The Risks and Side-effects of Knowledge Management Activities

Péter Fehér

Abstract (English, angol) Knowledge management has become one of the most popular management topics. Despite all opportunities and advantages, knowledge management is not an ultimate tool and not the general solution for any organisation. One of the most popular knowledge management tools is the document knowledge-base, which is used by several consultant companies, although this tool has many risks and side-effects.

Abstract (magyar, Hungarian) A tudásmenedzsment az egyik legnépszerűbb menedzsment irányzatok egyikévé vált. Minden lehetőség és előny ellenére, ugyanakkor ez nem egy mindenre alkalmazható eszköz, nem egy általános megoldás bármely szervezet számára. A technikai megoldások közül az egyik legnépszerűbb az elektronikus dokumentum alapú tudásbázis, melyet számtalan tanácsadó cég is használ, habár ehhez az eszközhez több kockázat és mellékhatás is kapcsolódik.


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**Abstract** – Knowledge management has become one of the most popular management topics. Despite all opportunities and advantages, knowledge management is not an ultimate tool and not the general solution for any organisation. One of the most popular knowledge management tools is the document knowledge-base, which is used by several consultant companies, although this tool has many risks and side-effects.

Keywords: knowledge management, risk, side-effect, electronic knowledge base, document base

1. Introduction

Knowledge management (KM) has become one of the most popular management topics. Most of the time, it is mentioned as a success-story, as a general improvement practice. Knowledge management is a useful management discipline that could enhance the effectiveness of knowledge intensive companies.

Despite of all opportunities and advantages, knowledge management is not an ultimate tool and not the general solution for any organisation. The first question is: What could be the success factor of a knowledge management project, or be the indicator of knowledge management activities?

Unfortunately, there are lots of unsuccessful knowledge management projects, and wrong practices. Knowledge management could be similar to a medicine that also has risks and side effects. To use this management discipline efficiently, deep knowledge of problem areas is also required.

There could be two reasons to analyse the risks and side effects of knowledge management activities:

a) The Knowledge Management discipline has become mature enough to recognise and analyse the difficulties and problems of this field, in order to enhance the practice.

b) The reason of the existence of problems and risks is based on the immaturity of Knowledge Management practices. In this case, this is a preventive research.

Although the mentioned reasons are seemingly excluding each other, synthesis is also possible. The research of knowledge management has a long history, but there are still numerous areas to do a research. In the ITI 2002 conference the conclusion of a conversation about knowledge management was, that knowledge management has enough maturity to be a viable practice, but there are still a lot to do to enhance the quality and effectiveness of practice.

In conclusion, the goal of this paper is dual: first to appoint a new research way, and second to prevent the impacts of the problems, risks and side-effects of knowledge management activities.
2. Definitions

In this paper the focus is on the risk and side effects of these electronic knowledge bases. Based on many surveys, one of the most popular knowledge management tools is the electronic knowledge base – or in other words knowledge repositories, computer based organisational memories –, which is most of the time equal to a document base (Rowley, 1999; KMRR, 2000; CKMID, 2001). A basic task of these systems is the automation of organisational knowledge to be knowledge items or knowledge holders more accessible (Corbett, 2000).

An electronic knowledge base stores, among others, past experiences, document templates, results of previous works, project documentation and education materials. Individuals submit documents, knowledge items to the system, where they are evaluated and structured, and these items are available for other workers.

The concept of side effect has medical origin for the unexpected impacts of medicines or medical treatments. Side effect is the incident, as during a performance of a task beside the expected results and impacts, unexpected events and results are appeared. Side effects are not certainly occurrent events, but have a risk of occurrence. The risk of side effects would not exist without the base activity, which enables both effects and side effects.

The concept of side effect has a pejorative meaning, but side effects are not always negative, only unexpected. In some cases, the side effect provides new possibilities, and result over-performs the expectations. If the importance or the impact of the side effect is high, and the side effect provides positive results, it is the best, for any organisation. The biggest danger is the negative side effects of an activity, especially when the importance or impact of the side effect is high.

If the importance or the impact of the side effect is low, it is a comfortable situation. But if the side effect has negative impact, it is a hidden danger that can have a stronger impact. If the side effect has positive impact, it is a possibility to exploit the opportunity, and develop this impact.
3. Methodological questions

In a qualitative research, it is easier to explore the positive results of any process or activity, but it is rather difficult to explore the problems. It is especially true in the area of knowledge management: there is a lot success story, but there is only a few about problems and failures. Executives and company representatives do not like to talk about their problems, but like to emphasise their results. The official and unofficial opinions are also different.

In such circumstances it is difficult to examine organisations, and explore the researched questions. Maybe the main problem is that nobody would like to answer the questions about problems, difficulties, risks and side effects. The executive does not want to worsen the image of the firm, and the employees do not want to say any bad about the firm, because they are loyal, or are afraid of lay-off. But there is also the possibility that dissatisfied employees represent the situation worse than real.

Therefore the possible way to do a research in this area is to keep the anonymy of the companies and the interviewed people, and take interviews with different persons in an organisation.

4. Risk and side effects of knowledge-bases

4.1. Knowledge stealing

The first risk of the use of electronic knowledge bases is the risk of illegally use of knowledge items, even by the competitors. To keep the business secrets was always a highly important defending task, and there is a higher emphasis on this importance in the fast changing information and knowledge-based society.

The formalisation of the organisational and personal knowledge presents a new risk of loosing important knowledge. Knowledge can leave the company by hostile attack, espionage, and also by the active involvement of an employee.

Because of the organisational knowledge has been formalised and stored electronically, there is a danger of system hacking, whether by a brute force method, or by acquiring the usability permissions. Another possibility is to find a dissatisfied employee, who is ready to help accessing the knowledge base, or ready to sell critical knowledge for good money.
Employees of the firm may use the content of the electronic knowledge base for private goals, but this behaviour is unethical, because the organisational knowledge, the asset of the company is used for the interest of one specific person. Most of the time, outgoing employees does not care about the ethical questions, and they are ready to keep as much organisational knowledge as possible. These employees may sell the knowledge, or use it, in their new workplace, in a new organisation.

Although companies recognise the problem of knowledge stealing, only a few of them are prepared to avoid this risk. The question is, whether the knowledge base worth the security practices for the company, and whether the named „enemy” is really that, who steals the knowledge.

4.2. Structural problems

For easier searching possibilities, easier navigation, knowledge items are organised into sub-knowledge bases, and are searchable by keywords, or by full-text index. Sometimes the knowledge items are linked from a catalogue.

There are two basic problems related to the organisation, structure development process (which is certainly necessary), in the process of searching a relevant knowledge item:

- The number of search results is too high, and there are a lot irrelevant items (under-structured knowledge base).
- The number of search result is too low, there are fewer results than in the knowledge base (over-structured knowledge base).

If a knowledge item is not attached properly with keywords, or not structured into the right knowledge base, or there is no link in the catalogue, the knowledge item seems to be not exist, and is not usable for anybody. But all knowledge is stored in an electronic knowledge base, the access can be difficult based on many reasons.

The performance of the company may depend on the organisational knowledge that is stored in the electronic knowledge base. If knowledge items are not available, the performance goes down, and the trust in the knowledge management system is decreasing.

<table>
<thead>
<tr>
<th>Mode</th>
<th>Reasons</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deleted or lost items</td>
<td>Irreversible data loss, through:</td>
</tr>
<tr>
<td></td>
<td>• Viruses;</td>
</tr>
<tr>
<td></td>
<td>• Hardware mistakes;</td>
</tr>
<tr>
<td></td>
<td>• System crashes;</td>
</tr>
<tr>
<td></td>
<td>• Insufficient back-up;</td>
</tr>
<tr>
<td></td>
<td>• Hackers;</td>
</tr>
<tr>
<td></td>
<td>• Structural loss;</td>
</tr>
<tr>
<td>Limited access problems</td>
<td>• Reversible data loss;</td>
</tr>
<tr>
<td></td>
<td>• Overload / limited;</td>
</tr>
<tr>
<td></td>
<td>• Interface problems;</td>
</tr>
<tr>
<td>Permanent access problems</td>
<td>• Permanent incompatibility of problems;</td>
</tr>
<tr>
<td></td>
<td>• Overload / permanent;</td>
</tr>
<tr>
<td></td>
<td>• Wrong codification;</td>
</tr>
</tbody>
</table>

Table 1: Organisational unlearning problems of electronic knowledge bases (adapted from Romhardt, 1997)
4.3. Validation of knowledge items, trust

In electronic knowledge bases knowledge items are stored depersonalised, therefore the competitiveness of the company does not depend on the knowledge of individuals, but on the proper work of knowledge management, and the knowledge base. With this system the knowledge items are reachable and useable independently from persons, work hours, or original knowledge holder.

Because of the knowledge items are depersonalised, the source of the knowledge items in the knowledge base are unknown. Therefore the users could have little trust in the knowledge items, because

- users have no personal experience with the shared knowledge items;
- knowledge items are transferred through mediator tools and communication channels, therefore the source of knowledge items is unknown;
- users have preconceptions about the context and environment, and the shared knowledge cannot be connected to these preconceptions (Child and Foulker, 1998);

Based on these reasons, in the case of mistrust, users like to verify the knowledge items, or require personal experience, or will not use the knowledge item at all. These reactions can lower the performance of the organisation. On the other hand, knowledge items can not be used without at least basic verification, because shared knowledge items can be useable only in specific, unique situations.

The use of knowledge items with unknown origin means risk, therefore risk analysis is required in the following dimensions: a) How big is the risk of the use of knowledge items of unknown origin, or what kind of damage can be excepted, in the case of use? b) What is the cost and time of the verification of knowledge items with unknown origin? c) How big is the damage in the case of no use, and how big is the opportunity cost?

![Figure 3: The verification dimensions of knowledge items](image)

If the validity of the knowledge item is very questionable, and there is a high risk of danger or opportunity cost, the verification process is highly recommended, in spite of the verification process requires high level of cost and time. In the case of high risk and low expected danger, or in the case of high level of danger and low risk the verification is required only in that case, if the verification can be processed on low cost and time.
The best preventive solution is to present the origin or the author of the knowledge items, and the trustworthy sources. Such source can be well-known, authentic person, organisation, or newspaper. The level of trust can be enlarged by detailed description of the creation (acquirement) of the knowledge item.

The lack of trust in knowledge items of the knowledge base can disturb the whole system. If the trust does not exist, fewer and fewer people will use the system, and submit new knowledge items. In this way the future of the system is determined, this could be the beginning of the so called „death spiral” (Manago and Auriol, 1996).

4.4. Value of knowledge items, maintenance

Avoiding the above-mentioned „Death Spiral”, motivation systems, incentives are applied at most organisations, where knowledge management is applied. The goal of the motivation is the support the use of the system and submitting new knowledge item to reach the critical mass. Based on the traditional reinforcement theory of Skinner (1969) and the experience of the knowledge management practitioners, three motivation methods are available.

The most popular application is the use of incentives. Knowledge base users and knowledge item submitters get different kind of rewards, such as bonus, travel possibilities, holiday, promotion or other services (positive feedback). Another possibility for motivation is the acknowledgement of performance, by attaching the identity of the author of knowledge items. Almost the opposite solution is to decrease the negative impacts, in the case of right behaviour (negative feedback). If in an organisation, an expert holds all relevant knowledge, every employee is waiting for the solution of this expert, and the expert is overloaded. Therefore for getting more time for the personal work, the expert will share the personal knowledge.

KPMG introduced the „give and get” system. Employees can not take any knowledge out of the electronic knowledge base, until they put new knowledge item in (Dixon, 2000). This system is based on punishment, but has the risk of frustration and no use.

Because of the mentioned motivation systems, employees are pressured to submit knowledge items to the knowledge base, but they are pressured mostly on quantity, and not on quality. Therefore there can be a huge number of worthless or wrong knowledge items in the knowledge base, which is a barrier of effective use. Because of the number of the worthless items, there is a high need of maintenance task.
The maintenance of knowledge bases is one of the most important, and also one of the most difficult tasks. The termination of irrelevant and unused knowledge items is a highly complex task, because "often what one person thinks useful, others find flaky, idiosyncratic, incoherent, redundant, or just plain stupid" (Brown and Duguid, 2000). The continuous renewal, refreshment, actualisation of knowledge items is also belongs to the maintenance activities.

Without the maintenance activities the electronic knowledge base is becoming huge to block the effective search, the searching time is becoming longer, the resulted knowledge items are partly relevant, or untrustworthy.

The big question: who should perform the maintenance activities? Who can evaluate knowledge items from different professional areas? In the maintenance team, competent employees are needed, but because of their knowledge, it is more effective, if they work in the fields.

4.5. Creativity problems

The problems with creativity are not new in the research and practice of the information systems. These problems have emerged already in the last decade, related to the expert and decision support systems. Employees using expert systems have less complex, sometimes monotonous task, because they monitoring the system, fixing problems, and sometimes organising the work, when the solution is not acceptable. Most of the decision making task is provided by the system (Hauser and Hebert, 1992).

There is a high level of similarity between the use of knowledge-based systems, and electronic knowledge bases. Electronic knowledge bases are storing past experiences, solutions, results, documents, therefore there is a high possibility of knowledge and result reuse, which is one of the main goals of developing knowledge bases, and lowering the problem solving time. Organisations are expecting higher quality of solutions, too, but without creative and analytical reuse, the mistakes in the past documents remain, and will be reused several times.

With the use of the knowledge bases, employees can provide solutions and documents faster than before, but there is the possibility of only "copy-and-paste" creating of documents. This process may leads to a decline in skill levels, especially if the system is working properly, without failures. In this situation the educated worker had only a few things to do, and without creative work, so the personal creativity and cognitive skills are lowered.

The result of the process can be dangerous for the organisation, if the employee needs the personal creativity in his/her work, again. And it can be dangerous for the employee, as well, because with less personal creativity, less thinking, less problem-solving ability, the employee is becoming more and more worthless for the organisation, although there is no frequently need for creative work.

If an employee gets use to the knowledge base frequently, this habit will result that the worker will use it in unnecessary situations. This symptom is similar to the use of calculators at school. Students use the calculator for difficult calculations, but after a while, they will use it for less complex problems as well, for example for calculate 2+2.

The use of knowledge bases may effect opposite creativity problems: employees with lower professional abilities (lower creativity), but with the use of the past solutions and experiences in
the knowledge base, may perform better than their abilities. Therefore these employees may get promotion, without real performance.

5. A case of a consulting firm

Management consulting firms are typical examples of knowledge intensive companies. The competitive advantage based on the knowledge of the organisation, of the employees. Therefore this sector is the forefront of developing knowledge management practices and using tools to support their employees in their daily work.

The main emphasis of knowledge management efforts in the consulting sector is on the knowledge leverage activities. "The aim of the knowledge organisation process is to put enterprise knowledge into such a form that makes it accessible to those who need it. Finding the type of knowledge as well as the sources of knowledge is obviously essential." (Apostolou and Mentzas, 1999).

There are several theories about the knowledge leverage process (Lai and Chu, 2000, Rubenstein-Montano et al., 2001, Dixon, 2000). The goal of this process is to share and reuse the personal knowledge. Besides many theories, the most common phases are: explore and elicit knowledge or create new knowledge, process and store, transfer (share) and use. At the beginning and at the end of this process there are one-one tasks, which are necessary for the effective knowledge leverage process, but most of the time are neglected.

The basis of the knowledge management activities is the scanning of the existing internal knowledge. The outcome of this task is a knowledge item catalogue, which is a list of knowledge items in a specific domain of the organisation (Klimko, 2002). This task is the basis of further knowledge leverage activities.

To end the life cycle of knowledge items, continuous maintenance activities are required, even the termination of unnecessary knowledge items. This task is highly difficult, because one knowledge item can be important for some users, while totally irrelevant for many other users, and it is hard to determinate the criteria of termination. Although these difficulties, the task is highly important, because without this special maintenance task the size of the knowledge base is becoming so huge, that the use of this tool is highly difficult: the searching times are high, the results of a search are only partly relevant, and difficult to find the needed items.

Consulting firms have to manage tacit and explicit knowledge. Explicit knowledge can be stored in knowledge bases, and reachable for any employee, while tacit knowledge is embedded in the head of a specific person. In theory, the explicit, formalised knowledge is independent of the author, the formerly owner of the knowledge item, but in some case, this explicit knowledge is worthless without the complementary tacit part.

One of the popular knowledge management tools in the consulting sector, and overall, is the document knowledge base, that stores project and personal experiences, lessons learned documents, analysis, writing samples, etc.

5.1. Results of the case

One of the observed consulting firms is a Hungarian department of an international consulting firm, which provides solutions for business problems. The Hungarian office has over 500
employees in different areas, such as audit, tax services, management consulting and corporate finance. The management consulting services are covering almost the whole market segment, providing technological solutions, strategic consultation, performance improvement and e-business solutions.

Information has been collected mainly by structured personal interviews, personal experiences and document analysis.

The internal knowledge base is based on a Lotus Notes solution, and reachable through Intranet interface. Knowledge items are structured into professional topics, and distinct databases contain the knowledge items. The main goal of the knowledge base is to support the project work. The knowledge base also supports the personal education in the case of free work-time.

5.1.1. Knowledge stealing

Knowledge bases are also reachable from outside the firm, and distance work is also possible, but it is mainly the practice of the managers and executives. To engage this possibility an enabling process is required. For the use of the knowledge base login and password is required. The employees of the firm are using the knowledge base in the firm, even at nights and in weekends. The entrance to the building has also high security requirements. If someone leaves the company for any reason, the permissions are suspended.

Although the administrative and physical security tools are strong, there is no tool to keep away the employees to take the parts of the knowledge base. Everybody has access to the knowledge base, everybody can save anything, and take it home. There is no monitoring system for logging the saved and printed items.

Therefore the employees sometimes use the knowledge base for personal goals, or sharing the knowledge items with not co-workers. Until now, the sell of knowledge items for concurrent firms have not experienced, but there is no possibility to prevent it.

The real knowledge of the firm is not in the knowledge base, but in the head of the employees, therefore the biggest danger is the leaving of the employees, who are keeping the personal knowledge and experience.

5.1.2. Structural problems

The databases of the knowledge base are organised by topics, and these databases are searchable. Searching efforts are mainly on content. There are a numerous search results, but it is hard to select the important and relevant items. It is easier to find specific items, with title and author.

Knowledge items are also stored in personal and project directories, but these storing places are locally reachable. Because of the structural problems, it is easier to find relevant information in the Internet, and based on personal suggestions. Sometimes, project leaders are sending e-mails with the newest results of the project, which is also an important knowledge source.

5.1.3. Value of knowledge items, maintenance, trust

The items of the knowledge base are mainly useable only for starting something, but it is hard to find every time the relevant items. There is no perceptible maintenance activity, therefore, once
one item is inside, that remains there”. There are some items, which content has already changed a long time ago, or the life has already refuted the content.

The age of the knowledge items is variable: there are some 5-6 years old items, beside the new one. Because of the variability and the lack of the maintenance efforts, it is a hard task to find the required knowledge in the knowledge base.

The value, trust and acceptance of a knowledge item are mainly based on the name of the author. Most of the time, the knowledge from unknown, or not well-known source is neglected. Beside this criteria, the reliability of knowledge items are not examined, but in evident cases the content will be overruled. In some cases and informal conversation with co-workers, experts or leaders help to decide over the reliability. There is no feedback over the wrong knowledge items, therefore there is no maintenance consequence.

5.1.4. Creativity problems

At the beginning of a project, the easiest way is to check the past works, and finished projects. Therefore the knowledge base is in daily use by any employee. Most of the time, the documents for the clients are built from different knowledge base documents, but although the similar sources, there are no similar results, because every employee uses the sources in an individual way, and the result contains the personal experiences and approach.

No use of knowledge base is unthinkable. The employees are seeking to create something new, but the easiest way is to rewrite the ready works.

6. Conclusion

The researches on risk and side effects of knowledge management activities are only at the beginning. Some of the companies have realised this problem, but do nothing to avoid them. In the different levels of the organisational structure there are different opinions about the success of the knowledge management activities. In higher levels, knowledge management is communicated as a successful, strategic practice of the organisation.

Maybe the biggest problem, that organisation executives have a big faith in technology, while forget the human and cultural side. Therefore the developed system is perfect, works properly, but the content is continuously missing, or worthless. Employees, the end users realise and understand the problems, but avoid blaming the company officially.

The easiest way for the companies to create a detailed policy, but it is more difficult, these rules to be observed. Organisations should realise that the improvement of their knowledge management activities does not mean certainly the loss of the “proper working company” image. So in the future, companies should analyse their KM activities, understand the complaints of the employees, and complete the technological solutions with cultural basis.
### Summary of risk and side effects of electronic knowledge bases

<table>
<thead>
<tr>
<th>Side effect category</th>
<th>Activity</th>
<th>Expectation</th>
<th>Effect</th>
<th>Side effect</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knowledge stealing</td>
<td>Formalising knowledge and storing it in electronic knowledge bases, in order to make it accessible and usable for every employee.</td>
<td>Through the access of knowledge bases, workers use the stored knowledge, and simplify their problem solving.</td>
<td>Organisational effectiveness is increasing, through reusing the present knowledge, and avoiding „reinvent the wheel“ syndrome.</td>
<td>There is a higher risk level of losing organisational knowledge, without control. Possible reasons: - system hacking; - illegal access; - inner employee behaviour;</td>
</tr>
<tr>
<td>Structural problems</td>
<td>The items of knowledge bases are indexed, and attached with keywords, or organised into sub-knowledge-bases by topics, in order to navigate and find the relevant knowledge items easier.</td>
<td>The searching time of relevant knowledge items is decreasing, problem solving is getting easier.</td>
<td>End users searching knowledge items by keywords or topics. End users have quick access to relevant documents.</td>
<td>Structural problems: - over or under structured system; - knowledge loss;</td>
</tr>
<tr>
<td>Validation of knowledge items, trust</td>
<td>Electronic knowledge bases store depersonalised knowledge, in order to avoid knowledge monopolies and knowledge loss.</td>
<td>There are no unique knowledge holders, knowledge monopoly.</td>
<td>Knowledge items are accessible every time, everywhere, independent from the original knowledge holder.</td>
<td>Because of the unknown origin of knowledge items, employees have little trust in use. - Wrong use; - No use; - Validation process; - „Death spiral“;</td>
</tr>
<tr>
<td>Value of knowledge items, maintenance</td>
<td>Organisations are motivating end users in different ways, encourage submission of new items to the organisational knowledge base.</td>
<td>End users are sharing their personal knowledge and experience, and submitting items to the knowledge base.</td>
<td>The number of useable knowledge items is increasing.</td>
<td>- Worthless items in knowledge-base; - Continuous maintenance is required; - Maintenance team is required;</td>
</tr>
<tr>
<td>Creativity problems</td>
<td>Creating knowledge bases to store the solved problems, situations, experiences.</td>
<td>Through the access of knowledge bases, workers use the stored knowledge, and simplify their problem solving.</td>
<td>Organisational effectiveness is getting higher, through reusing the present knowledge, and avoiding „reinvent the wheel“ syndrome.</td>
<td>- Risk of „copy-and-paste“ work; - Decreasing personal creativity; - Unneeded use of knowledge base; - False performance;</td>
</tr>
</tbody>
</table>

### Table 2: Summary of risk and side effects of electronic knowledge bases

7. References


