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# A Comparative Study of Knowledge Processes and Methods in Austrian and Swiss SMEs

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# A COMPARATIVE STUDY OF KNOWLEDGE PROCESSES AND METHODS IN AUSTRIAN AND SWISS SMEs

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## Abstract

*Small and medium-sized enterprises (SMEs) are a vital and growing part of any national economies. In common with most large businesses, SMEs have recognized the importance of knowledge management. Using survey data from 219 small and medium-sized enterprises in Austria and Switzerland including Liechtenstein, this paper investigates the use of knowledge processes and knowledge methods for SMEs. The objective of this paper is the identification of key knowledge processes in Austrian and Swiss Small and Medium-sized Enterprises. The basic research framework is the knowledge process model from Probst/Raub/Romhardt (1999) with its eight building blocks. Empirical studies conducted by the authors show that for SMEs only four knowledge processes of the building block approach are important: (1) knowledge identification, (2) knowledge acquisition, (3) knowledge distribution and (4) knowledge preservation. Based on the result of this first empirical study, a comparative study was conducted to gain more insight which knowledge methods support the four key knowledge processes in Austrian and Swiss SMEs. In this paper, the authors introduce a knowledge framework for the implementation of knowledge management in SMEs.*

*Keywords: Knowledge Processes in SMEs, SMEs, Comparative Study, Knowledge Methods in SMEs*

# 1 RESEARCH PROBLEM

The academic literature on knowledge management has become a major research field in different disciplines in the last ten years (Back & Enkel & von Krogh 2007, Davenport & Prusak 1998, Nonaka & Takeuchi 1995, Ruggels 1997, Sveiby 1997). Through knowledge management, organizations 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 organization. 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". In a global and interconnected society, it is more difficult for companies to know where the best and most valuable knowledge is, thus it becomes more difficult to know what the knowledge is. A successful implementation of knowledge management only can be achieved in a culture that supports knowledge sharing and transfer (Holden 2002). Nakra (2000) addresses the issue that a knowledge culture is the most important value for the implementation of knowledge management, because organizational knowledge resides in the culture, structure and individuals who make up the organization.

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). These new software products facilitate communication and interaction among people as well as among people and systems. Mentzas et al. (2001, p. 95) discuss two key components that are required to support the sharing of information and technology:

- *Collaboration facilities* for knowledge workers is mainly the domain of groupware products. Other technology examples in this group are email systems, workflow automation, discussion groups, document management, shared databases, scheduling and calendar functions.
- *Discovery facilities* are required for searching and retrieval purposes. Knowledge workers are in constant need of finding and accessing information and knowledge from other experts. A wide variety of information sources support the finding of expertise, and they include the Internet, corporate Intranets, legacy systems, corporate LAN.

Österle (2000) highlights the fact that multimedia applications and networking make it possible to access existing knowledge, and they enable new forms of knowledge representation, searching, and utilization. The examples given are similar to Mentzas et al. (2001), and they are groupware systems, search engines, expert maps, and discussion groups.

Knowledge management is more than the technological solutions provided to give people access to better and more relevant information (Wang et al. 2002, pp. 113). It is important that the design of the knowledge management systems reflect the mindset of the 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 organizational structure.

Historically, knowledge management focused on the domain of larger organizations and the above discussed issues of culture, networking, organizational structure and technological infrastructure are applied upon the implementation of knowledge management initiatives in large multi-national organizations and seem to give little relevance (Delahaye, 2003) to small and medium enterprises (SMEs). However, the success and growth of SMEs depends on how well they manage the knowledge of their knowledge workers. Managers in SMEs have to recognize that the uniqueness and creativity of each knowledge worker will lead to customer satisfaction and the success of the SMEs. 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 & Awazu (2006) point out that SMEs have to compete on the know-how in order to gain competitive advantages. Even more, SMEs do not have much money to spend on knowledge management initiatives, so knowledge must be leveraged that goals can be achieved in an effective and efficient manner.

SMEs are playing a key role in European economic performance because they account for a high proportion of the Gross Domestic Product (GDP) and employ some two thirds of the European workforce. According to the OECD Small and Medium Enterprise Outlook 2002 and 2005 (OECD 2002, 2005) the role of SMEs in OECD economic is very important for strengthening economic performances. SMEs represent over 95% of enterprises in most OECD countries, and generate over half of private sector development. A similar impact of SMEs to economic value can be found for example in the report of the Asia-Pacific Economic Cooperation (APEC, 2006), where about 90 percent of enterprises are SMEs.

Looking to the European countries of Austria and Switzerland including Liechtenstein a similar situation can be found. According to the Austrian Statistical Year Book (Statistical Yearbook of Austria 2005) and the Austrian Institute for SMEs Research (ASME 2006) for the year 2006, 99.7 percent which are 297.800 companies are SMEs in Austria. In Switzerland also 99.7 percent of the companies are SMEs, looking at the data from CHSME (2006). There are several research articles dealing with knowledge management in SMEs (Beijerse 2000, Bellinger & Krieger, 2007, Salojärvi & Furu & Sveiby, 2005, McAdam & Reid 2001, Wong 2005), but only a few empirical studies are conducted to see the impact of knowledge processes in SMEs. McAdam & Reid (2001) found out that the time is right for knowledge management within the SME-sector. The results of their comparative study of large organizations and SMEs showed that both sectors have much to gain by the development of knowledge management systems. Salojärvi, Furu & Sveiby (2005) found out that SMEs should be able to enhance their performance and competitive advantages by 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, a comparative study 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 realization 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 in order to conduct a comparative study. First, the theoretical framework will be presented, than the key research findings are discussed and finally an outlook with future research projects is presented. The future research direction focuses on the development of a method mix for each knowledge process.

## **2 THEORETICAL FRAMEWORK**

### **2.1 General Framework**

Figure 1 shows the basic framework for the comparative study of knowledge processes in SMEs in Austria and Switzerland/Liechtenstein.

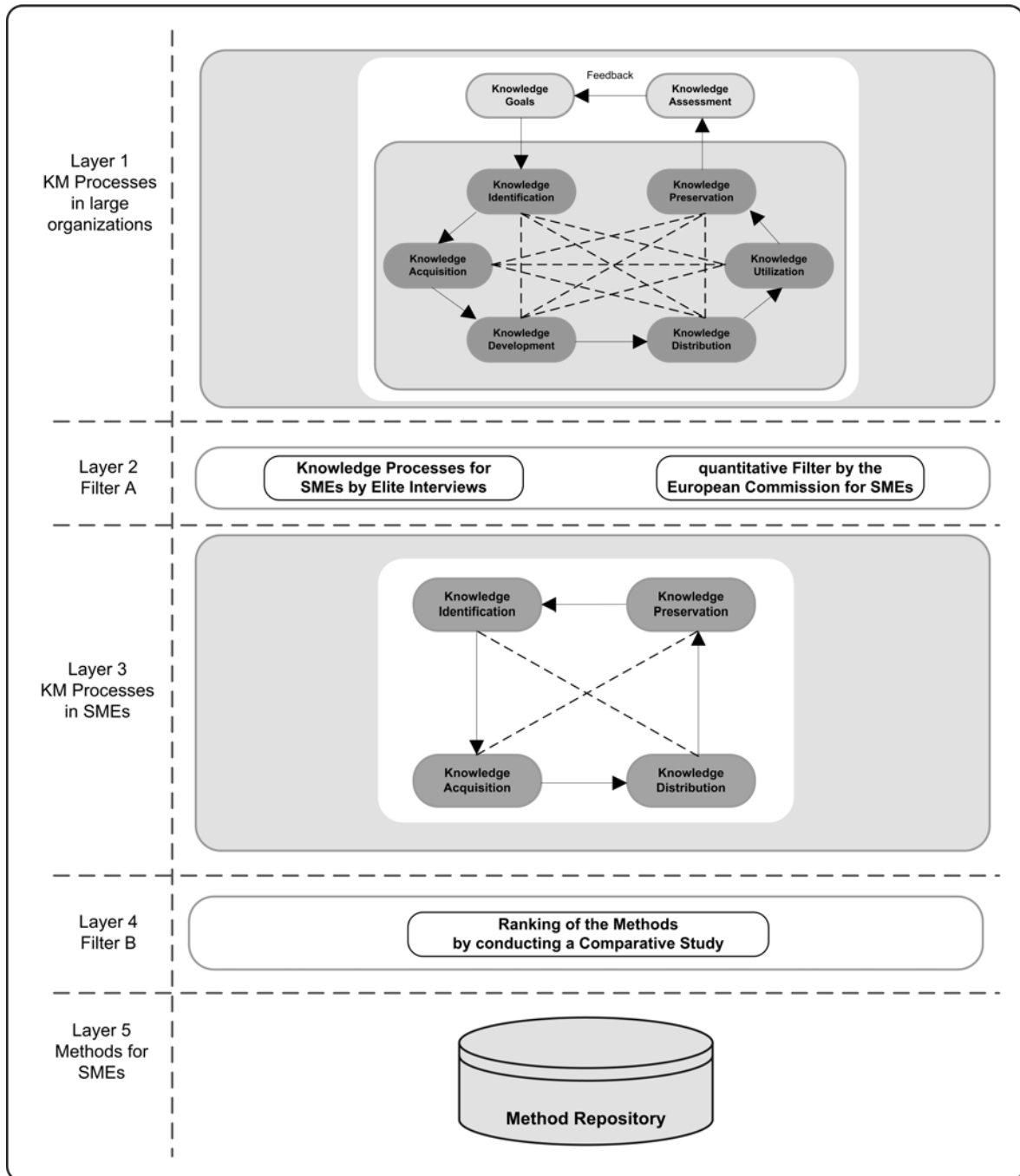


Figure 1. *Theoretical Framework: Knowledge Process Layer Concept for SMEs in Austria and Switzerland/Liechtenstein*

In the following sub-chapters the theoretical framework will be described in detail.

## 2.2 Knowledge Process Model of Probst/Raub/Romhardt

The basic research model is the “building block” approach by Probst, Raub & Romhardt (1999) with their description of the knowledge processes (figure 1, layer 1). Involved are eight components that form two cycles, one inner cycle and the other outer cycle. The inner cycle is composed of six key knowledge processes:

- *Knowledge Identification* is the process where external knowledge for analyzing and describing the company's knowledge environment is identified.
- *Knowledge Acquisition* refers to what forms of expertise should the company acquire from outside through relationship with customers, suppliers, competitors and partners in co-operative ventures.
- *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.
- *Knowledge Distribution* is the process of sharing and spreading knowledge which is already present within the organization.
- *Knowledge Utilization* consists of carrying out activities to make sure that the knowledge present in the organization is applied productively for the benefit its.
- *Knowledge Preservation* is the process where the selective retention of information, documents and experienced required by management takes place.

In addition, there are two other processes in the outer cycle, Knowledge Assessment and Knowledge Goals, which provide the direction to the whole knowledge management cycle:

- *Knowledge Assessment* completes the cycle, providing the essential data for strategic control of knowledge management.
- *Knowledge Goals* determine which capabilities should be built on which level.

Among other knowledge process models (e.g. Laudon & Laudon 2006, Nonaka & Takeuchi 1995), the building block approach of Probst/Raub/Romhardt (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 & Champy 1993, Kagermann & Österle 2006) has become a major research field in the information systems discipline in the last ten years. Davenport sees the term business process as "a structured, measured set of activities designed to produce a specified output from a particular customer or market" (Davenport 1993). The linkage of business process modelling and knowledge management is called knowledge process modelling. For Richter-von Hagen et al. (2005) "a process is knowledge intensive if its value can only be created through the fulfilment of the knowledge requirements of the process participants". Remus talks about knowledge intensive processes if reengineering is not possible in the same way as it is by business processes (Remus 2002, p. 92). Furthermore, Gronau (2004) determines a knowledge intensive process exists if the evolving added value can only be reached by knowledge for the process participants. The following facts are describing knowledge intensive processes: diversity of sources and media, variance and dynamic development of the process organisation, a plenty of process participants with different expertises, use of creativity, high level of innovation and influence on the area of the decision. Especially Edwards and Kidd (2003) argue that the modelling and the importance of business processes build the fundament of knowledge management.

### 2.3 Knowledge Processes in SMEs in Austria and Switzerland

There are several quantitative (European Commission 2000) and qualitative (Institut für Mittelstandsforschung Bonn, Hamer & Hamer 2005) definitions of the term SME depending on regional and national differences. The definition of SMEs of the European Commission 2005 is used for this research design. The European Commission analyzes SMEs by using the following three characteristics: (1) number of employees, (2) annual turnover and (3) total assets. Characterized through this three factors the European Commission differs (1) middle enterprises [less than 250 employees and less than 50 Mio. EURO annual turnover or less than 43 Mio. total assets], (2) small enterprises [less than 50 employees and less than 10 Mio. EURO annual turnover or less than 10 Mio. EURO total assets] and (3) micro enterprises [less than 10 employees and less than 2 Mio. EURO annual turnover or less than 2 Mio. EURO total assets].

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 less than 250 employees and less than 50 Mio. EURO annual turnover or less than 43 Mio. EURO total assets in Austria and Switzerland including Liechtenstein are the target population. In figure 1 layer 2 symbolizes 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. Gillham (2000) lists several characteristics of open-ended interviews (Gillham 2000, p. 64):

- The respondents will know more about the topic and the setting than the interviewer. Sometimes they can even tell the interviewer what questions to ask.
- By virtue of their authority and experience, they will have their own structuring of their knowledge. They will not allow an interview for which they have to answer a series of questions addressed at them.
- The best thing the interviewer can hope for is a response to a topic raised.
- The experts can be particularly informative about the location of documents, records, or other experts.
- The experts will expect some control over the interviewer, and they also will demand a level of accountability and feedback.

These five characteristics of elite interviews also apply to the interview situation for the 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 the key knowledge processes. The first interview session was conducted in 2004 and was limited to Austrian SMEs managers (Fink & Ploder 2006a). This study was the proving ground for the future procedure of the empirical studies in 2005/2006. The research hypothesis was:

*Hypothesis 1:* 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 belong to the sector of consulting and information technology (Fink & Ploder 2006b). The survey subject were CIOs (Chief Information Officer) and CEOs (Chief Executive Officer) in Austrian and Swiss SMEs. CIOs and CEOs (Davenport 1993, Ruggels 1997) are recognized as proficient in answering questions concerning knowledge management. The data sample of 36 interviewees was the proving ground for asking open ended questions. The data sample represents an industry allocation as illustrated in table 3. The data was analyzed by content analysis (Riffe 1998) defined by Krippendorff (1980, p.21) as “a research technique for making replicable and valid inferences to there content”. The interview sessions were lasting 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/Raub/Romhardt model are ranked as important for the implementation of knowledge management in SMEs (see figure 1, layer 3):

- **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.
- **Knowledge Acquisition:** The know-how of SMEs resides in many cases in the head of the experts or knowledge worker.
- **Knowledge Distribution:** This process focuses on the sharing of explicit and implicit knowledge between knowledge workers in SMEs. Especially 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 utilized by knowledge tools and mechanisms.

- **Knowledge Preservation:** It is well recognized that the most critical asset of any company are 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 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 the 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 in the answers given by the managers of SMEs in Austria as well as in 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 hypothesis 1 is confirmed. 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 & Laudon 2006, 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 find out which of the methods are most relevant for SMEs and second what are the differences in the Austrian and Swiss SME-sector. Figure 2 lists all identified methods for the four knowledge management processes, which are stored in the method repository (figure 1, layer 5).

The research *hypothesis 2* is: SMEs in Austria and Switzerland including Liechtenstein are ranking different knowledge methods as their favorites.



Figure 2. List of Knowledge Methods



### 3 COMPARATIVE STUDY OF KNOWLEDGE METHODS IN AUSTRIA AND SWITZERLAND

#### 3.1 Data Sample and Questionnaire Design

The data sample of 587 enterprises was stochastically appointed out of the target population described in table 1. It was average allocated over the regional federal states of Austria, Switzerland and Liechtenstein to get 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 carried out in Summer 2006 after a pre-test with 30 respondents and was partitioned into three parts:

- Generally questions referring to application of knowledge management within the enterprise itself.
- Rating relevance of the methods concerning the four knowledge processes for SMEs.
- Information about future capital investment plans referring to knowledge management.

Size range	Austria		Switzerland/Liechtenstein	
	Number of enterprises	Employees	Number of enterprises	Employees
Middle	10.225	304.052	5.657	625.500
Small	254.451	863.945	30.857	688.032
Micro	270.355	2.470.564	272.305	849.331
<i>Total</i>	<i>535.031</i>	<i>3.644.010</i>	<i>308.819</i>	<i>2.162.863</i>

Table 1. *Data Sample of SMEs in Austria, Switzerland/Liechtenstein*

The return quote of the survey was 38 percent. This means that 219 SMEs filled out the questionnaire. The failure rate was calculated as 6.6 percent. Therefore all statements out of the survey are correct at a percentage of 94 percent. The respondents are divided in industry sectors. 60 percent are out of the three key industries: industry, information and consulting and trade and handcraft. The other 40 percent are dispersed over the rest of industries as shown in table 2.

Industry Sector	Total	Relative	Interviewees
Industry	66	30%	8
Information and Consulting	48	22%	6
Trade and Handcraft	31	14%	4
Retail	28	13%	4
Tourism	22	10%	4
Bank and Insurance	20	9%	2
Transportation and Traffic	4	2%	2
<i>Total</i>	<i>219</i>	<i>100%</i>	<i>36</i>

Table 2. *Fragmentation of the sample and the elite interviewees in industry sectors*

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

#### 3.2 Results of the Comparative Study

Table 3 gives an overview of all methods supporting the four knowledge processes for SMEs. The table lists the absolute number of each method in the likert scale (+2 = absolute adequate, +1 = adequate, -1 = less adequate, -2 = not adequate, 0 = no answer) for the two countries: (1) Austria

(AUT) and (2) Switzerland/Liechtenstein (CH/FL). The ranking for each country of the methods is the calculated value based on the likert scale. The Ranking of (1) AUT and (2) CH/FL on average is shown in the columns “Ranking AUT average” and “Ranking CH/FL average” with a weighting of 60 percent for Austria and 40 percent for Switzerland/Liechtenstein. The weighting is reflecting the allocation of the population of the countries. The column “Difference” illustrates a relative comparison of the two countries (it’s 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”.

50 percent 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) as well as 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 as 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 eMail Systems, Scenario Technique, System Simulation and Business Games are useful for the process of knowledge acquisition but have not such a high modelling output than the top ranked methods. Taking consideration for the comparison the following scenario was the result of the SMEs interviews. In Swiss/Liechtenstein SMEs the methods of (1) Brainstorming (difference of -0.126), (2) System Simulation (difference of -0.188) and (3) Business Games (difference of 0.234) are more in use as in Austria. On the other side, the Austrian SMEs respondents favour the creativity method of Mind-Mapping (difference 0.126).

The method cluster in the process of *knowledge distribution* shows that the top favorites are eMail 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); in the middle ranking score are Checklists, Questionnaires, Best Practice, Lesson Learned Methods and Knowledge Maps. The 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 with the *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 hypothesis 2, country specific differences across the various types of knowledge methods were documented, although really emerging differences of the use of knowledge methods could not be stated. Yet the research showed the ranking of knowledge methods for SMEs in Switzerland and Austria. The interviewed managers of SMEs have a clear position concerning the employment of knowledge methods for supporting knowledge processes. The findings of the comparative study indicate that the willingness 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 (table 3) might be of particular importance in the early stage of implementing knowledge management in Austrian and Swiss SMEs.

	(1) Austria [AUT]						(2) Switzerland [CH]/Liechtenstein [FL]						Ranking AUT average	Ranking CH average	Difference	Ranking Sum	
	absolute adequate	adequate	less adequate	not adequate	no answer	Ranking	absolute adequate	adequate	less adequate	not adequate	no answer	Ranking					
	2	1	-1	-2	0		2	1	-1	-2	0						
<b>Knowledge Identification</b>																	
Knowledge Balance	28	81	28	8	32	<b>93</b>	5	18	7	2	10	<b>17</b>	0.531	0.388	<b>0.143</b>	62.6	
Balanced Scorecard	17	84	29	5	41	<b>79</b>	5	20	8	1	9	<b>20</b>	0.451	0.457	-0.006	55.4	
Skandia Navigator	14	82	34	7	39	<b>62</b>	3	20	8	2	10	<b>14</b>	0.354	0.320	0.034	42.8	
Market - Asset Value - Method	9	61	49	17	41	<b>-4</b>	6	11	11	4	10	<b>4</b>	-0.023	0.091	<b>-0.114</b>	-0.8	
Tobins's q	13	50	46	21	46	<b>-12</b>	3	13	11	5	11	<b>-2</b>	-0.068	-0.046	-0.023	-8	
<b>Knowledge Acquisition</b>																	
Brainstorming	66	76	12	9	12	<b>178</b>	21	15	3	2	3	<b>50</b>	1.016	1.142	<b>-0.126</b>	126.8	
Searchengine	80	61	18	9	8	<b>185</b>	20	15	4	2	2	<b>47</b>	1.056	1.073	-0.017	129.8	
Knowledge Network	62	70	16	7	21	<b>164</b>	15	17	4	2	5	<b>39</b>	0.936	0.890	0.046	114	
Mind Mapping	61	77	17	6	14	<b>170</b>	13	20	5	2	4	<b>37</b>	0.970	0.845	<b>0.126</b>	116.8	
eMail System	58	57	36	14	11	<b>109</b>	14	14	9	3	3	<b>27</b>	0.622	0.616	0.006	76.2	
Scenario Technique	31	85	31	8	20	<b>100</b>	8	21	8	2	5	<b>25</b>	0.571	0.571	0.000	70	
System Simulation	24	81	42	8	16	<b>71</b>	10	21	11	2	4	<b>26</b>	0.405	0.594	<b>-0.188</b>	53	
Business Game	29	74	41	12	17	<b>67</b>	14	15	10	3	4	<b>27</b>	0.382	0.616	<b>-0.234</b>	51	
Synektik	10	50	45	19	52	<b>-13</b>	2	12	11	5	13	<b>-5</b>	-0.074	-0.114	0.040	-9.8	
<b>Knowledge Distribution</b>																	
eMail System	64	63	26	10	14	<b>145</b>	16	15	7	2	2	<b>36</b>	0.828	0.822	0.006	101.4	
Handbook FAQs	48	77	29	9	13	<b>126</b>	19	12	7	2	3	<b>39</b>	0.719	0.890	<b>-0.171</b>	91.2	
Communities of Practice	42	80	26	8	19	<b>122</b>	11	20	6	2	5	<b>32</b>	0.696	0.731	-0.034	86	
Groupware	37	78	30	6	24	<b>110</b>	9	20	7	2	6	<b>27</b>	0.628	0.616	0.011	76.8	
Checklist	30	79	34	11	17	<b>83</b>	13	19	9	3	4	<b>30</b>	0.474	0.685	<b>-0.211</b>	61.8	
Questionnaire	34	78	26	17	19	<b>86</b>	9	20	7	4	5	<b>23</b>	0.491	0.525	-0.034	60.8	
Best Practice	39	67	34	13	22	<b>85</b>	10	17	8	3	6	<b>23</b>	0.485	0.525	-0.040	60.2	
Lessons Learned	32	74	38	9	22	<b>82</b>	8	18	10	2	6	<b>20</b>	0.468	0.457	0.011	57.2	
Knowledge Maps	25	81	36	15	18	<b>65</b>	6	20	9	4	5	<b>15</b>	0.371	0.342	0.029	45	
Story Telling	31	65	42	9	28	<b>67</b>	5	16	12	3	8	<b>8</b>	0.382	0.183	<b>0.200</b>	43.4	
Chatroom	40	54	48	19	14	<b>48</b>	8	14	12	6	4	<b>6</b>	0.274	0.137	<b>0.137</b>	31.2	
Micro Article	15	58	49	20	33	<b>-1</b>	4	15	12	5	8	<b>1</b>	-0.006	0.023	-0.029	-0.2	
<b>Knowledge Preservation</b>																	
Database	79	63	15	7	10	<b>192</b>	20	16	4	2	3	<b>48</b>	1.096	1.096	0.000	134.4	
Mind Mapping	71	74	15	6	10	<b>189</b>	14	20	5	1	3	<b>41</b>	1.079	0.936	<b>0.143</b>	129.8	
Document Management System	58	75	18	10	12	<b>153</b>	17	19	5	2	3	<b>44</b>	0.873	1.005	<b>-0.131</b>	109.4	
Checklist	47	76	23	9	18	<b>129</b>	18	16	6	2	4	<b>42</b>	0.736	0.959	<b>-0.223</b>	94.2	
Project Review	45	68	31	14	17	<b>99</b>	11	17	8	4	4	<b>23</b>	0.565	0.525	0.040	68.6	
Content Management	31	79	23	13	29	<b>92</b>	8	20	6	3	7	<b>24</b>	0.525	0.548	-0.023	64.8	
Expert System	24	75	37	14	21	<b>58</b>	9	19	9	3	8	<b>22</b>	0.331	0.502	<b>-0.171</b>	43.6	
Conceptualization	19	63	38	17	38	<b>29</b>	5	16	9	4	10	<b>9</b>	0.166	0.205	-0.040	21	
Neural Network	16	50	44	22	42	<b>-6</b>	4	13	11	6	11	<b>-2</b>	-0.034	-0.046	0.011	-4.4	

Table 3. Comparison Table of Austrian and Swiss/Liechtenstein Knowledge Methods

## 4 OUTLOOK AND FUTURE RESEARCH

Knowledge process modelling for SMEs uses the building block approach from Probst/Raub/Romhardt (1999) and models corresponding 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 reported on empirical studies concerning the Austrian and Swiss SME-sector.

Further research deals with the extension of the empirical study to the German SME-sector. At the present, the research design is implemented and the study will start in summer 2007. Another relevant direction for future work is the exploration of the suggestions to the practitioner on when and how to find the right mix of methods for each knowledge process.

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