

A strategy for knowledge management

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Abstract

Purpose – The purpose of this paper is to study the influence of organizational environment on the selection of knowledge management strategies. The paper focuses particularly on the relationship between business and knowledge management strategy and the success of the knowledge management initiatives.

Design/methodology/approach – This paper is a case study researching 11 German and Swiss companies. The knowledge management initiatives were categorized by six criteria (objectives, processes, problems, content, strategy, knowledge type) and their fit with the respective business strategy of the organizational unit was evaluated.

Findings – The findings in this paper suggest a relationship between the success of knowledge management and the alignment of knowledge management and business strategy. The paper also shows that an organization whose business strategy requires process efficiency should rely primarily on a codification strategy. An organization whose business strategy requires product/process innovation should rely primarily on a personalization strategy. The most successful knowledge management projects were driven by a strong business need and with the goal to add value to the organizational unit operations.

Research limitations/implications – The paper shows there are limitations due to the qualitative nature of the research: logical rather than statistical conclusions, small sample size, and subjectivity of interpretations.

Practical implications – The paper sees that a manager should be aware of the objectives and business processes of the organizational unit and chooses the knowledge management strategy and objective in accordance to the business strategy and objective.

Originality/value – The paper enhances understanding about the influence of organizational environment factors on the success of knowledge management initiatives.

Keywords Management strategy, Germany, Knowledge management

Paper type Research paper

Introduction

“Everybody discusses knowledge management, but how can it be used and how can we successfully apply it?”. This question from a company representative has its roots in a practical problem experienced by many organizations that are seeking to understand and deploy knowledge management (KM) for their business. Knowledge management has generated a lot of interest within the last years (Alavi and Leidner, 2001). In the strategic management literature, the knowledge-based view of the firm shifts the focus on the resource knowledge and proposes that knowledge is the most important resource in creating a sustainable competitive advantage (Kogut and Zander, 1992). However, not all knowledge management activities have been shown to positively influence business performance or to result in a competitive advantage. Many parameters and their interactions need to be considered for the successful application of knowledge management initiatives in an organization. For example, different knowledge management strategies and practices were proposed to be adequate for different types of knowledge. However, the selection of a suitable strategy not only depends on the type of knowledge to be shared but also on the

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organizational environment the organization operates in. Depending on the business strategy a different knowledge management strategy is more or less adequate and results in a positive business performance. Our objective is to study the nature of the relationship between business strategy and knowledge management strategy and its potential impact on competitive advantage.

A case study research in 11 German and Swiss companies (all non-consultant companies) was conducted in order to gain a deeper insight about the relationship between business strategy and KM strategy within a company. This paper presents selected cases and extracts of the case study research in order to support the relationship. The paper is composed as follows. First, we will discuss the basic concepts of KM that are important to our analysis and results. Second, the research methodology is presented. And third, the findings are discussed. Three cases are described in more detail in order to illustrate the proposition for a close relationship between KM strategy and business strategy.

Theoretical foundations

Since we want to discuss the relationship between business strategy and knowledge management strategy we first need to introduce basic terms that will be used in the rest of the paper. First, we will introduce the definitions of knowledge management and knowledge used in our study. Then, we will explain the differences between tacit and explicit knowledge and their role in KM strategy. Finally, we will introduce the basic business strategies we used in our analysis and their relationship to KM strategy.

Knowledge management

Knowledge management is a dazzling, multi-faceted, and controversially discussed concept. Philosophers and representatives of a variety of different disciplines are debating the meaning, definitions, and dimensions of knowledge and knowledge management (Nonaka and Takeuchi, 1995). The attention and importance given to the acquisition of knowledge in literature as well as practice increased in the past years (Alavi and Leidner, 2001). It is argued that knowledge management is a necessity due to changes in the environment such as increasing globalization of competition, speed of information and knowledge aging, dynamics of both product and process innovations, and competition through buyer markets (Picot, 1998). Knowledge management promises to help companies to be faster, more efficient, or more innovative than the competition. Also, the term “management” implies that knowledge management deals with the interactions between the organization and the environment and the ability of the organization to react and act (Macharzina, 1999). In the resource-based view of a firm knowledge is regarded as a vital organizational resource (Barney, 1991). Organizations that are aware of their knowledge resources possess a valuable, unique resource that is difficult to imitate and can be exploited to achieve a sustainable competitive advantage (Alavi and Leidner, 2001). Means to gain, maintain, and leverage the knowledge resource can thus lead to higher levels of success for organizations. Hence, we use the following definition: knowledge management includes all the activities that utilize knowledge to accomplish the organizational objectives in order to face the environmental challenges and stay competitive in the market place.

Knowledge

Knowledge is a complex concept that attracts many philosophers, researchers of other disciplines, and practitioners. Different typologies have been developed (Alavi and Leidner, 2001) and the only consensus seems to be the notion that knowledge is more than just mere data and information. Data can be considered as the basis for creating information and knowledge (Willke, 1998). “Data is a set of discrete, objective facts about events” (Davenport and Prusak, 1998). They are represented by characters and can be produced, codified, and distributed without a reference to the context or person (Rehaeuser and Krcmar, 1996). In contrast to data, information refers to a context (Rehaeuser and Krcmar, 1996). Information can be considered as messages or news created by the interpretation of data. This information can be understood by the recipient and has meaning to the recipient (Augustin, 1990; Nonaka and Takeuchi, 1995). Knowledge emerges from the processing of

the perceived information and contextualization of a person. This argumentation shows that knowledge can only exist in the context of person and his beliefs and experience (Nonaka and Takeuchi, 1995). "Knowledge is a fluid mix of framed experience, values, contextual information, and expert insight that provides a framework for evaluating and incorporating new experiences and information" (Davenport and Prusak, 1998). Thus, knowledge can also be defined as the ability of persons to evaluate information and act efficiently (Sveiby, 1998). Knowledge can provide added value if it results in actions and decisions (O'Dell and Grayson, 1998).

Tacit and explicit knowledge

Knowledge can be distinguished in two different types – tacit and explicit knowledge (Polanyi, 1966). Tacit knowledge is the personal and context-specific knowledge of a person. It is bound to the person and is thus difficult to formalize and communicate (Nonaka and Takeuchi, 1995). Consequently, it is not possible to separate, store, and distribute the whole knowledge of somebody (Davenport and Donald, 1999; Polanyi, 1966). Explicit knowledge in contrast can be codified, collected, stored, and disseminated. It is not bound to a person and has primarily the character of data. The words explicit and tacit can be misleading because they imply that they are exclusive. However, explicit knowledge is "grounded" in tacit knowledge and is created by externalization (visualization, articulation, or codification) of tacit knowledge (Nonaka and Takeuchi, 1995). It is the part of tacit knowledge that can be expressed verbally and does not represent the entire body of knowledge (Nonaka and Takeuchi, 1995).

Knowledge management strategies: codification and personalization

Two different knowledge management strategies have been discussed in the literature for sharing tacit and explicit knowledge: the codification strategy has the objective to collect knowledge, store it in databases, and provide the available knowledge in an explicit and codified form. Such a reuse of explicit knowledge and solutions can save time and money. The design of databases, document management, and workflow management can be considered to be part of this strategy. The codification strategy is assumed to be successful for these companies whose business strategy requires re-using existing knowledge (Hansen *et al.*, 1999; Malhotra, 2004). In contrast, the focus of the personalization strategy is not to store knowledge, but to use Information Technology to help people communicate their knowledge. The objective of the personalization strategy is to transfer, communicate, and exchange knowledge via knowledge networks such as discussion forums. If the business strategy focuses on generating new or customer specific solutions or product innovations the personalization strategy should be chosen rather than the codification strategy (Hansen *et al.*, 1999).

Knowledge management and business strategy

An organization's strategy of knowledge management is not arbitrary but depends of the "way the company serves its clients, the economics of its business, and the people it hires" (Hansen *et al.*, 1999). Knowledge management should not be implemented because it is just "nice-to-have". Following the definition of KM as proposed in this paper KM should provide a competitive advantage for the organization. Thus, KM should be tightly related to objectives and business strategies of the organization or subunit of the organization (Davenport *et al.*, 1998; Zack, 1999). If KM fails to add value to the organization, it is only cost intensive, useless, or even counterproductive. Thus, the strategic direction of the organization should determine the direction of the KM activity. The business strategy specifies the positioning of the organization or subunit with respect to its customers and competitors. Starting point for the analysis of the organizational situation can be Porter's five forces model. Porter distinguishes between three generic business strategies – differentiation, cost leadership, and focus – in order to counter the five forces of competition within an industry – supplier power, buyer power, threat of substitutes, industry competitors, and barriers to entry (Porter, 1980). The objective of differentiation is to generate something unique in the market place such as special design, unique brand, advanced technologies, or customer services.

According to Porter, parameters for creating competitive advantage include cost reduction for cost leadership on the one hand and time, quality, and innovation improvements for differentiation on the other hand. The adequacy of a particular business strategy is determined by the environment of the organization or subunit. For example, the competitive advantage of an organization that operates in a very dynamic market may be due to fast and efficient product development or innovation excellence. In other markets, production efficiency that supports cost reduction and cost leadership may result in a competitive advantage. Hence, two main objectives for knowledge management can be developed – KM to improve efficiency and KM to improve innovation. The two KM strategies differ in their respective KM objective, KM strategy, and knowledge type. Table I summarizes the characteristics of the two main KM objectives and strategies.

Our discussion suggests a fit model between business and KM strategy that leads to improved business performance. In the following we want to analyze the nature of the fit relationship between business and KM strategy. The theoretical discussion proposes a matching relationship with innovation and personalization on the one side and efficiency and codification on the other side. Fit as matching means that only theoretically defined combinations of variables leads to a favourable outcome whereas the absence of match leads to an unfavourable outcome (Venkatraman, 1989). These two combinations should be superior compared to innovation/codification and efficiency/personalization combinations and lead to a successful KM activity. We conducted a case study in 11 German and Swiss companies (all non-consultant companies) in order to gain a deeper insight about the nature of the relationship between business strategy and KM strategy within a company (see Figure 1).

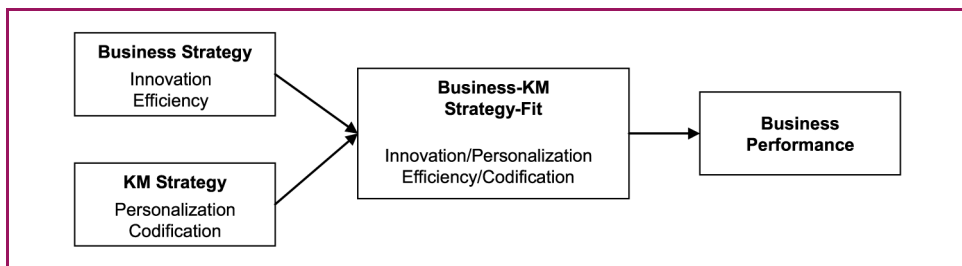
Methodology

The research was conducted in cooperation with a leading German utility company. This company faced strong competition after the deregulation of the German utility market. The company was interested in how it could use KM to increase its competitive strength. One of the salient question was what KM strategy would best fit their business strategy and be most successful. The goal was to derive conclusions by analyzing and comparing the differences and similarities of KM activities of the other firms. Since knowledge management activities can hardly be judged without analyzing the company's vision, organization, and unique

Table I The two main KM objectives and strategies

<i>Objective</i>	<i>Innovation</i>	<i>Efficiency</i>
	Creativity and knowledge creation	Externalization and re-use of knowledge
<i>Focus</i>	People	Processes
<i>Strategy</i>	<i>Personalization</i>	<i>Codification</i>
	Networking and dialogue	Collect, store, and disseminate explicit knowledge
<i>Problem</i>	New, unstructured, not repetitive	Repetitive activities and similar processes
<i>Knowledge type</i>	Tacit knowledge	Explicit knowledge

Figure 1 Fit between KM and business strategy



characteristics, a case study research design was chosen. A case study design adapted from Yin (1994) was developed and the case study research was conducted. After an extensive literature review, a conceptual framework for designing the interviewer guidelines was developed. The framework includes the KM processes that are supported by technology, organization, and culture and are directed towards the company's/business unit's KM objectives. This framework assured that all relevant aspects of the KM activity were studied.

The unit of analysis is a single KM initiative within an organization. Since the research was conducted in cooperation with a German utility company, the primary criteria for selecting sites were similarities in size, knowledge intensity of the industry, and heterogeneity of business areas. For that reason, consulting companies were not included in the selection. The primary resource and competitive advantage of consulting companies is knowledge and thus, the importance of knowledge is very high. They "sell" knowledge directly instead of selling products or services that are produced using the company's knowledge. The final case site selection was based on the presence and reputation of KM activities in literature and KM conferences. One company of the 11 selected companies reported two KM initiatives totalling 12 KM initiatives.

Interviews with one to two people of each company were held during Fall and Winter 1999. The length of each interview was between 1.5 and three hours and was conducted by one to two interviewers. The interviewers followed the interviewer guidelines and paid attention to the specific context of the company by asking follow-up questions and exploring an emerging subject in more detail. The majority of the interviews were recorded and transcribed. (The interviews were conducted in German. The authors tried to translate quotations as accurately as possible.) A two to four page summary based on the interviews and further documentations (company web site, documents received from the companies) was created for each company. The summaries were sent for approval to the companies allowing them to provide further feedback.

Case study research does provide rich and contextual data that can help to gain a deeper understanding about a phenomenon (Yin, 1994). However, due to the qualitative nature of the data case study research has limitations. First, the findings are based on logical and not statistical reasoning and may be biased by the acknowledgment of the known literature. Second, the results (e.g. for the evaluation of the success of the companies) depend on the ability of the interviewee to present the KM initiative, his/her attitude toward the KM activity, and the ability of the interviewer to correctly interpret the results. Finally, due to the collaboration with the German utility company we selected sites that are similar to it. Progressive companies like consulting companies were excluded a priori. The findings are therefore not necessarily generalizable to other companies and industries.

Analysis and results

The KM initiatives were evaluated and categorized by six criteria: KM objectives, processes, problems, content, strategy, and type of knowledge. The purpose was to find similarities among the sample units. Size, industry, and background information of the company, globalization (national, international), knowledge intensity of the industry, products, business processes, importance of innovation, and main audience of the KM initiative (business unit or whole organization) were also taken into account. IS success models recognize organizational impact as a major component of success of an information system (DeLone and McLean, 1992; Seddon, 1997). Thus, the success of the KM initiatives was assessed using two criteria referring to organizational impact:

1. Was the identified problem resolved by the KM initiative (i.e. usefulness of KM initiative)?
2. Can the companies report monetary or non-monetary success stories (i.e. business performance)?

In addition, one criterion was used to derive potential sustainability of the organizational impact: Is the KM system used and can it survive without strong support by top management? We identified five KM initiatives as being successful and two KM initiatives as

being less successful. It was not possible to clearly judge the rest of the KM initiatives. Two KM initiatives were still in the pilot phase. The interviews of the remaining KM initiatives did reveal positive trends, e.g. some success stories. Table II provides a comprehensive overview about the main criteria.

The cases show that KM initiatives do not necessarily apply to the whole organization. Almost half of the cases supported business units or departments within an organization. Thus, we considered the business strategy of the company if the KM initiative applies to the whole company and we considered the business strategy of the unit if the KM initiative applies to a business unit. For example, we examined the KM initiative in the audit department of company D. The success of the department is based on the quality and the number of audit reports created by the department. The department delivers the reports directly to the executive board. Thus, its business strategy is to deliver fast and reliable reports to the executives and the goal is to make the audit process as efficient as possible.

The KM initiatives can be categorized into four combinations of business strategy and KM strategy:

1. Codification and efficiency.
2. Efficiency and personalization.
3. Innovation and codification.
4. Innovation and personalization.

The KM initiatives in the quadrants with the combination efficiency and codification as well as innovation and personalization were according to our previous argumentation more successful than the KM initiatives in the other quadrants. The value in the parentheses shows the level of success as reported by the interviewee (see Table III).

The combinations of efficiency and codification as well as innovation and personalization suggest a higher potential for success of the KM initiatives and are therefore described in more detail in the following.

Innovation and personalization

Our research shows that companies who want to use knowledge management as a basis for their process of innovation encouraged the creation and the exchange of knowledge by enabling communication and collaboration in a person-to-person approach. This seemed to be especially suitable for complex, unstructured, and unique processes. This approach was chosen to solve new problems, to create customer specific solutions, and to develop product innovation. The “treasures hidden in the employees’ minds” (company representative) – the tacit knowledge – is the key of the personalization strategy. The objective to use KM in order to facilitate innovations makes a different strategy necessary than to facilitate efficiency of processes. The direct exchange of tacit knowledge through socialization is critical for knowledge creation and the process of innovation (Leonard and Sensiper, 1998; von Krogh, 1998). New and innovative ideas can arise from the use of synergies of people from different locations, cultures, or disciplines (Leonard and Sensiper, 1998; Nonaka and Takeuchi, 1995). Discussion forums, E-mail, TV, Videoconferences, and CSCW-Tools supported the personalization strategy. The next example of a company in the life science industry illustrates this combination (Box 1).

Table II Overview KM initiatives

KM initiative	Industry	Project	KM initiative supports unit	Supporting process	Knowledge type	Objective	Primary KM strategy	Secondary KM strategy	Strategy of concerned unit	Organizational impact	Tied to relevant business process
A	Pharmacy/life science	Data warehouse	Top-management	Data collecting	Explicit	Collect, refine, and disseminate data	C		Innovation	Middle	No
B	Automobile	Document management	R&D department	Development projects	Explicit	Store knowledge and meta-knowledge	C		Innovation	Middle	No
C	Domestic appliances	Yellow pages, knowledge platform, networks, maintain knowledge of leaving employees	Company wide and projects	Different technical projects and core competencies	Not clear	Make people more sensitive to KM	Not clear	Not clear	Not clear	Pilot	Not clear
D	Transportation	Auditing	Audit department	Repetitive audit processes	Explicit, tacit	Re-use of audit knowledge	C	P	Efficiency	High	Yes
E	Cement and aggregates	Data base "alternative fuels"	Project	Implementation of use of alternative fuels in subsidiaries	Explicit, tacit	Re-use of experiences with the implementation of alternative fuel usage	C	P	Efficiency	Pilot	Yes
F	Computer HW, SW, services	Creation of CoPs	Company wide	New business topics and themes	Tacit	Establish topic related CoPs	P	C	Innovation	Positive trends	Not clear
G	Life science	Virtual conferences	Company wide	No process	Tacit	Topic related exchange of knowledge, ideas, and increased transparency	P	C	Product innovation	Positive trends	Yes
H	Network technology provider	Global knowledge sharing network	Sales department	Repetitive sales processes	Explicit, tacit	Re-use of sub-processes and best practices	C	P	Efficiency	High	Yes
I	Insurance	A knowledge culture	Company wide	Customer support and product innovation	Tacit, explicit		P	C	Innovation	Positive trends	Yes
J1	Computer HW, SW, services	Maintenance database	Service department	Repetitive maintenance problems	Explicit	Re-use of tips and tricks	C		Customer efficiency	High	Yes
J2	Computer HW, SW, services	Document Management	Sales department	Repetitive sales processes	Explicit	Re-use of presentations, sales documents, etc.	C		Efficiency	High	Yes
K	Various, e.g. manufacturing, health care, etc.	"Vivid" knowledge management	Company wide	Unstructured, new processes for the development of innovations	Tacit, explicit	Generation of ideas and realization of product innovations	P	C	Product innovation	High	Yes

Notes: (C = Codification, P = Personalization)

Table III KM strategy and business strategy

		<i>Business strategy of concerned unit</i>	
		<i>Efficiency</i>	<i>Innovation</i>
KM Strategy	Codification	D (High) E (Pilot) H (High) J1,2 (High)	A (middle) B (middle)
	Personalization		F (Positive Trends) G (Positive Trends) I (Positive Trends) K (High)

Note: KM initiative C was excluded because the strategies could not be derived from the data

Box 1. Knowledge exchange to improve the innovation process

The objective of the Knowledge MarketPlace of Company G is to exchange knowledge between their employees beyond geographical boundaries. The Knowledge MarketPlace was established 1995 with Lotus Notes and employees from all over the world have access to the system and can contribute. The main components of the system are the Yellow Pages (employees profiles), Blue Pages (external expert profiles), and facilitated as well as non-facilitated virtual discussion forums. The intentions of the initiative are to leverage organizational learning (Nonaka and Takeuchi, 1995) through knowledge exchange, to identify knowledge carriers, to establish communities of practices, and – like in the following example – to generate new knowledge and ideas through dialogue. Company G is a global company in the Life Science industry with worldwide locations and high investments in R&D. Product innovation is key to the success in this industry. It is therefore important to early identify new emergent technologies and distinguish among those that are critical and will result in successful products. In November 1999, for example, a conference was conducted in order to discuss the potential use of an emergent technology for the development of new products. Employees from different locations, cultures, and disciplines can contribute to the forums and bring new perspectives to the topic and potential uses of the emergent technologies. New and innovative ideas can arise from the use of synergies of these heterogeneous groups (Leonard and Sensiper, 1998; Nonaka and Takeuchi, 1995). However, new ideas do not necessarily result in product innovations. They have to be exploited, converted, and realized in a marketable and competitive product or service. A Research and Technology Advisory Board was established in order to assign budgets to promising ideas that emerged through the virtual forums and ensure at least the financial ability to implement them.

Efficiency and codification

Conversely, companies who use knowledge management in order to improve the efficiency of operational processes use databases and information systems to disseminate “best practices” independently from the “human knowledge carrier”. The efficiency strategy relies primarily on the re-use of existing knowledge. It is not necessary to bring people together to share their knowledge directly and combine that knowledge by dialogue in order to create new knowledge. Thus, the codification strategy works best for this type of business strategy. Here knowledge is externalized, codified and stored in databases. This is particularly suitable for repetitive activities or similar problems. Problems can be solved faster and skills and competency of the personnel can be improved. Knowledge Databases, Data Warehouse, and Document Management were the main Information Technologies used in our sample. The next example of an internal audit department in a leading German transportation company illustrates the combination of efficiency and codification (Box 2).

Summary

The findings strongly suggest a relationship between the success of KM in terms of improving business performance of the organization or business unit respectively and the alignment of KM strategy and business strategy. The findings show a matching fit between KM strategy and business strategy. An organization whose business strategy requires efficiency of processes should rely primarily on a codification strategy. An organization

Box 2. Improving the efficiency of the auditing process

The KM initiative of the internal audit department (commercial and technical) of Company D, a leading German national transportation company, is directly aligned to the objective of the department. The departmental success is measured on the basis of the quality and number of finished yearly or ad-hoc audits. A need for KM arose when the department faced higher demands on the quality of the audits due to the privatization of the organization. In addition, the department faced increasing competition with other auditing companies. Thus, the quality and number of audits per year is critical to the success of the department. Two problems within the audit department were identified. First, the internal audit department serves as an “elite-school” for the whole organization. Thus, turnover and loss of audit knowledge is very high. Second, audit knowledge was either not documented at all or the documents were located in one of the seven different local office locations in the country. If an employee left the department, the successor had to start almost from scratch. This had a significant negative impact on the quality and number of audits. Thus, the main objective of the KM initiative was to maintain the audit knowledge, reuse, and share it between the different locations. The knowledge necessary for the auditing process was determined, codified, stored in a database, and transferred in the form of “Best Practices”, checklists, methods, etc. The company reported that the homogeneity and quality of the audit reports as well as the structure and efficiency of the auditing process improved considerably.

whose business strategy requires product or process innovation should rely primarily on a personalization strategy. In addition, the KM initiative should support the objective of the business strategy. For the audit department of Company D it was important to improve the quality and number of audits. It would have been less important for example to improve the process efficiency for booking flights for the auditors. The KM initiative did support the strategy that added the most value to the department. These findings can also be explained by organizational information processing theory that explains the need for processing information in order to reduce uncertainty and equivocality (Daft and Lengel, 1986; Galbraith, 1974). Uncertainty deals with the problem of absence of information whereas equivocality means ambiguity and the existence of multiple and conflicting interpretations (Daft and Lengel, 1986). Organizations that focus on innovations face high equivocality and need communication channels with high media richness such as face-to-face. Organizations with a focus on efficiency may face less equivocality and codification of knowledge is thus adequate for them.

Discussion

The analysis supported the relationship between business strategy and primary KM strategy. It also showed that some companies deploy both approaches – codification and personalization – within the same KM initiative. This supports propositions that codification and personalization are not two extremes but rather dimensions that can be combined (Gammelgaard and Ritter, 2005). For example, some KM initiatives with the objective to improve process efficiency mainly relied on the codification strategy and also used instruments like discussions forums or newsgroups to give their employees the opportunity to exchange knowledge and best practices directly. The next example illustrates that approach (Box 3).

The case studies did not clearly indicate a higher level of success for the companies that used both approaches. But it can be assumed that a sole reliance on one strategy may be too one-sided, e.g. a sole concentration on codification and reuse of knowledge may not be enough to face the dynamic and turbulence of the markets (Afuah, 1998). On the other side, bringing people together does not necessarily lead to innovation if the knowledge is not exploited.

We argued that the fit between efficiency and codification on the one side and innovation and personalization on the other side enhances the level of success of a KM initiative. However, it is not clear whether the combination of efficiency and personalization or innovation and codification necessarily lead to less performance of the organization in the long run. For example, it might be possible, that even if efficiency is the competitive strategy in the market, a personalization strategy can improve long-term performance due to a higher

Box 3. Global knowledge sharing network

Company H is a global provider of network technology for enterprises, carriers, and service providers. The focus in the network technology market shifted from providing reliable products to providing consulting services and tailored solutions to customers. Therefore, the success of the company depends on the ability to quickly provide customers with tailored solutions. The increasing complexity of the business also raised the demands on the competencies and abilities of the sales representatives. The KM initiative of the sales and market department is to “leverage our local innovations globally. We are a community committed to increasing value for our customers [...] by creating and re-applying leading-edge solutions”. The KM initiative has two main components. Primarily, knowledge along the sales process is identified, externalized, codified, stored, and disseminated via a web-based intranet. The secondary objective is to develop global knowledge networks. Discussion forums on the intranet support the creation of topic related groups (similar to communities of practices). Urgent requests can be posted via the intranet to obtain quick responses and help to solve new problems. The creator of every document in the KM system can be identified and contacted directly via phone or e-mail. These instruments help to improve tacit knowledge exchange and collaboration.

absorptive capacity. A higher absorptive capacity can help to perceive changes in the environment faster and make necessary adaptations to the business strategy (Cohen and Levinthal, 1990).

Our study focused on German speaking companies in Germany and Switzerland. Recent studies suggest that cultural and societal characteristics of a nation are likely to influence the organizational culture and therefore implementation and success of knowledge management initiatives (Ardichvili *et al.*, 2006; Ford and Chan, 2003; Michailova and Husted, 2003). Cultures high on the cultural dimension of “power distance” for example stress the importance of power and social status between individuals (Hofstede and Hofstede, 2005). Power and status might influence the motivation to share knowledge, the direction of knowledge flows, and access to knowledge and impede the success of certain knowledge management strategies (Ardichvili *et al.*, 2006; Ford and Chan, 2003). Cultures high on power distance might tend to share less knowledge since knowledge hoarding brings an advantage to the individual (Ardichvili *et al.*, 2006; Michailova and Husted, 2003). On the one hand, these cultural differences might imply that certain KM strategies are more or less effective in different countries. In that case we would expect to receive different results when replicating our study in other cultural settings. On the other hand, cultural differences might influence implementation strategies, which need to be tailored to the specific culture to ensure the success of the KM initiative (for example adapted incentive systems) without influencing the effectiveness of the higher-level KM strategy. In that case our findings would not deviate significantly from findings in other cultural settings.

Since our study was conducted in winter 1999/2000, there have been several developments in the social and technical dimension of information systems that might influence our findings. Developments in collaboration technologies such as Wikis make knowledge sharing and communication more convenient, effective, and efficient, and might lower communication barriers between knowledge sharers. Many technologies such as cell phones, PC, and e-mail have become mainstream and the increased experience with those technologies might positively influence the adoption rate of knowledge management systems. Research about barriers to knowledge management, best practices, and detailed investigations of successful and unsuccessful knowledge management initiatives may lead to higher success rates of future initiatives. The companies and knowledge management initiatives we considered in our study were one of the early adopters and examples of knowledge management. Hence they did not have many successful examples and academic research to draw and learn from. We would expect to obtain a clearer picture of successful and unsuccessful projects (see Table III) when replicating this study.

Implications for further research

An interesting point is that we found no combination of efficiency and personalization. One explanation for this could be that the small sample size accidentally did not contain an

“ If KM fails to add value to the organization, it is only cost intensive, useless, or even counterproductive. ”

example for this combination. Another explanation could be that this combination makes no sense and that companies consciously did not choose that combination. Further research could answer this question.

Our model used two basic business strategies – innovation and efficiency – to explain the relationship between KM strategy and business strategy. The results may be different if additional business strategies are examined. O'Dell and Grayson for example differ between three generic strategies for KM “Customer Intimacy”, “Product-to-Market Excellence”, and “Operational Excellence” (O'Dell and Grayson, 1998). Customer Intimacy helps to serve the customer more efficiently and effectively by using customer and market specific knowledge. Product-to-Market Excellence refers to the production process and has the objective to decrease the time from the development to the final product (time-to-market). Operational Excellence refers to the exchange of solutions and methods in order to make organization processes more efficient. Applying this categorization to the model could give further insights.

Implications for practitioners

We argued that when choosing KM strategy a company or business unit has to consider the business strategy of the company or business unit that is determined by the requirements of the market. A manager should be aware of the success factors, objectives, and crucial business processes of the organization or department and choose the KM strategy and objective in accordance to the strategy and objective of the business strategy.

Conclusion

The most salient lesson learned we derived from the experiences of the companies is as followed: the most successful knowledge management projects were those that were driven by a strong business need, and the goals of which were to add value to the company's operations or business unit's operations respectively. The knowledge management objectives and strategy need to concur with the company's/business unit's objectives and strategy and need to be aimed at creating a sustaina

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Further reading

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