Knowledge Management – Factor of Success

Stefan Picker, Albrecht Ruhnke and Prof. Dr. Jens Leker
University of Muenster, Institute of Business Administration, Leonardo Campus 1, 48149 Muenster, Germany, contact: spicker@uni-muenster.de

Innovations are crucial for the survival of firms in an ever faster moving environment. But how should a firm organize its knowledge management for tacit and explicit knowledge? Where to focus? How to ensure transfer of knowledge from customer into the firm?

In this paper we first develop a list of critical factors for knowledge management (KM), using different theoretical frameworks. We identified four levels which were common to most models: Management Promotion, Infrastructure, Strategy and Evaluation. Conducting four case studies from firms in the chemical industry allowed us to compare our factors with empirical data.

We found that involvement of top management is crucial for implementation of knowledge management, whereas evaluation seems to be less important. In all cases knowledge management was seen as a continuous development process. However, one of our most interesting findings is that an incentive program seems to be necessary for a successful implementation of KM in the culture and processes of an organization.

We also found the customer interface to be critical for a firm. This interface is important for the development of successful and customer driven innovations.

1. INTRODUCTION

Innovations are crucial for the survival of firms in an ever faster moving environment (Thieme, 2003). As ‘Innovation comes from anywhere’ (Akrich, 2002), companies face the problem that not only the internal R+D unit can be the source of innovations. For example, external consumer communities might also be innovative loci (Jeppesen, 2003). Regardless however where the innovations come from, it all results from the successful management of knowledge, be it customer knowledge or others.

The management of knowledge has undergone a dramatic development in the last decade. A vast amount of theories and research arose to describe, understand and exploit knowledge management. Although some already see that knowledge management ‘is at last practical’ (White, 2005), there is still no clear definition of knowledge or knowledge management. As Sarmento (2005) has stated there are many disciplines, from management science to psychology, who contributed to this
new field of Knowledge Management (KM). All, however, agree that KM is essential for the success of a firm, as knowledge leads to innovations (Hibbard, 1997).

There are several definitions and constructs of the term knowledge and its importance for the firm. Kogut and Zander (1992) for example, describe knowledge as an embedded resource of the firm. Birkinshaw et al. (2002) see knowledge as contingency variable. And others, as Maier and Remus (2002), integrate resource-based view and market-oriented view. In this paper we focus on the underlying elements of the management of knowledge. Basically we are following the definitions of Nonaka and Takeuchi (1995; see also Nonaka, 1994), who make a distinction between tacit and explicit knowledge.

Already, there are some extensive reviews on the current knowledge management literature (Hlupic, 2002; Holsapple, 2005). Most interestingly, however, is the fact, that most research is solely theoretical in nature. Holsapple et al. (2005) comment that there is a need for empirical research in the field of KM. Therefore we show here a combination of theoretical approach and empirical survey.

First we use a literature review to screen for elements that are thought, or have previously been shown, to be important for successful knowledge management. We then use four case studies as empirical dataset. Comparing our data with the literature reveals known and new factors that will aid to build up successful knowledge management – and thus to a more innovative output of the companies.

2. CONCEPTUAL FRAMEWORK

Using the literature we found four levels for knowledge management, which seemed most important: Management Promotion, Infrastructure, Strategy and Evaluation.

1. Top Management Support is known as an important factor for many decisions within a firm, e.g. innovation management (Hausschildt, 1997). Therefore it is not surprising that this element is also major factor for the successful implementation of knowledge management (Liebowitz, 1999; Mertins, 2001; Hlupic, 2002).

2. The development of an IT as well as employee infrastructure is widely considered a strong factor for knowledge management. Knowledge Manager could act as process promoter (Davenport, 1999; Gerrick, 2004).

3. Formulating a clear and placeable strategy is also a critical element for knowledge management. This has to be seen in the context of integration of knowledge management into the management processes and overall strategy of a firm (Narayanan, 2004; Liebowitz, 1999).

4. Evaluation of the implemented KM system is a natural requirement for success (Scholl, 2004).

Knowledge Management Frameworks have been developed as practical guidelines for implementation. We analysed four of those frameworks to see how the four categories we found, could be set into practice (see table 1): Gore/Gore, 1999; McCampbell, 1999; Wiig, 1999; Rubenstein-Montano, 2001a/b. These frameworks cover all major developments in this field that are currently discussed.
Table 1 – Comparison of the four KM frameworks

<table>
<thead>
<tr>
<th></th>
<th>Gore / Gore</th>
<th>McCampbell</th>
<th>Wiig</th>
<th>Rubenstein-Montano et. al</th>
</tr>
</thead>
<tbody>
<tr>
<td>Management/Promotion</td>
<td>Formulate Vision of Top Management</td>
<td>Form powerful coalition</td>
<td>Obtain management buy-in</td>
<td>-</td>
</tr>
<tr>
<td>Infrastructure</td>
<td>-</td>
<td>Technology focus</td>
<td>Establish and update a KM infrastructure</td>
<td>Develop framework for access/input /storage/use</td>
</tr>
<tr>
<td>Strategy</td>
<td>Strategic Vision</td>
<td>Communicate Vision of KM</td>
<td>Plan the knowledge strategy</td>
<td>Perform strategic Planning (key knowledge requirements) – business needs analysis</td>
</tr>
<tr>
<td>Evaluation</td>
<td>-</td>
<td>Measure quality, productivity, performance of KM</td>
<td>Monitor Knowledge management</td>
<td>Conduct knowledge review - Test and evaluate achieved results</td>
</tr>
</tbody>
</table>

3. METHOD

First a literature survey was performed to analyze the background of Knowledge Management and to extract the crucial elements of knowledge management processes. Second we conducted open interviews with four firms in the chemical and pharmaceutical industry to underline and refine our theoretical conclusions with empirical findings. Our empirical data were summarized as case studies, which are usually used for complex systems and to answer “how” and “why” questions (Yin, 1994).

We agree with Kafantaris (2002), that a firm has to solve the problems and obstacles of knowledge management in their own context. Thus we analyzed firms within a similar environmental situation (i.e. chemical industry) and tried to understand their whole process, rather than using a questionnaire with close-end questions. Because of the nature of our studies, we could only use a qualitative definition of success. Thus we relied on the statements of our interview partners if they deemed the KM system a success, as well as our own subjective opinion when we compared the obtained results with the previously pronounced aims.

3.1 Firm Sample

Four international firms (numbered A to D), from the US and Europe, were investigated by conducting open interviews. Companies were all from the chemical or pharmaceutical industry and comparable in size (sales of 10-20 billion €). Only firm B was significantly smaller (about 1 billion € sales). All firms had implemented a Knowledge Management system for at least 2 years.
4. RESULTS

Our results, obtained from the four case studies of the firms A to D, are summarized in table 2 according to the framework we developed in Chapter 2. All firms have integrated the four elements for KM which we previously extracted, although with different specifications.

<table>
<thead>
<tr>
<th></th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td>Management Promotion</td>
<td>Problematic when coming to commitment of implementation</td>
<td>Proactive position of board</td>
<td>Formulation of KM Strategy</td>
<td>Formulation of KM Strategy</td>
</tr>
<tr>
<td>Infrastructure</td>
<td>Specialized KM manager</td>
<td>KM experts and E-learning center</td>
<td>KM Manager</td>
<td>Focusing on IT technology</td>
</tr>
<tr>
<td>Strategy (aims)</td>
<td>Customer focused strategy with KM</td>
<td>- Customer focused strategy with KM</td>
<td>- Customer focused strategy with KM</td>
<td>- development of core competencies</td>
</tr>
<tr>
<td></td>
<td>- development of core competencies</td>
<td>- development of core competencies</td>
<td>- development of core competencies</td>
<td>- development of core competencies</td>
</tr>
<tr>
<td>Evaluation</td>
<td>Qualitative measurement</td>
<td>Qualitative measurement</td>
<td>Evaluation and controlling system</td>
<td>Qualitative measurement</td>
</tr>
</tbody>
</table>

Interestingly all companies seem to understand the importance of all factors. However the level of implementation differs from company to company. As we can see, top management support, was reported by all the firms. In firm C and D, this only meant that a strategy was formulated. And firm A actually stated that it was problematic to shift from actual statement of support to real commitment. Alone firm B reported a proactive position of its board of management. The factor of management promotion, however, was regarded as very important by all firms. We observed far less attention at the level of KM evaluation. Most firms use “success stories” as tool to qualitatively analyze the KM system. Only Firm C used a balanced score card system. Overall this element was not seen as crucial for the success of the Knowledge Management system.

The importance of “top management support” versus “evaluation” is also underlined by the fact that Firm B, which we think was most successful in KM implementation, is the only firm in our sample with a strong support from management. Additionally the KM system of Firm B resembles most closely the suggested options of our frameworks (compare table 1).

In our exploratory analysis we also found factors which were not previously found, or not regarded as generally important for the success of KM systems. Here we only focus on two of those factors. First KM was seen as a continuous process by all firms. And second, the “internal level of introduction” within the firm differed greatly. Although the overall strategy of the firms seems quite similar in most cases.
Knowledge Management – Factor of Success

(see table 2 – focus on core competences and customers), the implementation level was different (see table 3). Whereas Firm A implemented the KM system closely oriented to its processes, Firm B implemented a whole new company culture. This new culture of knowledge sharing was backed by incentives, rewards and intensive internal marketing. Firm B was the only firm using such an intensive incentive program (only Firm A also had a slender reward system). Firms C and D utilized an approach which focused very much on IT.

Table 3: Level of Introduction for the 4 analyzed firms (A to D).

<table>
<thead>
<tr>
<th>Level of Introduction</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td>Process orientation as focus of KM strategy</td>
<td></td>
<td>Implementation of KM through a change in company culture</td>
<td>Network of employees through IT</td>
<td>Management of explicit knowledge to create a knowledge network</td>
</tr>
</tbody>
</table>

As all firms stated, that KM systems are continuously developing, it is not surprising that, over time, the implementation level changed. Figure 1 shows that the analyzed firms’ KM systems converted towards mainly decentralized process orientated systems.

Figure 1: Level of introduction for the four analyzed firms’ KM system and their coordination level within the firm. Arrows indicate the development of the KM system over time (technology = IT).

5. DISCUSSION

Using our theoretical framework we could show that four elements are crucial for the success of the Knowledge Management within a firm: Management Promotion, Infrastructure, Strategy and Evaluation. Our empirical data especially underline the
importance of top management support while evaluation of KM seems less important.

We also found factors outside our theoretical framework. Especially the integration of KM into the culture of the company might be important. Although this factor was also described in literature (Pemberton, 2001) only one firm actually used it to implement KM. To help developing such a culture, an incentive program seems to be necessary (Davenport, 1998). From our findings we can summarize that the usage of an intensive incentive program greatly helps to establish KM. Backed by management support this can yield to successful KM implementation.

As basically all analyzed firms stated the strategic customer orientation of their KM system, this factor appears to be important as well. There seems to be an awareness, that only by successfully using KM, new innovations will arise within a firm, and thus a competitive advantage of the firm.

Here, for the first time, we could show how KM systems develop over time. Interestingly it seems that all firms converge at the point of KM as a process oriented tool. This might be due to the fact that knowledge is too abstract a term to continuously have it integrated as a culture. Also the integration of KM as a cultural aspect requires quite some resources (in terms of KM experts, KM managers…). On the other hand an IT system alone seems also not useful (Martensson, 2000). Companies which see KM only as a technology system, seem to be stuck as it is not clear where to focus and what to do with the acquired data (compare Salisbury, 2003). Therefore there is a need to integrate the KM system into the processes of the firm. This is maybe the optimum for the innovative output of the KM. This point is extremely controversial. Our dataset, very limited in number, is not useful for generalizations. However, we think that this point might be an interesting focus for further research.

We can not generalize the findings beyond our empirical scope. Especially the problem of measuring success in a not quantifiable analysis is very limiting. However as many of our empirical findings are in line with the literature, this is an interesting approach. And for the first time we showed empirical data from firms of the chemical and pharmaceutical industry within their own context and how their KM system developed over time. This can only be achieved by case studies. These exploratory works can then be used as an empirical fundament to further analyse KM with statistical methods.

Nevertheless, our data give new insights to the Knowledge Management discussion, and will help companies to leverage their KM systems in order to get more customer focussed and more innovative.

6. REFERENCES

3. Davenport T. Managing Customer Knowledge. CIO Magazine 1998 (June 1st)
Knowledge Management – Factor of Success

4. Duvenport TH, Prussak L. Wenn ihr Unternehmen alles wüßte, was es weiß … Das Handbuch zum Wissensmanagement (German). Landsberg/Lech: Verl. Moderne Industrie, 1999
8. Hibbard J. Knowing What We Know. InformationWeek 1997 (20th October), Issue 653, pp. 46-55