Balanced system for knowledge process management in SMEs
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Abstract
Purpose – The specific challenges which small and medium-sized enterprises (SMEs) face lead to a special knowledge management system with harmonised methods and supporting software tools. This paper seeks to address this issue.

Design/methodology/approach – A theoretical framework is proposed as a layer concept to describe the special situation of knowledge management in SMEs. Based on this framework empirical studies were conducted in German-speaking countries to find out the relevant methods and tools supporting knowledge management in SMEs.

Findings – The outcome of the empirical study describes methods of knowledge management supporting the four key knowledge processes in SMEs, i.e. knowledge identification, knowledge acquisition, knowledge distribution and knowledge preservation. The results are explained in the developed “TechnicalSocialSocialTechnical Model” (TSST Model), which is a balanced system for technical and social knowledge applications.

Research limitations/implications – The empirical study presented provides a model for knowledge management support in SMEs in German-speaking countries. Further research will expand the empirical data on an international focus.

Originality/value – The developed TSST Model is currently used for the implementation of knowledge management systems in Austrian SMEs. The developed TSST Model functions as a decision support framework for SMEs to select technical and social knowledge methods according to the corresponding knowledge processes.

Keywords Knowledge management, Knowledge management systems, Knowledge processes, Small to medium-sized enterprises

Paper type Research paper

1. Research problem
The academic literature on knowledge management has become a major research field in different disciplines in the last ten years (Back et al., 2007; Davenport and Prusak, 1998; Nonaka and Takeuchi, 1995; Ruggels, 1997; Sveiby, 1997). Through knowledge management, organisations are enabled to create, identify and renew the company’s knowledge base and to deliver innovative products and services to the customer. Knowledge management is a process of systematically managed and leveraged knowledge in an organisation. For Mockler and Dologite (2002, p. 14) knowledge management “refers to the process of identifying and generating, systematically gathering and providing access to, and putting in use anything and everything which might be useful to know when performing some specified business activity. The knowledge management process is designed to increase profitability and competitive advantage in the marketplace”. A successful implementation of knowledge management can only be achieved in a culture that supports knowledge sharing and transfer (Holden, 2002; Nakra, 2000). Besides culture and networking, the objective for
Knowledge management technology is the creation of a connected environment for the exchange of knowledge (Gallupe, 2001; Mentzas et al., 2001).

Knowledge management is more than the technological solutions provided to give people access to better and more relevant information (Wang and Plaskoff, 2002, p. 113). It is important that the design of knowledge management systems reflects the mindset of knowledge workers and their way of offering highly qualitative knowledge solutions with quick solution processes. An effective knowledge management system must integrate people, processes, technology and the organisational structure.

Historically, knowledge management has focused on the domain of larger organisations and the issues discussed above of culture, networking, organisational structure and technological infrastructure were applied upon the implementation of knowledge management initiatives in large multinational organisations and seemed to have little relevance (Delahaye, 2003) to small and medium-sized enterprises (SMEs). However, the success and growth of SMEs depend on how well they manage the knowledge of their knowledge workers. Managers in SMEs have to recognise that the uniqueness and creativity of each knowledge worker will lead to customer satisfaction and the success of the SME. In 2000, the European Council set the clear strategic goal for the European Union (EU) of becoming “the most competitive and dynamic economy in the world, capable of sustaining economic growth with more and better jobs and greater social cohesion” by the year 2010 (European Commission, 2000). Dezouza and Awazu (2006) pointed out that SMEs have to compete on know-how in order to gain competitive advantages. Further, SMEs do not have much money to spend on knowledge management initiatives, so knowledge must be leveraged in order that goals can be achieved in an effective and efficient manner.

SMEs play a key role in European economic performance because they account for a high proportion of gross domestic product (GDP) and employ some two-thirds of the European workforce. According to the OECD’s “Small and Medium Enterprise Outlook 2002/2005” (Organization for Economic Co-operation and Development, 2005) the role of SMEs in OECD economies is very important for strengthening economic performance. SMEs represent over 95 per cent of enterprises in most OECD countries, and generate over half of private sector development. A similar impact of SMEs on economic value can be found in the report of the Asia-Pacific Economic Cooperation (2006), where about 90 per cent of enterprises are SMEs. During their 2006 meeting in Beijing the members agreed to strengthen the SMEs’ competitiveness for trade and investment. For example, SMEs account for more than 95 per cent of companies in Australia. Of the 624,010 SMEs in Australia, more than two thirds employ between one and four people. A further 180,880 SMEs employ between five and 19 people, meaning that 93.5 per cent of people employed by SMEs in Australia are employed by what can be described as “micro-SMEs”, namely companies with less than 20 employees.

Looking to the European countries of Austria and Switzerland, including Liechtenstein, a similar landscape of SMEs can be found. According to the Statistical Yearbook of Austria (2006) and the Austrian Institute for SME Research (2006), for the year 2006, 99.7 per cent of companies are SMEs, which makes for 297,800 companies in Austria. In Switzerland 99.7 per cent of companies are SMEs, looking at the data from CHSME (2006).

There are several research articles dealing with knowledge management in SMEs (Beijerse, 2000; Bellinger and Krieger, 2007; Salojärvi et al., 2005; McAdam and Reid,
2001; Wong, 2005), but only a few empirical studies have been conducted to determine the impact of knowledge processes in SMEs. McAdam and Reid (2001) found that the time was right for knowledge management within the SME sector. The results of their comparative study of large organisations and SMEs showed that both sectors have much to gain from the development of knowledge management systems. Salojarvi et al. (2005) found that SMEs should be able to enhance their performance and competitive advantage through a more conscious and systematic approach to knowledge management.

This paper focuses on discussing the key knowledge processes for SMEs in Austria and Switzerland including Liechtenstein. Furthermore, an architectural concept is introduced which assigns the corresponding knowledge management methods to each knowledge process in SMEs. The findings of the research indicate that SMEs need only four key knowledge processes and therefore the authors propose a knowledge method framework designed for the realisation of the specific characteristics of SMEs for implementing knowledge management. The empirical study combines the concepts of knowledge processes as well as knowledge methods for SMEs in a single study. The key objective of this paper is the matching of knowledge methods to knowledge processes in SMEs and designing a balanced system called the “TechnicalSocialSocialTechnical Model” (TSST Model), which aligns technical-oriented and social/cognitive methods to the key SME knowledge processes. First, the architectural concept will be presented, then the key research findings are discussed, and finally the TSST Model is explained by integrating the empirical outcomes with the impact for SMEs. The practical implication of this model is a decision support function for SME managers to match social aspects of knowledge management in information-technology dominated surroundings, reflecting the heterogeneous landscape of knowledge workers.

2. Theoretical framework
2.1 Architectural concept
Figure 1 shows the architectural concept for the comparative study of knowledge processes in SMEs in Austria and Switzerland/Liechtenstein (Fink and Ploder, 2007a).

2.2 Knowledge process model of Probst et al. (1999)
The basic research model is the “building block” approach by Probst et al. (1999) with their description of the knowledge processes (Figure 1, layer 1). Eight components are involved that form two cycles, one inner cycle and one outer cycle. The inner cycle is composed of six key knowledge processes:

(1) **Knowledge identification** is the process where external knowledge for analysing and describing the company’s knowledge environment is identified.

(2) **Knowledge acquisition** refers to what forms of expertise the company should acquire from outside through relationships with customers, suppliers, competitors and partners in co-operative ventures.

(3) **Knowledge development** is a building-block which complements knowledge acquisition. Its focus is on generating new skills, new products, better ideas and more efficient processes. Knowledge development includes all management efforts consciously aimed at producing capabilities.
(4) Knowledge distribution is the process of sharing and spreading knowledge which is already present within the organisation.

(5) Knowledge utilisation consists of carrying out activities to make sure that the knowledge present in the organisation is applied productively for the benefits.

(6) Knowledge preservation is the process where the selective retention of information, documents and experienced required by management takes place.

In addition, there are two more processes (knowledge measurement and knowledge goals) in the outer cycle.

Among other knowledge process models (e.g. Jennex, 2007; Laudon and Laudon, 2005; Nonaka and Takeuchi, 1995), the building block approach of Probst et al. (1999) has the advantage that it is well known in European companies as well as in SMEs, and furthermore it is a very unique and complete design of knowledge processes. Business process modelling (Hammer and Champy, 1993) has become a major research field in the information systems discipline in the last ten years. Davenport (1992) sees the term
“business process” as “a structured, measured set of activities designed to produce a specified output from a particular customer or market”. The linkage of business process modelling and knowledge management is called knowledge process modelling. For Richter-von Hagen et al. (2005a, b), “a process is knowledge intensive if its value can only be created through the fulfilment of the knowledge requirements of the process participants”. Richter-von Hagen et al. (2005a, b) describe knowledge-intensive processes as sequences of activities based on knowledge-intensive acquisitions and handling. The following describe knowledge-intensive processes:

- diversity of sources and media;
- variance and dynamic development of the process organisation;
- plenty of process participants with different expertises;
- use of creativity; and
- high level of innovation and influence on the area of the decision.

Edwards and Kidd (2003) argue that the modelling and the importance of business processes build the fundamentals of knowledge management.

2.3 Knowledge processes in SMEs in Austria and Switzerland

There are several quantitative and qualitative definitions of the term SME depending on regional and national differences. In the USA, the definition of small business is set by a government department called the Small Business Administration (SBA) Size Standards Office. The SBA uses the term “size standards”, which is a numerical definition to be considered as a small or medium-sized business. It must also be independently owned and operated. Unlike the European Union, which has simple definitions applied to all industries, the USA has chosen to set size standards for each individual industry. This distinction is intended to better reflect industry differences. SMEs are also of high importance for in the US economy. Similar to Europe, more than 97 per cent of firms in the USA can be defined as SMEs. The definition of SMEs of the European Commission (European Commission, 2000) is used for this research design. The European Commission analyses SMEs using the following three characteristics:

1. number of employees;
2. annual revenue; and
3. total assets.

Characterised through these three factors the European Commission differentiates:

- medium-sized enterprises (fewer than 250 employees and annual revenue less than €50 million or total assets less than €43 million);
- small enterprises (fewer than 50 employees and annual revenue less than €10 million or total assets less than €10 million; and
- micro enterprises (fewer than ten employees and annual revenue less than €2 million or total assets less than €2 million).

Since the authors focus on the definition of the European Commission of SMEs, they follow the research view of a quantitative perspective of SMEs. This means that all enterprises with fewer than 250 employees and annual revenue less than €50 million or
total assets less than €43 million in Austria and Switzerland including Liechtenstein are the target population. In Figure 1, layer 2 symbolises the quantitative view of the SME definition.

The research method for the identification of knowledge processes in SMEs were expert interviews, or what Gillham (2000) referred to as “elite interviewing”. This kind of interviewing is chosen to address someone in a special position or an expert.

The characteristics of elite interviews apply to the interview situation for knowledge processes in SMEs. The managers or company owners were highly motivated to articulate their view of knowledge processes and wanted to share their personal position about key knowledge processes. The first interview session was conducted in 2004 and was limited to Austrian SMEs managers (Fink and Ploder, 2006a). This study was the proving ground for the future procedure of the empirical studies in 2005/2006. The research hypothesis was:

H1. SMEs need a simple knowledge process model in order to implement knowledge management successfully.

The second interview session was conducted from December 2005 until February 2006 (Figure 1, layer 2). The research method was the elite interview. The data sample ranged from all industry sectors in which SMEs could be found in Austria at this time, with a special focus on enterprises which belonged to the sector of consulting and information technology (Fink and Ploder, 2006b). The survey subject were Chief Information Officers (CIOs) and Chief Executive Officers (CEOs) in Austrian and Swiss SMEs. CIOs and CEOs (Davenport, 1992; Ruggels, 1997) are recognised as being proficient in answering questions concerning knowledge management. The data sample of 36 interviewees was the proving ground for asking open-ended questions. The data was analyzed by content analysis (Riffe et al., 1998) defined by Krippendorf (1980, p. 21) as “a research technique for making replicable and valid inferences to the content”. The interview sessions lasted about one hour and the authors were the interviewers. The result of the Austrian and Swiss research showed a clear finding, that in both countries only four knowledge processes of the Probst et al. (1999) model are ranked as important for the implementation of knowledge management in SMEs (see Figure 1, layer 3):

1. **Knowledge identification** – In SMEs it is highly important to identify the key sources of knowledge, experiences and know-how in order to stay competitive in the market.

2. **Knowledge acquisition** – The know-how of SMEs resides in many cases in the head of experts or knowledge workers.

3. **Knowledge distribution** – This process focuses on the sharing of explicit and implicit knowledge between knowledge workers in SMEs. Particularly in SMEs which are determined by smaller groups, a knowledge sharing culture to facilitate the exchange of knowledge to other groups is highly important and should be utilised by knowledge tools and mechanisms.

4. **Knowledge preservation** – It is well recognised that the most critical asset of any company is the sum of its collective knowledge and intellectual property (Davenport and Prusak, 1998; Nonaka and Takeuchi, 1995). Knowledge preservation and growth of this asset requires effective knowledge management.
management throughout the SMEs, so as to make sure that the right information is available to the right people when they need it (Leonard-Barton, 1995).

In addition, the managers of the SMEs pointed out that the process of knowledge disposal is also relevant for SMEs, with the objective of not overloading the information flow between individuals. From the content analysis of the expert interview, both Austrian and Swiss managers made the statement of knowledge disposal as an integrated part of knowledge preservation.

There were no significant differences between the answers given by the managers of SMEs in Austria and Switzerland.

In general, it can be stated that SMEs are satisfied with only four knowledge processes instead of the original framework with eight building blocks. This implies that $H1$ is verified. For our future research, these four key knowledge processes for SMEs are the basic framework for assigning knowledge methods for SMEs.

2.4 Knowledge methods
Based on a literature review on knowledge methods (Heisig, 2006; Laudon and Laudon, 2005; Mertins et al., 2001; Schwartz, 2006) a list of existing methods supporting one of the four key knowledge processes was developed (Figure 1, layer 4). The objective of this empirical study was to determine which of the methods are most relevant for SMEs, and what the differences are in the Austrian and Swiss SME sectors. Figure 2 lists all identified methods for the four knowledge management processes, which are stored in the method repository (Figure 1, layer 5).

The second research hypothesis is:

$H2$. SMEs in Austria and Switzerland including Liechtenstein rank different knowledge methods as their favourites.

Figure 2.
List of knowledge methods

Source: Fink and Ploder (2007a)
3. Comparative study of knowledge methods in Austria and Switzerland

3.1 Data sample and questionnaire design

The data sample of 587 enterprises was appointed stochastically from the target population described in Table I. It was on average allocated over the regional federal states of Austria, Switzerland and Liechtenstein to obtain a representative result. In Austria there is a total number of 535,031 SMEs and in Switzerland/Liechtenstein there are 308,819 SMEs. The online questionnaire was conducted in summer 2006 after a pre-test with 30 respondents (Fink and Ploder, 2007a).

The return rate of the survey was 38 per cent. This means that 219 SMEs filled out the questionnaire. The failure rate was calculated as 6.6 per cent. So all statements in the survey are correct at a percentage of 94 per cent. The respondents are divided in industry sectors: 60 per cent are from the three key industries, i.e. industry, information and consulting as well as trade and handcraft. The other 40 percent are dispersed over other industries, as shown in Table II.

In the following sub-section the research findings of the comparative study are presented.

3.2 Results of the comparative study

Figure 3 gives an overview of all methods supporting the four knowledge processes for SMEs. Figure 3 lists the absolute number of each method on the Likert scale (+2 = absolute adequate, +1 = adequate, −1 = less adequate, −2 = not adequate, 0 = no answer) for the two countries of Austria (AUT) and Switzerland/Liechtenstein (CH/FL). The ranking for each country of the methods is the calculated value based on the Likert scale. The ranking of AUT and CH/FL on average is shown in the columns “Ranking AUT average” and “Ranking CH/FL average”, with a weighting of 60 per cent for Austria and 40 per cent for Switzerland/Liechtenstein. The weighting reflects the allocation of the population of the countries. The column “Difference of ranking”

<table>
<thead>
<tr>
<th>Industry sector</th>
<th>Total</th>
<th>Per cent</th>
<th>Number of interviews</th>
</tr>
</thead>
<tbody>
<tr>
<td>Industry</td>
<td>66</td>
<td>30</td>
<td>8</td>
</tr>
<tr>
<td>Information and consulting</td>
<td>48</td>
<td>22</td>
<td>6</td>
</tr>
<tr>
<td>Trade and handcraft</td>
<td>31</td>
<td>14</td>
<td>4</td>
</tr>
<tr>
<td>Retail</td>
<td>28</td>
<td>13</td>
<td>4</td>
</tr>
<tr>
<td>Tourism</td>
<td>22</td>
<td>10</td>
<td>4</td>
</tr>
<tr>
<td>Bank and insurance</td>
<td>20</td>
<td>9</td>
<td>2</td>
</tr>
<tr>
<td>Transportation and traffic</td>
<td>4</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Total</td>
<td>219</td>
<td>100</td>
<td>30</td>
</tr>
</tbody>
</table>

Table I. Data sample of SMEs in Austria and Switzerland/Liechtenstein

<table>
<thead>
<tr>
<th>Size range</th>
<th>Austria</th>
<th>Switzerland/Liechtenstein</th>
</tr>
</thead>
<tbody>
<tr>
<td>Middle</td>
<td>10,225</td>
<td>5,657</td>
</tr>
<tr>
<td>Small</td>
<td>254,451</td>
<td>30,857</td>
</tr>
<tr>
<td>Micro</td>
<td>270,355</td>
<td>272,305</td>
</tr>
<tr>
<td>Total</td>
<td>535,031</td>
<td>308,819</td>
</tr>
</tbody>
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Table II. Sample of the elite interviews per industry sector
average” illustrates a relative comparison of the two countries (assessed by “Ranking AUT average” minus “Ranking CH/FL average”) and works out differences in the importance of particular methods. The sum of the average rankings can be seen in the last column, “Ranking sum” (with a weighting of 60 per cent for Austrian SMEs and 40 per cent for SMEs in Switzerland/Liechtenstein).

A total of 50 per cent of all SMEs respondents in Austria and Switzerland/Liechtenstein ranked the methods “Knowledge balance” (ranking sum 62.6) and “Knowledge scorecard” (ranking sum 55.4) for the knowledge identification process as the most useful ones. The method “Skandia Navigator” (ranking sum 42.8) is the third most applicable method. However, the methods “Market-Asset-Value” (ranking sum −0.8) and “Tobin’s q” (ranking score −8) are not so useful for knowledge identification. The comparative study showed that in Austrian SMEs the “Knowledge balance” method (difference of 0.143) has a higher ranking than in Switzerland, while in Switzerland the “Market-Asset-Value” has a higher ranking (difference of −0.114).

The most common methods for supporting the knowledge acquisition process are search engines (ranking sum 129.8) and brainstorming (ranking sum 126.8), followed by mind-mapping (ranking sum 116.8) and knowledge networks (ranking sum 114.0).
Not useful for knowledge acquisition is the complex method of “Synektik” (ranking sum $-9.8$). The methods of “E-mail systems”, “Scenario technique”, “System simulation” and “Business games” are useful for the process of knowledge identification but do not have such a high modelling output as the top ranked methods. Considering the comparison, the following scenario was the result of the SMEs interviews: in Swiss/Liechtenstein SMEs the methods of “Brainstorming” (difference of $-0.126$), “System simulation” (difference of $-0.188$) and “Business games” (difference of $0.234$) are used more than in Austria. On the hand, Austrian SMEs favour the creativity method of mind-mapping (difference 0.126).

The method cluster in the process of knowledge distribution shows that the top favourites are “E-mail systems” (ranking sum 101.4) and “Handbooks” (ranking sum 91.2); the second most relevant methods are “Communities of practice” (ranking sum 86.0) and “Groupware systems” (ranking sum 76.8); while in the middle ranking are “Checklists”, “Questionnaires”, “Best practice”, “Lesson learned methods” and “Knowledge maps”. Comparison of the countries shows that “Handbooks” and “Checklist” are more useful for Swiss/Liechtenstein SMEs, while “Storytelling” and “Chatrooms” are preferred by Austrian SMEs.

Comparing the two countries on knowledge preservation methods, the indication is that “Mind-mapping” is better ranked in Austria than in Switzerland, while “Document management systems” and “Checklists” are more preferred by Swiss SMEs. The research results with regard to the ranking position indicate that “Databases” (ranking sum 134.4), “Mind-mapping” (ranking sum 129.8) and “Document management systems” (ranking sum 109.4) are the top ranked knowledge preservation methods. However the artificial intelligence method of neuronal networks is not useful for knowledge preservation.

Concerning $H2$, country-specific differences across the various types of knowledge methods were documented, although emerging differences in the use of knowledge methods could not be stated. However, the research showed the ranking of knowledge methods for SMEs in Switzerland and Austria. The managers of SMEs interviewed have a clear position concerning the employment of knowledge methods for supporting knowledge processes. The findings of the comparative study indicate that the tendency of SMEs is to try out only a few knowledge methods which have importance to knowledge management. Moreover, the comparative study can be used as a framework for the application of knowledge methods in SMEs. This framework (Figure 3) might be of particular importance in the early stages of implementing knowledge management in Austrian and Swiss SMEs.

Current research is dealing with the extension of the study to the German SME sector. At present, first data analysis indicates that the German SME sector is similar to the Austrian SME sector concerning the role of methods.

4. Discussion and conclusion
Knowledge process modelling for SMEs uses the building block approach from Probst et al. (1999) and models corresponding with knowledge methods for the SME domain. A significant emphasis in this empirical study has been the development of a flexible and usable knowledge method mix to implement knowledge initiatives in SMEs. This paper addresses one of the currently perceived issues surrounding knowledge management, namely the lack of defining key knowledge processes for SMEs to handle knowledge
methods in specific settings. The study has drawn on an extensive review of the literature as well as on empirical studies concerning the SME sector. The European SME view of using knowledge processes should be extended to a comparative study including a more international SME perspective. This means that the key findings of the authors will be validated under international and national factors such as different SME definitions or regional/national specific economic frameworks.

The results of the empirical studies show that the benefits of a systematic knowledge management framework guiding organisations through the modelling of knowledge-intensive processes and through the choice of corresponding knowledge methods are great. Particularly, the investigation into the development of a balanced system integrating technical (“hard”) and social (“soft”) knowledge management is a key success factor. The empirical evidence that was gathered from our study was that the knowledge processes involve soft as well as technical aspects (Hlupic et al., 2002). The results show that organisations can overcome an overlap of one aspect by applying a flexible knowledge management system according to each knowledge process. This means that organisations have to design a decision framework that helps them to assign each knowledge process method from either a technical or a social toolbox or a combination of both (Ploder and Fink, 2007). Looking closer at each of the four derived knowledge processes a “TechnicalSocialSocialTechnical-Model” (TSST Model) can be identified (Figure 4). Figure 4 indicates that the process of identification

![Figure 4. TechnicalSocialSocialTechnical Model (TSST Model)](image-url)
is characterised by more technical-oriented knowledge methods, while the knowledge acquisition process is governed by social method support as well as the knowledge distribution process. Finally, knowledge preservation needs require an information technology approach to model the individual knowledge objects in SMEs. Therefore, SMEs can achieve a balanced system by combining from the knowledge repository (layer 5 in Figure 1) a method mix for knowledge initiatives.

A common problem in introducing knowledge management in SMEs is the lack of clarity about which types of methods should be taken into consideration. The TSST Model is designed for situations in which a knowledge system is viewed as an IT-reliant work system devoted to processing only information, not taking the social part of knowledge into account. The process of knowledge identification is characterised by a more technical method of support, such as scorecard methods or workplace analysis and human resource data analysis. The process of knowledge acquisition is highly personal and is therefore supported by more social methods such as mind-mapping, brainstorming and knowledge networking. The analysis of the knowledge methods used in SMEs revealed insights into the work reality of knowledge workers and was highly supported by “soft” knowledge methods. Rose (2007) uses the theory of value management, meaning that managing a value network demands an understanding of all processes and how they interact with each other. For Rose (2007), teams are process networks in miniature, exchanging knowledge in a rather informal way rather than by using information systems. Continuing to the next process of distributing knowledge, social thinking is the mainly used idea of understanding the knowledge sharing culture. The methods used are primarily from the “soft” side, such as storytelling, lessons learned, communities of practice or knowledge mapping. Wah et al. (2007) argue that knowledge produces social capital and is a driver for knowledge sharing. This means “considering the social embeddedness of knowledge sharing […] the evolving theory of knowledge sharing is likely to be grounded in social relationships” (Wah et al., 2007, p. 33). The process of knowledge modelling is completed with the preservation (storage) of knowledge, which is a rather technical process using databases and document/content management systems (Fink and Ploder, 2007b).

The TSST Model of knowledge management in SMEs presented in this paper is result of empirical studies conducted by the authors and provides a balanced system for SMEs. Particularly, SMEs are very sensible about drifting to one side of knowledge management or the other. A balanced system covering soft as well as hard knowledge management methods is necessary for the successful implementation and use of knowledge processes. The technology-oriented processes of identification and storage are supplemented by soft-oriented knowledge processes of acquiring and distributing, resembling the duality of knowledge which is also stated by Davenport and Prusak (1998). The hard and soft view of knowledge helps SMEs to transform their knowledge into action and to generate new and innovative processes.

References


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