TOWARDS A VALUE-ORIENTED KMS RECOMMENDATION FOR SME

Ulrike Borchardt

University of Rostock, 18051 Rostock, Germany

Keywords: Knowledge management systems, Small and medium enterprises, Value.

Abstract: Knowledge management and Knowledge Management Systems have been around for many years. They can be considered well established in larger enterprises, yet which effect they do have on small and medium enterprises is still not fully clarified. By our own research we recognized, that especially with regard to Knowledge Management Systems a solid foundation for decision making in SME is missing. This stems mostly from the unclear value such a system can add to the enterprise. To address this this paper is to present our concept for a value-oriented framework for Knowledge Management Systems in small and medium enterprises to allow them to choose suiting Knowledge Management Systems according to their business objectives and the business value to be expected from the applied solution. The framework to be presented, accordingly consists of three dimensions: Knowledge services, business value of IT and their interrelations.

1 MOTIVATION

As already shown with our research, presented in (Borchardt, 2011), knowledge management (KM) is of interest for small and medium enterprises (SME), yet the actual value added by the employment of a KM system (KMS) or KM application remains unclear. Individual SME lack the ability to choose an application suiting their needs, and instead pick one brought to the SME by single employees. This decision is not profoundly based on the suitability of the application but on the interest of single employees or the availability of material on applications. SME rarely use KMS and are hardly aware what value can be added by using a KMS/KM application. The conducted survey revealed the lack in the productive use of according applications. From our viewpoint a general value-driven recommendation on which application to choose for KM under different circumstances (provided by the business strategy) is missing. Though individual work on aspects concerning IT value of KMS can be found (Stocker and Tochtermann, 2009) a general profound guideline on how to choose appropriate support for SME could not be found. Consequently, we want to present the concept of a value-oriented framework for the recommendation of KMS for the use in SME in this paper. Hence, section 2 provides the terminology and section 3 presents our concept for the value-oriented framew-

ork as well as the work to be accomplished for putting the framework into existence. Section 4 provides some details on the prospects and the work ahead.

2 ESSENTIALS

This section provides details on the background for our framework: KMS and the business value of IT.

2.1 Knowledge Management Systems

There is no standard definition available, yet one with an holistic approach addressing the term from the technical angle being based on ICT (information and communication technology) is given by Maier((Maier, 2007), p.86):
"A knowledge management system is an ICT system in the sense of an application system or an ICT platform that combines and integrates functions for the contextualized handling of both explicit and tacit knowledge, throughout the organization or that part of the organization, that is targeted by a KM initiative. A KMS offers integrated services to deploy KM instruments for networks of participants, i.e. active knowledge workers, in knowledge-intensive business processes along the entire knowledge life cycle. Ultimate aim of KMS is to support the dynamics of organizational learning and organizational effectiveness."

According to this definition Maier suggested an ideal architecture of such a KMS ((Maier, 2007), p.319). This architecture though well planned, was not found in the range of SME we questioned (Borchardt, 2011), leaving us with the impression, that a KMS in practice is interpreted as any software application supporting the process of capturing, storing and distributing knowledge (Jennex, 2008). Yet, Jennex argues that mostly structured knowledge is captured by such systems, an impression that was not confirmed by our surveys, where it was more like any kind of knowledge was gathered, often even the difference between knowledge and information was not clarified. Moreover, the question when to talk of a KMS and when of a KM application does not seem to be fully answered. This was also indicated by the SME, as they name various applications, not forming them into an integrated system (Borchardt, 2011). However, Maier's architecture describes the services offered by a full KMS which can be projected on single applications. Hence, it provides a number of services to be taken into consideration, when evaluating whether KMS/KM applications supporting these services are adding to the business value.

2.2 Business Value of IT

For evaluating the value a certain application, in our case a KMS/KM application, can add to an SME, a concept of the value to be added has to be clarified first.

In the 1990's a similar problem occurred for the general use of IT systems and was manifold addressed by research resulting in the term of BVIT (business value of IT). This concludes all approaches whose objective is to evaluate the impacts of changes in IT for the business in the concerned organization. Performance, competitiveness, innovation as well as economic growth over longer periods of time were of special interest in this field. It is possible to categorize the approaches as follows (Sandkuhl et al., 2008):

- Process-oriented approaches.
- Project-focused approaches.
- Scorecard approaches.
- Perceived value approaches.

Based on these concepts a measurement of the value of KMS is part of our value-oriented framework, as these systems with their performance also influence competitiveness, innovation and growth of the regarded SME and consequently are supposed to positively influence the business value. The adaptation to KMS and integration in our framework is described in section 3.

3 VALUE-ORIENTED FRAMEWORK FOR KMS IN SME

Looking at the definition provided by Maier it can be argued, that KMS mostly can be considered ICT systems. Consequently, the business value of IT holds for them and there has to be an interrelation for them. For our framework we assume the value of KM can hardly be estimated by monetary means only. This is firstly due to the character of knowledge itself which hardly can be properly evaluated in monetary terms. Secondly, even for IT in general several business value concepts exist (see 2.2), which supports the thesis that a merely monetary based evaluation would not hold as well for this part. Based on these facts we planned a framework holding 3 dimensions which are described in the following paragraphs.

3.1 Intention

The main intention of the framework sketched here is to allow for an easy derivation of suggestions on which KMS or KM application would be of use for a certain SME, given its business objectives are known. The suggestions are not to be made barely on the fact that an application is suitable for a certain objective but also provide information which application delivers the best value and which further applications allow for maximization of the value when employing a chosen application.

3.2 Dimension 1: Business Value of IT

The first dimension of our framework is to address the business value of KMS in the SME. As KMS are closely related to IT (see 2.1), the approaches of the business value of IT as introduced in section 2.2 are suitable to evaluate their success. However, when it comes to narrowing down the approaches to one specific, perceived value approaches as for example introduced by (Delone and McLean, 2003) are most promising. They concentrate on the business value to be experienced by the users, whereas other approaches introduced in section 2.2 address projects (but KM and KMS are supposed to be permanent tasks in the SME), processes (which may be are not known completely to the SME and we do not want to make process modeling a prerequisite for our framework) or mostly monetary, as e.g. scorecards.

Accordingly more research on the field has already been done and adaptations of IS success to KMS success are available. Two of those are the ones by Jennex-Olfman (Jennex, 2008) and Maier (Maier,

2007). Both transfer the information based IS success in the environment of knowledge and KM.

Below the adoption of Jennex-Olfman is provided. This one provides a description of the performed individual breakdown of the single parts from IS success to KM. For example, the information quality part is extended to information and knowledge quality, indicating further that this part is depending on the knowledge strategy of the enterprise, which itself results into different level in richness and linkage of the available knowledge. For our framework these individual
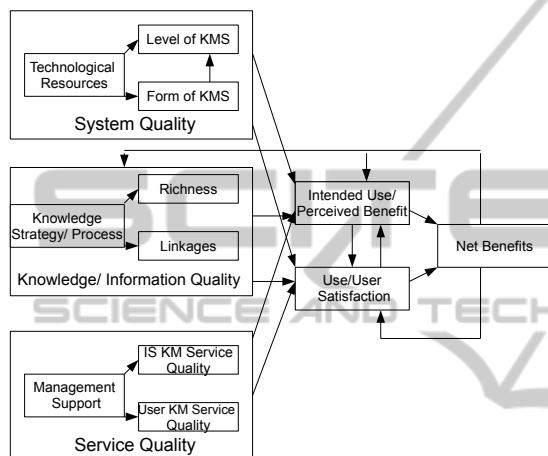

Figure 1: KMS success model of Jennex and Olfman (Jennex, 2008).

parts of the KMS success are to provide the attributes and interrelations within the first dimension, as this is solely dedicated to measuring the success of one KMS and the approaches itself are already proved to be working. The parts System Quality, Knowledge/ Information Quality, Service Quality, Perceived Benefit, User Satisfaction, Net Benefit are our attributes.

3.3 Dimension 2: KMS Architecture

This second dimension covers the technical aspect of the framework. Based on the architecture of Maier we aim at identifying individual components of a KMS, namely KM application, that may be of use in the SME. With this dimension we orientate at the knowledge services as suggested by Maier in layer III, being the first point of decision making when choosing KM applications. Subsequently, in this dimension it has to be decided which of the services from e.g. layer III: publication, discovery, cooperation and learning is to be addressed. However, this is not done to disregard that the architecture holds more than these core KM aspects ((Maier, 2007), p.321) but emphasizes the overall holistic intention, yet the contact to SME has

shown that they are stronger focused on the according services though aware that integration is needed. Consequently, these services serve as attributes in the dimension. In addition, the layers below and above might be taken into consideration as attributes. For instance enterprise portals as unique but individualized point of access in the personalization service might be of interest. Some examples of what can be expected within the services is shown in figure 2. The
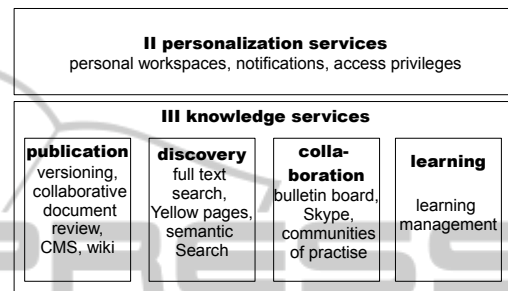

Figure 2: KMS architecture partly, from (Maier, 2007).

services being the attributes of our framework, the individual applications are supposed to be the values of the according attributes. Which attribute values will be included in the final framework can be addressed from two angles. First, would be asking the SME themselves which applications they use for their KM, we discovered by survey (Borchardt, 2011) that most SME use all kinds of applications, consequently the second possibility is deriving the applications by literature research from publications and market reviews, as well as by the look at larger enterprises using means of comparison.

3.4 Dimension 3: Interrelations

Considering the first two dimensions this one aims at bringing them together. Whilst the first dimension and its interrelations are well investigated, the second dimension merely collects applications and functionalities to group them to the according services. The third one is to map the contained services of a ideal KMS with their applications onto the KMS success.

Subsequently, it is necessary to evaluate the individual applications with regard to the KMS success, e.g. wikis, CMS, groupware and more, to be map them to the first dimension. For a wiki e.g. as an application for publication mostly, it has to be identified which business value precisely can be expected from its use. In addition different combinations are to be explored as for instance a wiki with extended search possibilities. The question here is: does the extended effort pay off by the gained value or is the the difference in

value not significant.

It is not only of interest to match dimensions one and two on each other but relate them to the objectives of the concerned SME. Already Salojärvi et. al. (Salojärvi et al., 2005) found that certain types of SME are more inclined to the positive aspects of KM than others. For instance they found that rather young enterprises, especially in IT and consulting benefit from the early use of a KMS or KM application. The same is to be expected within this dimension. Knowledge-intensive enterprises might profit more from KMS than traditional well settled craftsmen. The interrelations between the dimensions one and two and consequently with the business strategy are to be explored.

4 PROSPECTS

This paper presented our concept of a framework facilitating value-driven recommendations of KMS/KM applications for SME according to their business strategy and objectives in KM. Though all KM activities including the choice and implementation of a technological support are supposed to be oriented towards the business strategy as indicated we discovered by our survey that more concrete work in this field is still needed.

It is to be populated by proceeding our research as begun with the empirical study introduced in (Borchardt, 2011). With this study the general groups of SME applying KM and/or KMS were gathered. It showed that only minor parts of the SME in Germany already apply KM knowingly though the study focused on mostly knowledge-intensive SME. While proceeding we now conduct an additional survey to gather further information on SME just beginning to implement KMS to capture their true initial objectives. Moreover, we are refining the method to generally determine the impact of single applications like a wiki. This partly has been done before, see (Stocker and Tochtermann, 2009) yet we are not aiming at capturing single case studies but go for a broader approach allowing us to question more SME. Once this is settled to work for wikis, the transfer to other applications has to be done and proofed. The work on single application is primarily adapting the concept of KMS Success of Jennex-Olfman to these applications and provide them with a method of study. We decided for a half standardized interview holding several blocks of questions concerning the individual parts of the KMS Success model. This interview is conducted with several SME already applying a wiki collecting their perceived use correlated to their business strategy. In a second step this is to be used on further wiki

implementations. It should allow us to draw conclusions on the business value to be expected by building groups or clusters of SME showing similar behavior. A justification of the results to be retained from the framework has to be accomplished. To achieve this two general approaches are possible: firstly by repeating the initial empirical studies in different environments, e.g. different countries, since we are by now working with SME from Germany only or even special groups among SME. Secondly, there is the matter of comparison, e.g. to compare enterprises with and without recommended KMS. The evaluation of the framework is of high importance for our research as the already questioned SME indicated that they tend to rely more on proofed work, as KM and KMS were seen as a supporting technology and usually not part of the main objective of the SME. Consequently, the reliability of the results has to be secured to ensure the framework to be accepted and to show that KM and KMS can be a part of the SME's success.

REFERENCES

Borchardt, U. (2011). Towards Value-Driven Alignment of KMS for SME. In *Business Information Systems Workshops*, Lecture Notes in Business Information Processing, page inprint. Springer Berlin Heidelberg.

Delone, W. H. and McLean, E. R. (2003). The DeLone and McLean Model of Information Systems Success: A Ten-Year Update. *J. Manage. Inf. Syst.*, 19:9–30.

Jennex, M. E. (2008). Knowledge Management Success Models. In Jennex, M. E., editor, *Knowledge management: Concepts, methodologies, tools, and applications*, volume 1, pages 32–40. Igi Global.

Maier, R. (2007). *Knowledge Management Systems: Information and Communication Technologies for Knowledge Management*. Springer-Verlag Berlin Heidelberg, Berlin, Heidelberg, third edition. edition.

Salojärvi, S., Furu, P., and Sveiby, K.-E. (2005). Knowledge management and growth in Finnish SMEs. *Journal of Knowledge Management*, 9:103–122.

Sandkuhl, K., Tellioglu, H., and Johnsen, S. (2008). Orchestrating Economic, Socio-Technical and Technical Validation using visual modelling. In *16th European Conference on Information Systems: ECIS 2008*. National University of Ireland.

Stocker, A. and Tochtermann, K. (2009). Exploring the value of enterprise wikis - a multiple-case study. In Liu, K., editor, *KMIS*, pages 5–12. INSTICC Press.