practices and made them available to organizational members. Nowadays, due to the development of information technology, knowledge repositories have turned into electronic knowledge banks accessible from a simple web browser, with a wide impact on the use of knowledge within organizations.

Research Method

A knowledge bank is not a simple database, nor a knowledge base in the strict sense of the terms. We will present the concept and structure of a knowledge bank starting from the knowledge sharing process and up to the types of stored knowledge.

Results

One of the most important processes of knowledge management, namely knowledge sharing at the organizational level, refers to the provision of information and know-how about tasks received in collaboration with other members of the organization in order to solve identified problems. There have been identified a number of seventy-six qualitative and quantitative studies published between 1999 and

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2008 and three studies published before 1999 in the field of knowledge sharing research. Research on knowledge sharing has been based on a wide range of theories, the most commonly used being:

- the theory of motivating action, which aims at the attitude towards the communication behavior of the acquired knowledge;
- social capital theory, examined in the context of communities of practice;
- social exchange theory, being used to investigate the benefits and costs perceived in the knowledge sharing process;
- social network theory, which examines the connections between individuals within virtual communities that can facilitate knowledge sharing and enhance the quality of shared knowledge.

In the theory *of motivating action*, knowledge sharing among employees influences knowledge complexity at the team level and automatically at the level of the company. The employees with a higher level of education and a wealth of experience have a positive attitude towards knowledge sharing. An important factor in the process of sharing knowledge is the human resources policy of the organization through personnel training systems, using the mode of transfer of experience and acquired knowledge from specialists to beginners.

The research based on team composition has demonstrated that the engagement of team members within organizations in the process of knowledge sharing positively influences the performance of the team and implicitly of the organization. The better the work team is formed and the higher the professional level of the team members, the more they will share the acquired knowledge.

Researchers have shown that knowledge sharing can be facilitated by creating a less centralized the organizational structure, creating a work environment conducive to employee interaction, such as using open workspace, job rotation, encouraging communication between departments, and participating in informal meetings.

At the organizational level, knowledge sharing is closely related to business development. The efficiency of the knowledge sharing process entails the reduction of production costs and implicitly the increase of income obtained from new products and services. After carrying out some studies on certain companies, it was demonstrated that due to the lack of knowledge sharing, very large losses were recorded. Swang and co-authors found that the female staff on mixed teams in large organizations were significantly more likely to engage in knowledge sharing than male staff.

Chow and co-authors studied the process of knowledge sharing in multinational organizations, at the level of international subsidiaries, where individuals of various cultures and nationalities operate. It was found that Chinese employees tended to share knowledge across the organization, even if sharing this knowledge was harmful to the individual. American employees were found to be more willing to share knowledge with people outside the team.

According to social capital theory, employees may decide to share knowledge or not for various reasons. They can share knowledge due to reciprocity or if they are interested in helping others. Employees may choose to share knowledge as a way to help develop personal relationships with colleagues. New employees in order to make a good impression show a more favorable attitude than old employees regarding the process of knowledge sharing, this leads to obtaining benefits and opportunities for career advancement. Individuals in higher positions in the organizational hierarchy may refrain from sharing knowledge because of the risks of losing their position.

Social exchange theory suggests that individuals place a high value on the ratio of perceived benefits to costs. Consistent with this theory, research shows that perceived benefits have a positive influence on the knowledge sharing process, while perceived costs have a negative influence.

The lack of incentives was identified as a major barrier to the knowledge sharing process. Organizational rewards such as promotion, various bonuses and excellence pay were identified as important levers in encouraging knowledge sharing.

The studies have found that managers' attitude of encouraging the knowledge sharing process was positively related to employees' knowledge sharing behaviors. Job satisfaction and organizational attitude promote knowledge sharing. It was found that the emphasis placed by the management factors of the organization on the performance-based salary system successfully contributed to the smooth running of the knowledge sharing process. In the theory of social networks, it is highlighted the role of the development of the information society, of the tools and platforms it proposes. Within virtual communities, on the Internet, knowledge is disseminated with the help of the most popular types of Web 2.0 tools: wikis, blogs and microblogs, social networks, services for sharing graphic content (photo sharing) and audio/video (video sharing). The connection between people active in social networks has been shown to positively influence the amount of information shared. Those who want to strengthen their position in an online professional community, for example on a specialist forum, are followers of knowledge sharing. The most familiar of all search engines is Google, which is used for its perfect ability to provide the most relevant information to meet the needs of individuals, even when defined quite empirically. Before the dominance of Google (appeared in 1998), the most popular search engine in the world today, other search engines were used, such as Yahoo, the second most used search engine (1995), Netscape Navigator (1995), AltaVista (1996), HotBot (1995), Galaxy (1994), etc.

However, Google has managed to captivate us more than any other search engine, using artificial intelligence algorithms, it has allowed us to get closer to the information we want, proving to us that the accessibility of knowledge is critical.

The phenomenon we are facing lately is that of information overload. If we have too much information, we risk not using it, the effect being similar to having no information at all.

Because time is always a precious resource, individuals will use only a limited portion of their time to search for lessons learned—recommendations based on past experience. All individuals try to manage their time as efficiently as possible, but the vast majority doubt that the lessons learned can help improve the organization's work, not being sure of the effectiveness of this concept.

All employees must access the lessons learned, before carrying out new activities, to prevent recurring mistakes, avoiding unnecessary repetition of work processes, allowing the organization to repeat previous successes.

The most common method of managing the lessons that organizations share is to collect and save all materials resulting from discussions in a virtual library using an electronic document management system or portal. Normally, the user will select files that have names associated with the encountered situation.

Within an electronic document management system, documents can be organized by value or by attributes. The user will choose files that contain attributes and values similar to the searched context. Storing lessons, knowledge and good practices in a knowledge bank is an optimal solution of managing the debate sessions of organizations.

A knowledge bank is a database containing knowledge. The knowledge bank is an effective way to enable organizations to properly manage their organizational memory: lessons learned, best practices, organization-specific knowledge, etc. The difference between a knowledge bank and electronic document management systems, libraries or portals is significant, the latter manage files (various types of documents), while a knowledge bank manages the contents of organizational memory, for example the actual lessons learned. Each lesson is managed as an independent object and can be seen in the knowledge bank as an accessible record, because its core is composed of a single sentence - the recommendation (what to do or avoid). However, the most important difference between a knowledge bank and other knowledge management methods is that each lesson, stored in a database, has its own set of attributes and values, which are not necessarily identical to those of the original source.

Saving each lesson in the knowledge bank as a separate object has two main benefits: efficiency (no need to read the full description of the entire session) and precision (each lesson is marked with its specific attributes and values, thus defining the most relevant context for its implications).

Both efficiency and accuracy are about improving and facilitating accessibility.

From a theoretical point of view a lesson learned contained in a knowledge bank is a combination of four components: the body of the lesson (the title and the lesson itself), the context-based attributes (material, process and product), the fixed attributes (fixed metadata: date of creation, date of update, date of last validation, name of the person who prepared the lesson and sensitivity level), hyperlinks and attachments (direct the user towards images or diagrams, explaining the lesson). The process of creating organizational knowledge, from the request level to its incorporation in the organizational environment, is represented in figure 1.

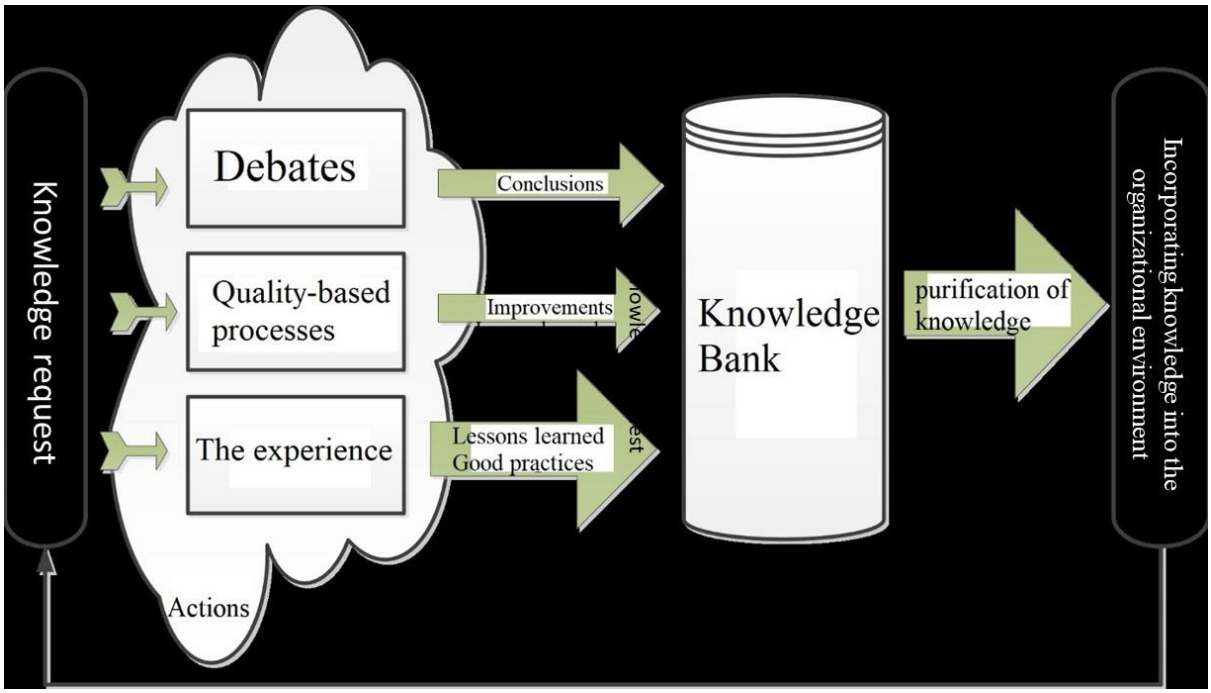


Figure 1. The process of creating organizational knowledge

Conclusions

A bank of knowledge:

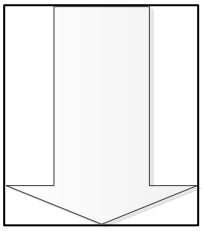
- contains sets of lessons learned;
- good practices;
- other types of knowledge presented.

Each lesson, topic covered must have a title, values for context-based attributes, values for fixed attributes, attachments and hyperlinks.

Many progressive organizations rely on communities of practice to maintain the professional excellence of project teams, regardless of where team members may be geographically located. As the communities of practice facilitate knowledge sharing, they are critical to overcoming the challenges involved in creating, sharing, disseminating, and using knowledge.

The implementation of the knowledge bank by difficulty levels is presented in the following table:

Table 1. Implementation of the knowledge bank by difficulty levels

Easier  More difficult	Collection (Knowledge Repositories) Internal linking (Thematic Groups or Communities of Practice) External Linking (Knowledge Partnerships, Gateway, GDLN) Brokering global knowledge, Facilitating adaptation to local knowledge, Connecting stakeholders and acting as a catalyst for change

Source: Adapted from (Filemon & Uriarte, 2008)

The results of the implementation of the knowledge bank are found in: thematic groups (communities of practice), advisory services, sector knowledge collections, sector statistics (real-time database), debates (tacit knowledge download), indigenous knowledge, forums development, webcasting and dissemination through formal / informal learning.

A knowledge bank is actually a complex knowledge management system that uses information technologies for document and workflow management, and that manages data warehouses (Data Warehouse) and associated search tools for collection, organization, filtering, storage, sharing knowledge of any type at the organizational level.

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