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**FOSTERING KNOWLEDGE MANAGEMENT IN SMALL AND MEDIUM-SIZED
ENTERPRISES: INVESTIGATING AND OVERCOMING KNOWLEDGE DEFICITS
IN MANAGEMENT CONTROL**

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Academic Abstract

The submitted paper covers two topics which are essential for SMEs and their competitiveness: management control and knowledge management. On the basis of an empirical survey among producing SMEs in Central-Germany the authors investigated knowledge deficits concerning the domain of management control. German SMEs show numerous weaknesses especially when it comes to prediction-oriented instruments of management control, e.g. SWOT-, Scenario-Analysis or dynamic investment procedures. The authors developed a suitable computer-aided learning tool to overcome these knowledge deficits and designed a knowledge management concept to collectivize individually learned knowledge.

Executive Summary

The authors understand knowledge management as a concept of control in which an enterprise generates relevant knowledge collectively in order to be able to call it up individually when decisions have to be made. On this basis a scientific approach to knowledge management in SMEs is started by investigating empirically. The knowledge management case focuses on the domain of management control and its employment in SMEs. The following questions are in the starting line: Which knowledge about management control is relevant for SMEs and how has a referring knowledge management system to be designed and organisationally embedded in SMEs? Thus, the authors proceed in two stages, covering a diagnosis and a therapy suggestion procedure. In order to attain a diagnosis about knowledge deficits in SME concerning management control, standards referring to this domain have to be defined. These standards can be derived normatively from the fundamental condition of corporate existence. The authors applied an empirical survey among producing SMEs in Central Germany to discover the variance between these standards and the available knowledge in the domain of knowledge about management control. The discovered variances are a starting point to design a SME-specific knowledge management system. The content basis for this knowledge management system is a didactically arranged computer-aided learning tool, which has to be embedded organisationally by establishing knowledge communities.

1 Knowledge Management in SMEs

1.1 Knowledge Management: Science and Practice in Conflict

Although science understands itself as the central institution of all relevant knowledge activities (e.g. generating, developing, and transferring knowledge), its commitment in this field of business management cannot keep up with the efforts of the information systems or consulting industry (Kakabadse 2003):

- In science, there is even no widespread or uniform definition of knowledge management. Surveys targeting small and medium-sized enterprises (SME) indicate the importance of knowledge as a critical corporate resource, but when it comes to SME-specific knowledge management concepts the authors were not able to investigate a sufficient amount of best practices (Hoehner 2005, 13).
- In practice, knowledge management is a modern topic and often covered by the consulting industry (Scarbrough 1999). In announcements one can find praise for file managers as knowledge tools or manager meetings declared as knowledge fairs.

SMEs suffer under this conflict in first row, because they do not have resources to develop and install means of knowledge management on their own or to evaluate offered concepts thoroughly. Thus, there tends to be empirical evidence that knowledge management is not another management fad, but a new feature of management practice (Ponzi 2002). On the one hand one can observe multinational enterprises implementing sophisticated knowledge reporting systems (Edvinsson 1998), and on the other hand one can find SME's in a process of muddling through (Bianchi 2002).

1.2 Knowledge Management as a symbiotic concept of organizational development

Numerous disciplines brought up knowledge management for research, e.g. psychology, sociology, information systems or business management. Depending on the discipline

knowledge and knowledge management is defined and determined differently. In this paper knowledge is understood as realizations about the structure or pattern of problems and its solution. Knowledge represents more than data, which could be described as observations or facts, or information, which could be defined as structured or related data (Cleveland 1989, 22). Furthermore, knowledge is context-dependent and can not be regarded objectively. Knowledge develops itself through construction and experience and has to be tied to formerly established knowledge (Pfiffner 1998, 152). According to different criteria, knowledge can be structured into various semantic segregations, e.g. theoretical versus practical knowledge, tacit versus explicit knowledge, individual versus collective knowledge or internal versus external knowledge.

Necessary for the survival of a system is its innovation competence as the ability to react self-organised to dynamically and non-linearly changing environmental conditions. Knowledge management is an up-to-date approach in order to secure innovation competence and integrates three different concepts of organizational development: classical personnel development, business reengineering and eLearning (Willke 2001). The roots of these concepts can be observed clearly, if all three predecessors and knowledge management are arranged in a two-dimension figure. The first dimension represents collectivity which starts with individual-oriented activities and develops towards organizational-oriented activities. The second dimension shows durability and differentiates between singularly and repeatedly occurring activities.

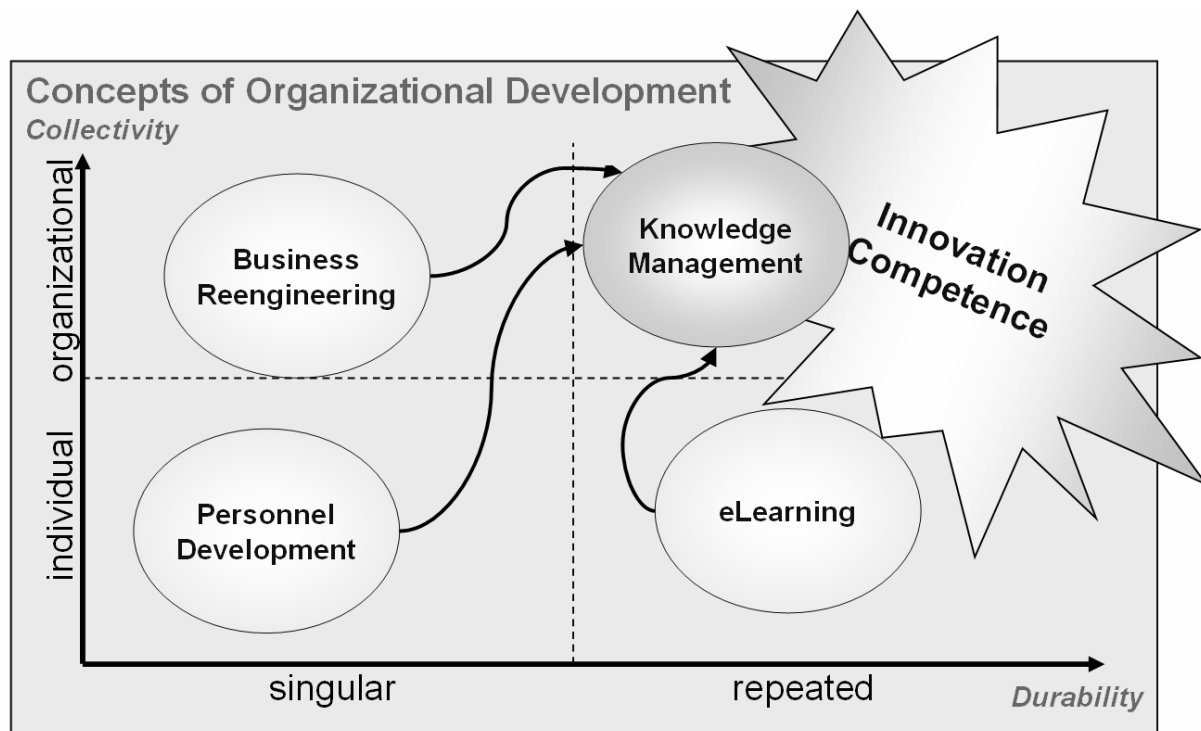


Fig. 1: Concepts of Organizational Development (Source: Mittelstaedt)

Classical personnel development, as enforced in the 1970s and 1980s, intends punctual changes. When deficits regarding particular individuals of a determined organization are observed, certain trainings are deployed, but a systematic proceeding is not intended. Business Reengineering, as enforced in the 1990s, means a radical advancement to organizational development. Its basic assumptions neglect the human factor and lay emphasis on processes (Hammer 1993). Business Reengineering concerns the complete organization, but often it occurs only in cases of reorganization or crisis. Organizational concepts of eLearning aim at permanent improvement of qualifications and competences based on a computer-oriented learning perspective. It ignores that innovation competence is not only a question of individual abilities, but there is also corporate knowledge, which remains when employees go home. This knowledge belongs to infrastructure, internal proceedings, business processes and external relations, but has to be developed, too. Knowledge management structures and collectivizes classical personnel development trainings, reengineers business processes

repeatedly and takes up computer-based learning concepts. Knowledge management assures organizations' innovation competence.

With reference to Probst (2006, 56) crucial activities of knowledge management are:

- knowledge identification, i.e. making use of tacit knowledge
- knowledge acquisition, i.e. procuring external knowledge
- knowledge development, i.e. generating internal knowledge
- knowledge sharing, i.e. distributing individual knowledge
- knowledge utilization, i.e. using individual knowledge organizationally
- knowledge retention, i.e. securing acquired knowledge

The present paper chooses the domain of knowledge about management control in order to present an example how knowledge management can be fostered in SME.

1.3 Relevance for SMEs

Considering the relevance of knowledge management for SMEs, it might be interesting to distinguish this group from other enterprises. Quantitative characteristics appear suitable for this as well as qualitative characteristics. The defining properties within the framework of research, however, are almost exclusively chosen from statistical criteria. According to the new definition by the European Commission from 01/01/2005, SMEs are companies with less than 250 employees and an annual turnover of no more than EUR 50m or a total annual balance not exceeding EUR 43m (EU 2003).

In contrast to large-scale enterprises SMEs exhibit specific characteristics with impact on above described knowledge management activities. The characteristics are shaped by less available resources, lower competence in planning and systematization, more authoritarian leadership and a strong focus on technical knowledge (Ilksensmeier 2001, 37). Hence, knowledge management in SME has to preserve resources, strengthen planning and systema-

tization competence, establish more cooperation and broaden the technical horizon, i.e. that supplementary domains of knowledge should be included. There are also SME-specific characteristics which could facilitate knowledge management activities, e.g. visibility or commitment (Ilksensmeier 2001, 61). The authors will lay emphasis on examining the above mentioned weaknesses.

Further on, outcomes of an empirical survey will be presented that investigated the application of instruments referring to management control among producing SME in Westphalia, an industrialized region of Central Germany. The domain of knowledge about management control serves well as an example for knowledge management, because its extent is limited and could be transferred to whole industry homogeneously. It is a basic assumption of the authors that above described SME-specific characteristics have a negative impact on the knowledge level concerning management control. High-level personnel of SME tend to be mostly engineers. Therefore, knowledge about management control does not belong to their core competences.

2 SME-specific diagnosis of knowledge deficits concerning management control

In medical terms diagnosis is the process of identifying a disease, i.e. to evaluate if and how much the present condition (ill) deviates negatively from a specified condition (healthy). Here, an economical diagnosis will be conducted that should identify if and how much the present condition of management control in SME deviates from the required condition. With respect to human beings the healthy condition is known, but when it comes to the required condition of management control in SME further explanation is necessary.

2.1 Necessary knowledge about management control for SMEs

The increasing dynamics and complexity of the corporate environment put the quality of leadership decisions ever more to the test. In order to aid this process, controlling as a leadership instrument is already widely applied in large-scale companies in the areas of corporate planning, management, information gathering and control.

The changes in these business areas equally affect the management of medium and large enterprises but as former studies regarding the application of controlling in SMEs show, especially this group of companies display clear deficits in their range of leadership instrument. Empirical results further show that the specific conditions of medium-sized enterprises have not received sufficient attention. Additionally, management's requirements of leadership instruments have been too rarely investigated.

The lack of specific business instruments for medium-sized companies was in part made responsible for the high number of SME bankruptcies in recent years. Ensuring a company's existence by securing liquidity is any company's minimal target, regardless of its size.

In this context, controlling has the tasks of securing leadership rationality and the liquidity of the company. From a theoretical perspective, the high bankruptcy rates among SMEs appear

to indicate a lack of rational methods in management. This has to be further examined by an empirical investigation to identify a possible need for management control in SMEs.

Bloom and Van Reenen (2006) proved empirically in their paper about management practices in Europe and the USA that there is a significant relation between the systematic application of well-known management practices and productivity and net yield respectively. The following survey assumes a canon of strategic and operative instruments of management control as a lower threshold which is derived from relevant literature about management control. It has to be stated that the quality of this canon could not be validated, due to a lack of data concerning the productivity of the examined companies.

2.2 Demand analysis through empirical investigations

An empirical investigation in 2003 looked at potential management control needs in SMEs. 1.568 medium-sized enterprises were surveyed in Ostwestfalen and Lippe (regions of Central-Germany) using a standardized, written questionnaire. Part A of the questionnaire contained questions regarding general data, part B asked for strategic management control, while part C explored operative management control. Part D established the degree of knowledge about management control in SMEs, part E looked at the organizational application as well as the willingness to develop instruments of management control in SMEs. The last part F measured the acceptance of e-learning for the second phase of the project. For the sake of analysis, only closed-ended questions were used. In order to maximize information content, particular items had differently scaled answer measures, specifically nominal and ordinal scales. It was ensured by consistently outlining the individual content topics that the surveyed companies would not forget essential details. 197 out of 1568 questionnaires were returned. 188 of these were fit for analysis.

Characteristics of the sample			
	Number of Companies		Per cent (%)
Line of business			
Building	16		8.5
Food	13		6.9
Textile industry, Leather- und Clothes	6		3.2
Woodworking	6		3.2
Furniture	27		14.4
Publishing, Printing und Paper	11		5.9
Chemical industry	10		5.3
Rubber and plastics	11		5.9
Glass, Ceramics, Stone, Soil	4		2.1
Metal industry	25		13.3
Machine building	31		16.5
Electronics, Optics	13		6.9
Vehicle construction	4		2.1
Others	11		5.9
Total	188		100.0
Number of employees			
Less than 20	7		3.7
20 – 50	51		27.1
51 - 100	51		27.1
101 - 200	44		23.4
201 – 500	34		18.1
More than 500	1		0.5
Total	188		100.0
Formation of the company (age of companies)			
2 – 5 years ago	3		1.6
6 – 10 years ago	17		9.0
11 – 50 years ago	78		41.5
More than 50 years ago	90		47.9
Total	188		100.0
Growth of the companies in comparison with the average growth of the industry			
Much more	13		6.9
More	78		41.5
Equal	75		39.9
Less	20		10.6
More less	2		1.1
Total	188		100,0

Tab. 1: Composition of the sample (Source: Rautenstrauch)

2.3 Current condition of management control concerning SMEs in Germany

For the sake of clarity, only selected, descriptive partial results are used.

With regard to strategic management control more than every second enterprise does not have a mission statement or corporate vision. Approximately four out of ten companies do not have a corporate strategy, only 12.2% of surveyed enterprises have a strategy for their functional areas. The same percentage said not to plan strategically at all. The next question about the application frequency of certain instruments of management control showed that 20% of surveyed enterprises did not give any information for the use of strategic instruments (see figure 1).

Those companies that said not to utilize single strategic tools were asked to provide reasons in the next question. Analysis, however, was made more difficult mainly due to two aspects: On the one hand companies gave several reasons why they didn't use individual tools, on the other hand some left this question unanswered even though they replied not to use these tools. Others didn't give any information at all.

Analysis of the empirical study revealed that especially smaller SMEs were not familiar with a number of strategic instruments (see figure 2).

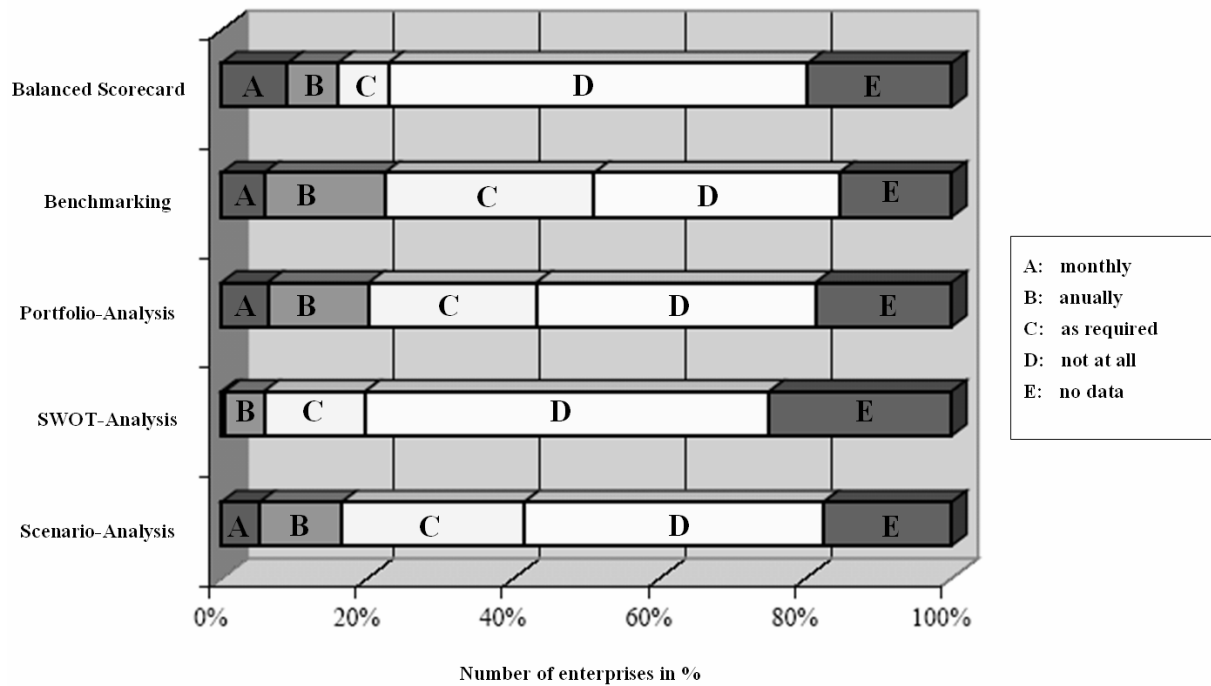
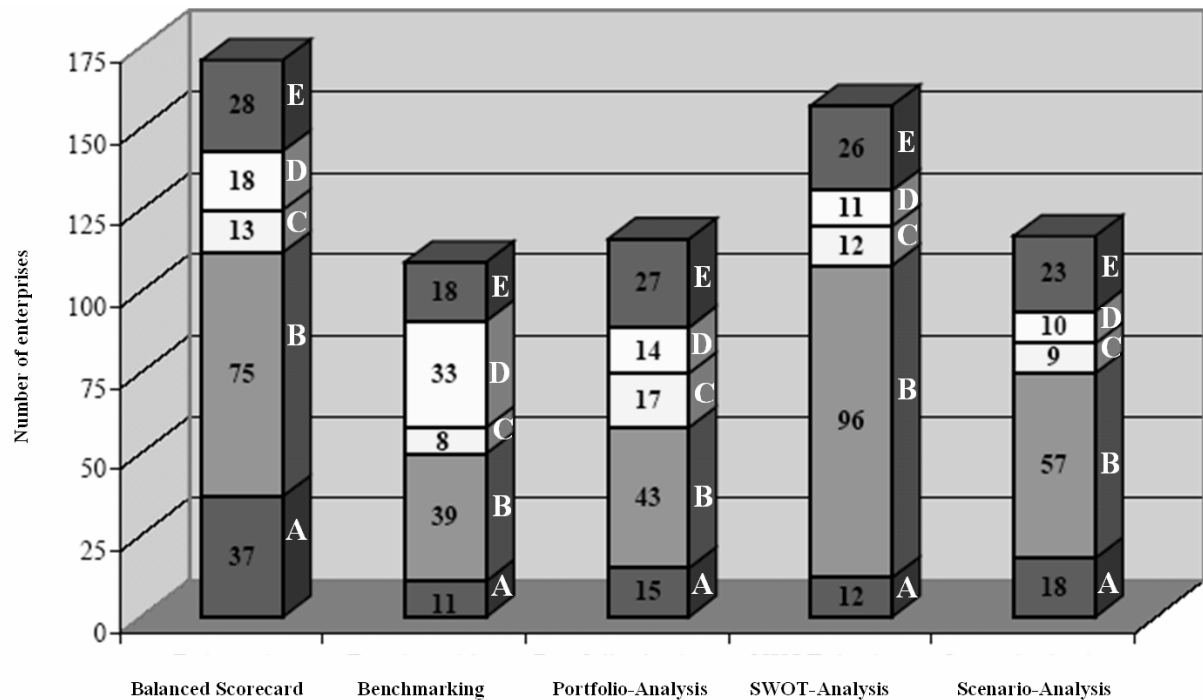


Fig. 2: Application of strategic instruments (Source: Rautenstrauch)

However, with an increase in size SMEs tended to utilize strategic instruments of management control more often in accordance with expectation. These results confirm for the most part the results of former empirical studies about strategic instruments of management control, showing at the same time that a trend towards more frequent use of strategic management control and its instruments has not yet been established.



Problems referring to

A: lack of time B: know-how deficits C: doubtful realization D: information retrieval/ data mining E: enterprise's technical focus

Abb. 3: Reasons for the non-application of strategic instruments (Source: Rautenstrauch)

With regard to operative management control among SME, the study showed that in terms of corporate planning more than 75% of all surveyed companies had annual planning and budgeting processes. Approximately three out of four enterprises conduct investment planning, and roughly seven out of ten financial and liquidity planning. Only about every second company prepared a plan for general and administrative, and production costs. More than 90% of surveyed companies control these costs looking at turnover variance, while other instruments in other areas were far less established. With respect to costing, the study showed that the majority of companies utilized costing systems like accounting for actual costs in cost center accounting, a near-term profit and loss statement, and product calculation. Budgeting (costing), however, was only done by about one third of surveyed companies.

In investment control, 80% of surveyed enterprises have investment plans but only every second company provided a plan for more than the next fiscal year. Enquiries into the assessment of investments using valuation revealed that in SMEs dynamic methods still have a comparatively low acceptance rate, while every fourth SME with a headcount of up to 100 employees said to not use any valuation methods at all and instead refer to experience or rough estimates, which makes securing rational investment decisions doubtful at best.

In general, this empirical study showed that the application potential of management control has not yet been realized to the desired extent in SMEs to secure rational leadership and management decisions. The reasons for this cannot simply be explained by a lack of human and financial resources but also stem from a lack of knowledge on the side of the decision makers in SMEs.

This shows the need for knowledge acquisition regarding the possibilities of strategic and operative instruments of management control, yielding a number of starting points for a knowledge management concept to reflect the specific conditions of small and medium-sized enterprises.

3 Prototypical concept of knowledge management for SMEs

The conducted survey investigated knowledge deficits concerning management control, especially when it comes to prediction-oriented instruments as SWOT-, Scenario-Analysis or dynamic investment procedures. The assumption was confirmed that SMEs show a lower level of competences regarding planning and systematization. But how to overcome, how could a therapy look like?

With respect to knowledge management concepts there are two basic approaches. First, one kind of concepts refer to information and communication technology (ICT) and pertinent tools like information retrieval and data mining (Ras 2005, 155). These concepts lay emphasis on the architecture of information systems and assume that correct application will lead to innovation competence. Second, sociological concepts experience a revival, e.g. communities.

3.1 Computer-aided learning supports individual knowledge management

It is indispensable that knowledge has to be developed by reliable sources. In the beginning, leading authors of management control literature focused on large-scale enterprises. As the scientific community realized that SMEs are not just „small large-scale enterprises“, an SME-specific research concerning management control started. SMEs do not have the option to host a great variety of in-house trainings or the resources to allow long learning absences. These restrictions have to be considered when it comes to learning arrangements. It is inevitable to carry out flexible learning concepts. Blended Learning is a concept which combines different media, methods and theories of learning in order to integrate their respective advantages (Kerres 2000, 24). The following figure shows the variety of Blended Learning (Wiepcke 2006: 69).

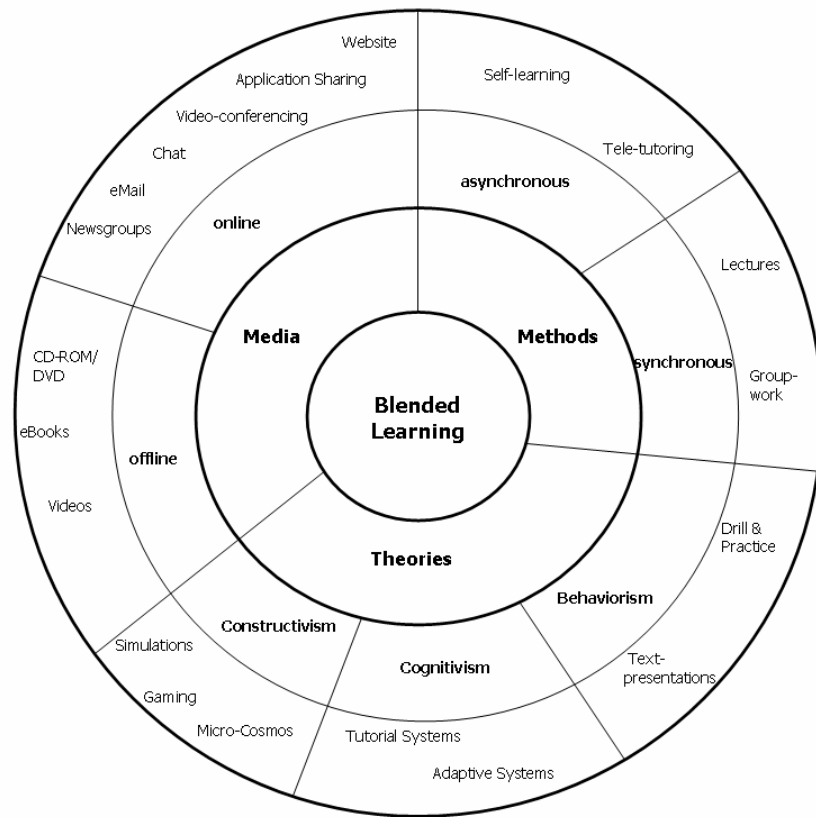


Abb. 4: Blended Learning mix of methods, theories and media (Source: Wiepcke 2006: 69)

Computer-aided learning tools are a basic component of SME-specific learning arrangements because of their flexibility. The computer-aided learning tool „Instruments of Management Control for SME“, was developed as a solution to the above mentioned knowledge deficits of SME. The learning tool exhibits the following didactical characteristics which are desirable for successful training (Mittelstaedt 2005, 27).

Criteria	Description regarding „Instruments of Management Control for SME“
Target group congruence	The computer-aided learning tools were conceived from the outcomes of a survey among the target group. Therefore, a high degree of congruence could be assumed.
Activity-based learning	The tasks for learners were challenging. Repeatedly the learner is requested to make decisions in critical business situations which are similar to realistic problems of SME's.

Self-control	Learners have the possibility to monitor and control their advancements. They can choose among different courses and are responsible for their own learning success.
Situated content	The content is embedded in real business situations and linked holistically. Business cases can be entered in respect to function (finance, investment etc.) or section (procurement, production etc.).
Descriptiveness	Abstract theories about management control are connected to real cases and applications. Hence, descriptiveness occurs and learners develop an holistic understanding.
Visibility	Relevant knowledge about management control is presented thoroughly and holistically, but condensed and transferred into specific SME environments.

Tab. 2: Characteristics of the computer-aided learning tool

„Instruments of Management Control for SME” (Source: Mittelstaedt)

The employment of the above described computer-aided learning tool enables employees to acquire knowledge about management control individually. Thus, the first stage of knowledge management is individual learning and the second stage means to adapt individual knowledge to enterprises needs and to collectivize it. Fostering knowledge management creates benefits for the whole company, but needs to be institutionalized and embedded organisationally (Choenni 2005, 115).

3.2 Knowledge sharing by communities

Communities are groups with a common purpose on a mostly long-term basis, which try to reach their goals self-organised. With reference to the degree of expertise and experience there are learning communities (recently established or mostly beginners) and communities of practice (formerly established or mostly experts). Another perspective on communities distinguishes on the basis of how meetings are organised: face-to-face or distributed.

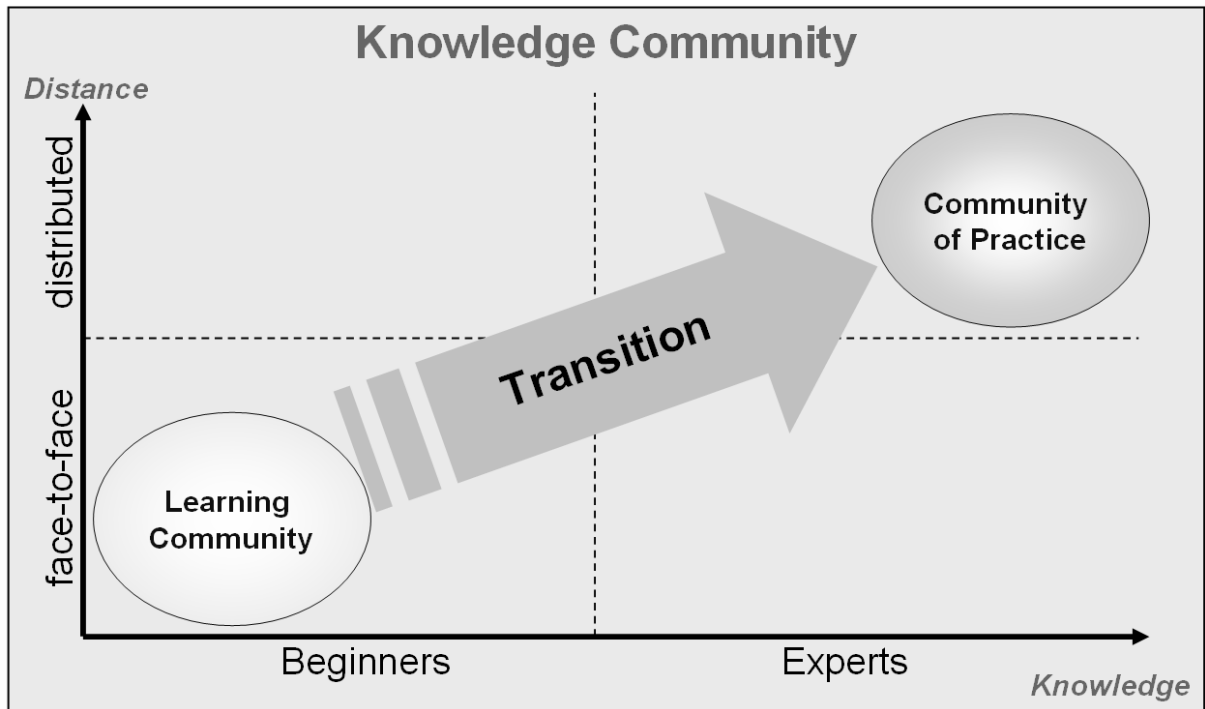


Fig. 5: Knowledge Communities (Source: Mittelstaedt)

In practice communities often combine above mentioned characteristics. On the one hand, regarding communities of beginners or recently established communities, face-to-face meetings predominates. On the other hand, experts and more advanced communities tend to prefer distributed work forms. If you try to develop a community it is an advantage to follow the path of transition (see figure 5). Self-organisation is an important fact of success. Therefore, it should be avoided to set a precedent by denomination. In the eyes of the authors, however, the neutral term knowledge community appears most suitable (Scarborough 2001, 12).

Goldman (1999) formulated helpful recommendations for community activities:

- active listening and intervening of all community members,
- reflective processing of individual and collective learning procedures,
- establishing a common language and knowledge basis iteratively,
- defining common goals and measures together.

Successful communities are able to create a common identity and handle diversity open-mindedly (Bielaczyc 1999).

Regarding knowledge deficits in the domain of management control the authors suggest to found a knowledge community. The knowledge community could start by sharing their experiences with the computer-aided learning tool. Further on, the community could try to find a business case concerning their company that could be a first application. In the beginning, meetings should be held face-to-face in order to create a common identity. Later on the community could shift to distributed work forms (Wenger 1999), e.g. computer supported learning environments. Very small enterprises could consider founding a knowledge community with business partners, because a minimum number of members are critical for success.

3.3 Retaining knowledge by Lessons Learned and Storytelling

Knowledge management backs up the collectivization of knowledge. Therefore, it is necessary to document, save and communicate knowledge thoroughly. Project management brought out the documentation method Lessons Learned. Lessons Learned means to write down experiences and teachings as an outcome of special projects. These recordings could contain strengths, weaknesses, opportunities or threads of a project, and also which mistakes were made or what could be done better next time. Step by step Lessons Learned are collected, structured and prepared with additional data. This method makes it possible to uncover implicit knowledge and communicate it throughout the entire organisation.

Another, more intense method to retain knowledge is called Storytelling (Denning 2005). Often there are corporate stories or anecdotes about collective experiences. These stories describe a special characteristic or event. Storytelling tries a systematic approach to create anecdotes in order to describe a special corporate characteristic, to avoid a defined mistake or

to solve a recurring problem better. The method of storytelling can be divided in different phases: planning (i.e. defining a target and a target group), information retrieval (e.g. interviews), data evaluation and storywriting, validation and distribution (Kleiner 1997). These stories are highly accepted, employees pay attention and memorize them well. Furthermore, storytelling develops a corporate identity and processes of change can be started (Thier 2006, 21). Lessons Learned are solid ground for storytelling. A knowledge community could take up a best practice case and tell a story about it.

4 Practical implications and conclusions

4.1 So what?

The presented knowledge management concept considers SME-specific weaknesses. The computer-aided learning tool preserves corporate resources and can be employed flexibly. Overcoming deficits concerning management control and learning more about knowledge management helps SMEs improving planning and systematization competences twofold. Thus, the mentioned knowledge community could be a starting point for other communities. As a side effect, communities moderate authoritarian leadership, because their self-organising nature does not permit dominance of individual members.

The authors' guiding interest in the research was to make a contribution to fostering innovation competence in SMEs scientifically. By investigating knowledge deficits empirically, producing a computer-aided learning tool and creating a knowledge management concept the authors presented a holistic, concrete and applicable model of how SMEs can benefit from science.

4.2 Conclusions

The submitted paper covers two topics which are essential for SMEs and their competitiveness: management control and knowledge management. On the basis of an empirical survey among producing SMEs in Central-Germany the authors investigated knowledge deficits concerning the domain of management control. German SMEs show numerous weaknesses especially when it comes to prediction-oriented instruments of management control, e.g. SWOT-, Scenario-Analysis or dynamic investment procedures. The authors developed a suitable computer-aided learning tool to overcome these knowledge deficits and designed a knowledge management concept to collectivize individually learned knowledge. The main component is a knowledge community called „Instruments of Management Control“.

Additionally methods like Lessons Learned or Storytelling can help to document experiences. Therefore, knowledge is retained and can be communicated throughout the entire company.

References

- Bianchi, C. (2002): Introducing SD modelling into planning and control systems to manage SMEs growth: a learning-oriented perspective, in: *System Dynamics Review*, Vol. 18, Issue 3, Special: Systems Thinking and System Dynamics in Small-Medium Enterprises, pp. 315 – 338.
- Bielaczyc, K./ Collins, A.M. (1999): Learning Communities in classrooms – A reconceptualization of educational practice, in: Reigeluth, C.M. (Ed.): *Instructional design theories and models*, Vol. II: A new paradigm of instructional theory, pp. 269 – 292.
- Bloom, N./ Van Reenen, J. (2006): *Measuring and Explaining Management Practices Across Firms and Countries*, EP Discussion Paper No 716, London.
- Choenni, S./ Harkema, S./ Bakker, R. (2005): Learning and interaction via ICT tools for the benefit of knowledge management, in: *Knowledge management and management learning – extending the horizons of knowledge-based management*, Baets, W. (Ed.), New York, pp. 113 – 124.
- Creditreform (2006): *Insolvenzen in Europa 2005/06*, Creditreform (Ed.), Neuss.
- Denning, S. (2005): *The leader's guide to storytelling - mastering the art and discipline of business narrative*, San Francisco.
- EU (2003): *Amtsblatt EU L 124/36*, 2003-05-20.
- Goldman, S.R./ Bray, M.H./ Gause-Vega, C.L./ Zech, L.K. (1999): A learning communities model of professional development, *Proceedings of the 8th Conference of the European Association for Research on Learning and Instruction*, Goeteborg.
- Hammer, M./ Champy, J. (1993): *Reengineering the corporation - A manifesto for Business Revolution*, New York.
- Hoehner, M.A.W. (2005): Wissensmanagement im deutschen Mittelstand – eine empirische Bestandsaufnahme, in: *Wissens- und Informationsmanagement in kleinen und mittleren Unternehmen*, Meyer, J.-A. (Ed.), *Jahrbuch der KMU-Forschung und -Praxis*, Köln, pp. 13 - 20.
- Ilskensmeier, D. (2001): Der Ansatz eines ganzheitlichen Wissensmanagements für Klein- und Mittelbetriebe, in: *Beiträge aus der Forschung*, Landesinstitut Sozialforschungsstelle Dortmund (Ed.), Band 124, Dortmund.
- Kakabadse, N.K./ Kakabadse, A./ Kouzmin, A. (2003): Reviewing the knowledge management literature: towards a taxonomy, in: *Journal of Knowledge Management*, Vol. 7, Issue 4, pp. 75 – 91.

- Kerres, M. (2000): Computerunterstütztes Lernen als Element hybrider Lernarrangements, in: Kammerl, R. (Ed.): Computerunterstütztes Lernen, München, S. 23 – 39.
- Kleiner, A./ Roth, G. (1997): Learning Histories – A new tool for turning Organizational Experience into Action, Working Paper, MIT 21st Century Corporation Projekt.
- Koch, S./ Mandl, H. (1999): Wissensmanagement – Anwendungsfelder und Instrumente für die Praxis, Forschungsbericht 103, München.
- Kosmider, A. (1991): Controlling im Mittelstand: eine Untersuchung der Gestaltung und Anwendung des Controllings im mittelständischen Industrieunternehmen, Stuttgart.
- Legenhausen, C. (1998): Controlling-instrumente für den Mittelstand, Wiesbaden.
- Liening, Andreas: Multimediale Informationstechnologien für Klein- und mittlere Unternehmungen, in: Arbeits- und Forschungsberichte des IDF, Liening, A./ Karpe, J. (Ed.), Köln.
- Mittelstaedt, E. (2005): Wirtschaftsdidaktisches Design computergestützter Lernwerkzeuge, in: Dortmunder Beiträge zur ökonomischen Bildung, Liening, A. (Ed.), Nr. 4, Dortmund.
- Nonaka, I./ Takeuchi, H. (1995): The knowledge-creating company – How Japanese companies create the dynamics of innovation, New York.
- Pfiffner, M. (1998): Wissen wirksam machen, Bern.
- Ponzi, L./ Koenig, M. (2002): Knowledge management: another management fad?, in: Information Research, 8(1), Nr. 145 [2006-08-12: <http://InformationR.net/ir/8-1/paper145.html>].
- Probst, G./ Raub, S./ Romhardt, K. (2006): Wissen managen, 5. Aufl., Wiesbaden.
- Ras, E./ Memmel, M./ Weibelzahl, S. (2005): Integration of E-Learning and Knowledge Management – Barrieres, Solutions and Future Issues, in: Professional Knowledge Management – Third Biennial Conference WM 2005 Kaiserlautern, Althoff, K.-D. et al (Eds.), Berlin, pp. 155 – 164.
- Rascher, I./ Wilkesmann, U. (2003): Change Management in der Wissensökonomie: Das Bochumer Modell, in: Die Praxis des Wissensmanagements, Katenkamp, P./ Peter, G. (Ed.), Münster, pp. 119 – 142.
- Rautenstrauch, T./ Müller, C. (2005): Verständnis und Organisation des Controlling in kleinen und mittleren Unternehmen, in: Zeitschrift für Planung und Unternehmenssteuerung, Vol. 16, pp. 189 – 209.
- Rautenstrauch, T.; Müller, C. (2006a): Strategisches Controlling in mittelständischen Unternehmen: Wunsch oder Wirklichkeit?, in: CM, Vol. 31, No. 3.

- Rautenstrauch, T.; Müller, C. (2006b): Investitionscontrolling in kleinen und mittleren Unternehmen (KMU), in: ZfCM, Vol. 50, No. 2.
- Rollett, H. (2001): Implikationen von Praxiserfahrungen für die IT-Unterstützung von Wissensmanagement, in: Anwendungsorientiertes Wissensmanagement, Bornemann, M./ Sammer, M. (Ed.), Wiesbaden, pp. 275 – 294.
- Scarbrough, H./ Swan, J./ Preston, J. (1999): KM and the learning organization: a review of literature, Institute of Personnel and Development, London.
- Scarbrough, H./ Swan, J. (2001): Knowledge Communities and Innovation, in: Communities of Practice, Huysman, M./ Baalen, v.P. (Ed.), Trends in Communication, No. 8, Amsterdam, pp. 7 – 18.
- Thier, K. (2006): Storytelling – eine narrative Managementmethode, Heidelberg.
- Weber, J. (2004): Einführung in das Controlling, ed. 11, Stuttgart.
- Wenger, E. (1999): Communities of practice – learning, meaning, and identity, Cambridge.
- Wiepcke, C. (2006): Computergestützte Lernkonzepte und deren Evaluation in der Weiterbildung, Hamburg.
- Willke, H. (2001): Systemisches Wissensmanagement, ed. 2, Stuttgart.