

Assessing User Acceptance of a Knowledge Management System in a Global Bank: Process Analysis and Concept Development

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Abstract

Many organizations pursue knowledge management (KM) initiatives, with different degrees of success. One key aspect of KM often neglected in practice is that it not only concerns technology. Technology merely provides the tools with which employees can leverage their knowledge in the context of their work. Thus, how employees perceive the technology and interact with it is assumed to play a major role in KM initiatives' success. This paper analyses patterns of user behavior and acceptance of knowledge management systems (KMS) to identify their relevance for a KM initiative's overall success. Using a combined single case study and literature review approach, we develop a model of user behavior and acceptance of KMS. By combining the user acceptance model with a model of context-specific influencing factors and the integrated KMS architecture by Riempp [35], we also present an integrated framework for approaching KM initiatives.

1. Introduction and overview

1.1. Subject and purpose of the article

Knowledge management (KM) has been receiving increasing attention since the early 1990s. As a result, more and more organizations have undertaken KM initiatives with different degrees of success [9], [10], [14], [33], [35], [41]. Problems experienced in KM initiatives are often attributed to a focus on KM's technological dimension (i.e. knowledge management systems), together with a lack of attention for the social dimension (e.g. organizational culture). Consequently, KM initiatives need to address both dimensions equally in order to be successful [9], [18], [29].

Following the above argument, it can be assumed that the degree of fit between the two KM dimensions should be reflected in the way users interact with and the degree to which they accept knowledge management systems

(KMS), i.e. information systems designed to support individuals in performing KM-related activities in the context of their work [35]. Accordingly, the aim of this paper is to develop a model of user behavior and acceptance of KMS in order to analyze their impact on KM initiatives' success. The following research questions guide this paper:

1. What factors influence user acceptance of KMS?
2. How does user acceptance of KMS impact the business process support provided by a KM initiative?
3. How can levels of user acceptance of KMS be increased and business process support be improved to best leverage KM?

1.2. Research approach

The research aim of this article is to propose, by means of theory building, new and/or extended concepts that reflect an integrated approach to KM initiatives, and which can be used for further empirical testing.

The study described in this article was conducted by combining a review of the literature on KM, KMS and user adoption/acceptance of IT systems with a single case study at a global bank.

The single case study comprised 14 semi-structured interviews. In addition to the interviews, several question-and-answer sessions were conducted with the initiative's managers. Studies were also undertaken of the project documentation and hands-on experience gained with the installed KMS.

The case study approach was chosen, as case research is useful when: (1) a phenomenon is complex and broad; (2) the current body of knowledge is not sufficient to permit the formulation of causal questions; (3) a holistic, in-depth investigation is required; and (4) it is impossible to study a phenomenon outside the context in which it occurs [2], [4], [13]. These conditions are regarded as applying to the study of user behavior and acceptance.

Moreover, the purpose traditionally pursued by case studies is the generation of theories for later testing [24], which is in line with the research aim formulated above.

1.3. Structure of the article

In section 2, the paper’s theoretical background is discussed. Section 2.1 provides an overview of the integrated KMS architecture and how it is applied in the context of the case study. Section 2.2 presents a short compilation of key success factors when approaching KM.

Section 3 presents the analysis of the case study. In section 3.1, a model of context-specific factors that influence the analyzed KM initiative is defined. Next, in section 3.2, a model of user behavior and acceptance of KMS is developed and applied to the case study. Accordingly, this section addresses the first two research questions mentioned above. Finally, in section 3.3, findings from previous sections are combined to formulate a “best practices framework of KM” in order to answer the third research question.

Section 4 concludes the study by presenting the article’s main findings and identifying the open questions that require further research.

2. Theoretical background

2.1. The integrated KMS architecture

The integrated KMS architecture presented in this section will serve as this paper’s reference framework (for other frameworks cf. for example [5], [27], [41]). The architecture was chosen because: (1) it addresses both dimensions of KM; (2) it links KM and KMS to business processes.

The integrated KMS architecture was developed by means of a combination of desk research, multiple case studies, and action research. The field research involved a two-year KM project at PricewaterhouseCoopers as well as studies and workshops with 10 organizations in the context of the Customer Knowledge Management competence center at the University of St. Gallen [35].

The architecture consists of three layers (strategy, process, and system) and four pillars (content, collaboration, competence, and orientation). Finally, all the above elements are influenced by organizational culture (see figure 1) [35].

The strategy layer is composed of the business strategy, the KM goals and strategy as well as the measurement system. In the latter, metrics are defined to monitor the progress of the KM initiatives [35].

The process layer encompasses business and support processes. KM processes constitute support processes that are executed by employees with KM roles. KM roles

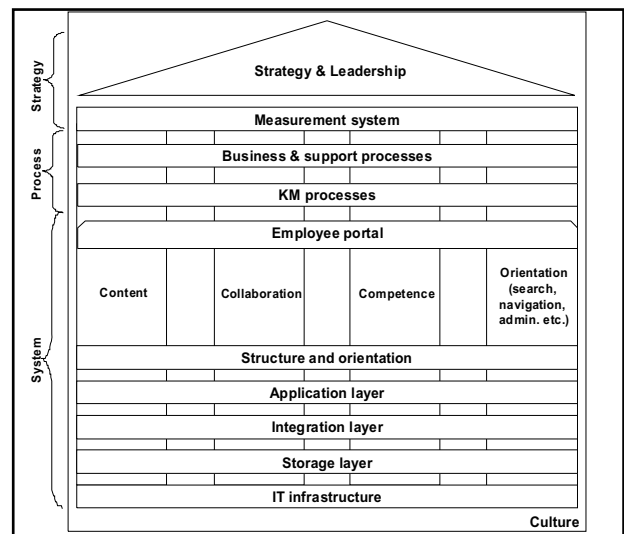


Figure 1. Overview of the integrated KMS architecture

bundle specific KM activities conducted by individuals and/or groups, e.g. localizing and collecting, exchanging, using, and (further) developing knowledge [35].

The system layer describes the KMS, which is accessed through a portal, and is composed of the following four functional pillars: (1) Content – relates to the management of content, its context and the information objects in which it is contained. (2) Competence – addresses all aspects related to the competencies of individuals and groups within the organization. (3) Collaboration – supports individuals and groups who use content and apply their competencies in order to identify exchange and create knowledge. (4) Orientation – provides the search, navigation and administration functions that are required by the other pillars [35].

In order to establish a successful KM function in the organization, the above described elements of the architecture have to be integrated along the following four key dimensions: (1) Integration with the culture – The architecture should be congruent with the values and work habits in the organization. (2) Vertical integration between the architecture’s three layers – The KM strategy should be in line with the business strategy. In turn, the KM processes should operationalize the goals defined in the KM strategy. Finally, the strategy and process layers determine the design of the KMS. (3) Integration of the KM processes and roles within the KMS – The KMS should be designed to support employees in the execution of their roles (especially KM roles) within business and support processes as well as related KM processes. (4) Horizontal integration between the four pillars of the architecture, e.g. by providing role-specific access to different pillars’ functions via a central portal, in order to better support individuals in their daily work [35].

Finally, it should be noted that within the context of the case study, some adaptations were made to the integrated KMS architecture. Firstly, the process layer was extended to also encompass KM support processes and roles, which aim at providing support for KM processes and roles as well as the KMS. These include activities related to the management of the Information Technology (IT) infrastructure on which the KMS runs, end-user support as well as training and communication measures. This modification is rooted in the case study's specific needs as well as in the fact that other authors regard supporting roles to be part of the KM initiative [10], [31]. Secondly, because the KM initiative analyzed currently utilizes a proprietary KMS, the architecture's system layer does not fully apply to the case study. Thus, in the case study analysis, the system layer is only discussed in general and not further differentiated (see figure 1).

2.2. Review of KM key success factors

An overview of KM initiatives' key success factors compiled from literature closes the theoretical background section. Six often mentioned key success factors are:

(1) KM initiatives should have a clearly defined purpose and provide value for the business (either directly through monetary gains/savings or indirectly through improvements in cycle times). Projects otherwise run the strong risk of never really taking off due to a lack of management support [9], [10], [12], [29], [31], [35].

(2) Active support by senior management is considered to be crucial for KM initiatives. This support involves spreading the word about the initiative and its importance to the organization, leading by example (i.e. living the values of a knowledge-friendly culture) as well as providing required resources [9], [10], [16], [25], [40].

(3) Organizations conducting KM initiatives need to establish and sustain a knowledge-friendly culture based on pro-active knowledge sharing. The importance of a "fit" between the initiatives' objectives and the organizational culture has often been reiterated (cf. for example [9], [10], [29], [31], [35], [40]).

(4) Organizations should implement effective technical (systems) and organizational (processes and roles) infrastructures in order to realize the initiatives' goals [10], [17], [29], [31].

(5) Related to the infrastructure aspect is the recommendation to institutionalize KM practices and systems into the individuals' natural work flow [9], [12], [29], [31], [35], [37].

(6) In order to be used effectively in every-day-work, KMS require appropriate levels of training, communication and support. To promote their adoption, it is important to also communicate the potential benefits of using the KMS [9], [16], [40].

3. Case study findings

The case study analyzed in this section involved the implementation of a KMS in adjacent staff departments of a global bank delivering top-management support.

Based on the case study interviews, the following characteristics specific to the analyzed staff departments could be identified:

(1) Collaboration amongst the staff teams in the analyzed departments was found to be lower than collaboration between the staff teams and other parts of the organization. This situation can be attributed to the staff teams' specialization in a specific subject matter (e.g. compliance or financial management) as well as to the case study organization's complex matrix structure [39].

(2) Given their specialization, teams are assumed to have different requirements regarding processes and systems designed to support their activities.

(3) Processes and activities can be classified as being unique, recurring, or routine. The majority of processes are of a recurring nature, being characterized by changing problem structures and cooperation partners, undefined information requirements, and only partially defined process steps [15].

In the following, major factors influencing the case study are identified and their effects on the KM strategy and process layers are analyzed.

3.1. Context-specific influencing factors

Based on interviews as well as observations of the daily user interaction with the KMS, seven major factors influencing the elements of the integrated KMS architecture in the context of the case study could be identified. Of the seven influencing factors, three (training and communication, knowledge-friendly culture, and top-management support) are KM key success factors which were discussed in section 2.2. The remaining four influencing factors (resource scarcity, ingrained work habits, recurring processes, and functional communities) are specific to the context of the case study.

Further, six of the identified influencing factors can be categorized within three dimensions: (1) administrative (funding and operation), (2) organizational (hierarchy, processes, and teams), and (3) cultural (see figure 2). Next, each influencing factor is discussed individually.

(1) The first influencing factor in the administrative dimension is resource scarcity, which relates to the extant lack of financial and human resources required for a comprehensive development of the KM initiative.

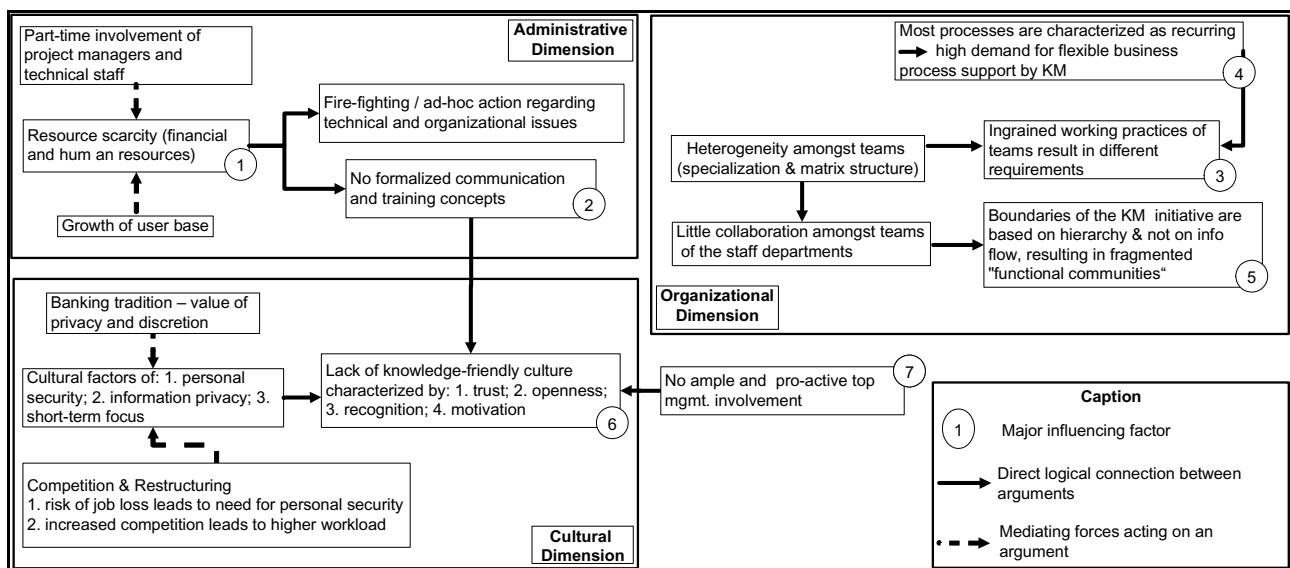


Figure 2. Overview of context-specific influencing factors model

The following two main aspects help explain the scarcity of human resources in the KM initiative: (1) There is little spare capacity available in the organization and (2) major obstacles appear to impede the employment of full-time members for the KM initiative within the near future (e.g. high fixed costs). This scarcity of resources leads to two shortcomings. Firstly, the approach to managing the KM initiative is regarded as being mostly ad hoc as well as showing a tendency towards “fire-fighting” instead of a planned and structured approach [3]. Secondly, the KM initiative currently lacks a defined communication and training concept. There are only isolated efforts to educate users (e.g. by providing online user guides).

(2) Since appropriate training and communication have been identified as KM initiatives’ key success factors in the literature, their absence constitutes the second major influencing factor [9], [16].

Influencing factors three to five constitute the organizational dimension.

(3) The third influencing factor relates to the ingrained ways of working as developed by the different staff teams, which are assumed to result in varying requirements regarding KM support.

(4) The fourth influencing factor relates to the effect that recurring processes have on the KM initiative. It is likely that this process type demands a higher degree of flexibility from KM processes and systems than well-defined routine processes [15].

(5) The fifth influencing factor relates to collaboration patterns in the staff departments. Teams have been found to collaborate mostly with individuals and teams outside staff departments. To describe this collaboration pattern,

we introduce the concept of “functional communities”, which are defined as flexible cross-departmental networks of individuals and teams exchanging function-related information (objects). The limitation of the KM initiative with regard to “functional communities” is that the boundaries of the KM initiative follow the organizational hierarchy and do not take functional communities’ information flow into account. This leads to the fragmentation of functional communities and their information flows, as there are community members that have access to the KMS (and the information objects contained in it) and others that do not.

(6) The sixth influencing factor relates to the culture dimension. A knowledge-friendly culture is a key success factor of KM initiatives and can be characterized by the following values: (1) trust – engaging in active knowledge creation, sharing, and utilization is rewarded and responded to by colleagues and managers, (2) openness – employees actively share information and experiences. Openness furthermore also implies that knowledge is not hoarded for purposes of securing personal power, (3) recognition and motivation – employees are appreciated by colleagues and managers for their contributions [9], [10], [31], [35], [40].

Based on the preliminary evaluation, the case study organization is characterized by a lack of a knowledge-friendly culture. By and large, this organization’s culture hinges on the notions of: (1) personal security, (2) information privacy, and (3) short-term focus. Firstly, the interviewees mentioned issues relating to the securing of positions (e.g. complaints that people hoard knowledge for personal power). Secondly, as a bank, the case study organization reveals a deeply ingrained concern regarding

information privacy and access control. While these concerns are legitimate, there is a real danger of creating too many “Chinese walls” between different teams and departments, limiting KM’s possible value and hampering its adoption. Thirdly, interviewees often expressed their reservation regarding putting a significant amount of effort into learning how to use the KMS without the certainty of a return in the short-term. This short-term focus is thought to be related to the high workload of the case study organization’s employees.

A study on the economic impact of KMS discovered that KM initiatives generated value starting the second year after their inception. The study maintained that in the first year of the system’s implementation, the employees learned ways in which the new system could support their work. Only after this learning period could employees use the new system effectively and become productive [22]. While the amount of time and effort required for learning a new system may vary, this statement shows that employees must be willing to learn new ways of working (i.e. make an upfront time investment) in order to receive value from the KMS. Therefore, employees’ unwillingness to use the system if there is no immediate return is regarded as a major barrier to the long-term success of the examined KM initiative (see next section).

If as yet, there is no knowledge-friendly culture in place, it has to be actively developed while the KMS is being implemented [9]. Amongst the different measures available for promoting the values of such a culture are top-management support as well as communication and training, which will be discussed next.

(7) The KM initiative is currently not experiencing ample and pro-active top-management support. This aspect constitutes the seventh major influencing factor. As a key KM success factor, the aim of top-management support should be to mobilize employees for and get them to be open-minded regarding KM [9], [10], [16], [31]. By acquiring active top-management support, a knowledge-friendly culture can be created over the longer term. A communication and training concept that includes the values of a knowledge-friendly culture would also further support this culture creation process. The development of these three key success factors (culture, top-management support as well as a communication and training concept) is regarded as paramount for the initiative’s future success.

In the following, the influencing factors together with the integrated KMS architecture and the KM best practices presented in section 2 will be applied to the case study’s KM initiative. In this context, the following paragraphs discuss the KM strategy as well as the KM (support) processes and roles layers, whereas the KMS layer is discussed in more detail in the next section.

The examined KM initiative currently lacks a formulated and agreed upon KM strategy. The KM initiative was initiated with the goal of using the KMS as a substitute for the staff departments’ network drives. According to the lead project manager, when the KM initiative was launched, the time was right for the introduction of KM into the organization and the opportunity had to be seized quickly, using whatever little resources were available. Since its inception, the KM initiative has grown and evolved, but it is still solely fueled by the lead project manager’s vision. With the KM initiative’s continued growth, the development of a KM strategy to guide future actions in alignment with business needs is regarded as crucial for its success. This relates directly to the importance of the KM initiative having a clearly defined purpose and value for the business in order to succeed, as identified in section 2.2 [9], [10], [12], [29], [31].

Concluding this section, an analysis is provided of the KM (support) processes and roles layer. Given the resource scarcity affecting the KM initiative, only a fraction of this layer is currently institutionalized. KM support processes and roles have been partially implemented, while there are no KM processes and roles at all. Furthermore, as far as the KM support processes and roles are concerned, only the IT infrastructure aspect is being addressed by means of the implementation of business continuity as well as quality assurance systems. KM support processes and roles for communication, user administration, training and support are still missing. This is a major risk that could affect the KM initiative’s success, especially as good training and communication support are expected to have a positive influence on user acceptance (see next section) [9], [16].

3.2. User acceptance of KMS

This section begins by developing a model of user behavior and acceptance of KMS, taking the integrated KMS architecture and the identified major influencing factors into consideration, which is then applied to the case study.

Model development

Before discussing the model in detail, the authors would like to briefly comment on its development. The factors contained in the model have been compiled from different studies (cf. [7], [17], [19], [25], [28], [30], [34]) and adapted to the context of the analyzed KM initiative. Further validation of the proposed model is required, as it combines different concepts with the preliminary results presented in section 3.1. Moreover, the factor composition of the model should not be regarded as exhaustive and further research on factors affecting user acceptance of KMS as well as their relevance is required.

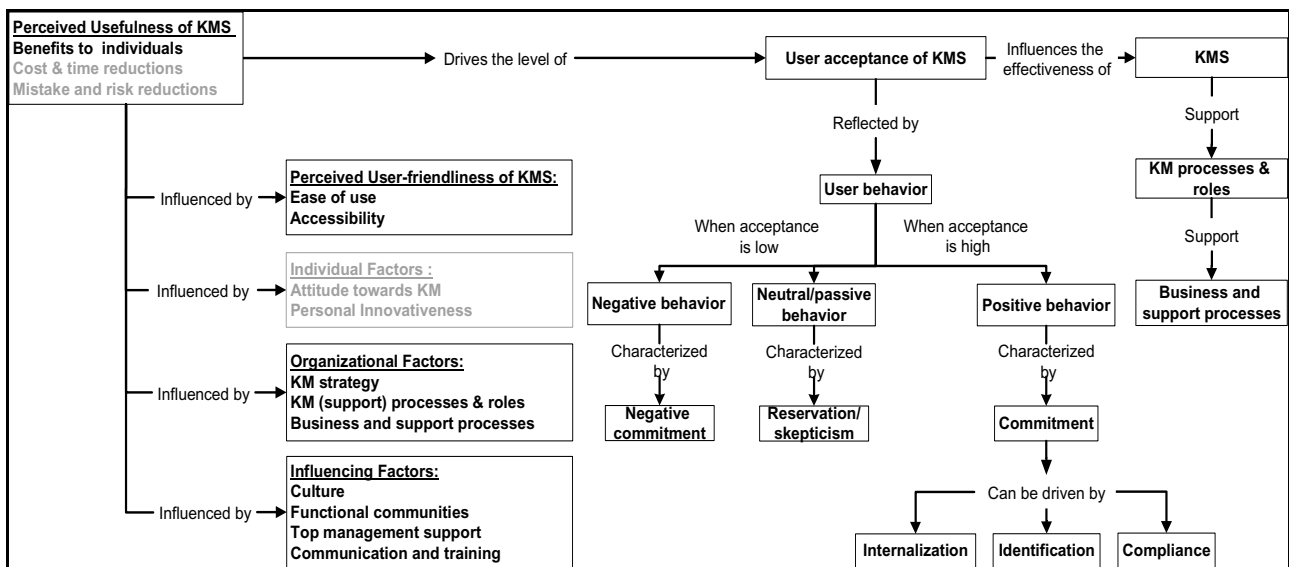


Figure 3. Overview of user behavior and acceptance of KMS model

In the integrated KMS architecture, the role of the KMS is to support the KM processes and roles by providing the necessary functions for their execution. The KM processes and roles, in turn, deliver the benefits of KM to the organization by supporting business as well as other support processes [35]. Accordingly, it is argued that by influencing the effectiveness of the support provided to KM processes and roles, user acceptance of KMS has an indirect impact on the KM initiative's success. This argument forms the core of the model of user behavior and acceptance of KMS as illustrated by figure 3.

The model conceptualizes user acceptance of KMS as a spectrum ranging from low to high levels of acceptance. The different levels of user acceptance are assumed to manifest themselves in different patterns of user behavior, namely negative, neutral/passive, and positive user behaviors. Since human emotions and resulting behaviors cannot be determined accurately, each pattern of behavior is regarded as describing a range of behaviors. Negative behavior ranges from active resistance (voicing strong dislike and peaceful boycotts) to aggressive resistance (proactive spreading of destructive stories and overt blocking behavior). Neutral/passive behavior ranges from indifference (lack of interest) to passive resistance (negative perceptions and attitudes). Finally, positive behavior can range from involvement (willingness to cooperate) to lasting commitment (identification and ownership) [7].

The patterns of user behavior are mainly characterized by commitment, which is understood as the willingness (or lack thereof) of an individual to commit time and effort to following a specific behavior. Negative patterns

of behavior are characterized by negative commitment, which is hereby defined as the willingness to commit time and effort to oppose or even eliminate the KMS. Neutral/passive patterns of behavior are characterized mainly by skepticism and lack of commitment. Regarding positive patterns of behavior, individuals can have different motivations for showing commitment, which requires a differentiation between three types of commitment. Commitment by compliance describes situations where individuals commit themselves mainly in order to collect some form of reward for a specific behavior. When rewards are primarily quantity-based, e.g. rewards based on the number of information objects created in the KMS, this form of commitment may lead to opportunistic behavior. The second type of commitment is driven by identification, i.e. individuals commit to a behavior mainly as a result of their need for acceptance by peers and managers. This type of commitment may also be regarded as sub-optimal, as the individuals are more concerned with following role models than with the values behind their behavior. It is therefore hypothesized that individuals who merely show involvement in the KMS could do so by either being driven by compliance and/or identification and may therefore refrain from their positive behavior when the respective drivers cease to exist. For this reason, commitment should ideally be of the third kind, i.e. driven by an internalization of the values associated with the respective behavior. Thus, the individual needs to recognize and share the KM initiative's values (especially regarding the knowledge-friendly culture), in order to become truly committed to the KMS [7], [14], [28], [30].

Perceived usefulness of KMS

The level of user acceptance and, consequently, the level of commitment demonstrated by users are regarded as being dependent on the perceived usefulness of KMS. Perceived usefulness describes the degree to which individuals believe that using the KMS will increase their job performance [11]. Several studies have identified perceived usefulness as a major factor affecting the acceptance of KMS (cf. for example [6], [26], [32], [38]). Perceived usefulness of KMS can be further broken down into the following aspects: (1) The benefits individuals derive from using the KMS compared to alternatives that were there before, (2) cost and time reductions that can be achieved through increased productivity, and (3) possible mistake and risk reductions (i.e. improved decision-making quality) [19], [34], [35]. It should be noted that not enough data could be gathered on the case study's KM initiative to allow for a sound evaluation of aspects two and three. Consequently, only the first aspect of perceived usefulness is addressed in the case study analysis of user acceptance of KMS.

In turn, perceived usefulness of KMS is influenced by four major categories of factors. The first category is the perceived user-friendliness of KMS. Factors considered in this category are ease of use and accessibility. Ease of use relates to the level of effort required to use the KMS. Accessibility is regarded as relating to the degree of ease with which users can gain access to the KMS, i.e. its diffusion in the organization [19], [34].

The second category influencing the usefulness of KMS addresses individual factors. These can be further broken down into: (1) Attitude towards KM – it is very important that individuals understand the KM initiative's value and have a positive attitude towards it, (2) personal innovativeness – represents the degree to which an individual is willing to use a new technology. It has been found to influence the perceived usefulness as well as the perceived user-friendliness of KMS [1], [19], [25], [30], [34], [35]. Not enough information could be gathered on the individual factors to consider these in the case study analysis of user acceptance of KMS.

The third category influencing perceived usefulness relates to the organizational factors of KM strategy, KM (support) processes and roles as well as business and support processes, which therefore relate to the integrated KMS architecture's key elements. How well the KMS fits into the everyday work context by supporting KM processes and roles is regarded as an important determinant of its perceived usefulness [17], [19], [34], [35], [37].

The final category considers key influencing factors identified in section 3.1, namely culture, functional communities, top-management support as well as communication and training. Studies have confirmed culture, top-management support and training as being

influencing factors on the perceived usefulness of KMS, whereas the influence of functional communities on perceived usefulness has yet to be empirically tested [19], [25], [34].

Model application to the case study

In the following, the model of user behavior and acceptance of KMS is applied to the case study. Judging from the interviewees' answers as well as from personal observations, the KM initiative is presently characterized by moderately low levels of user acceptance. Although the interviewees argued that there have been noticeable improvements in the KMS, no significant signs of widespread positive user behavior could be found. Instead, the majority of users interviewed demonstrated a neutral/passive behavior pattern characterized by: (1) Persistently applying existing work practices, (2) low or no commitment to making an effort to learn how to use the KMS effectively and efficiently, and (3) negative perceptions of the value of the KMS for everyday work.

The pattern of neutral/passive behavior described above indicates that many of the users interviewed perceive the usefulness of the installed KMS to be low. The goal of the following analysis is to better understand the factors leading to this result.

The neutral/passive pattern of behavior determined in the interviews is assumed to be partly caused by resistance to change. Literature describes resistance to change as a natural element of any project with a change management component, including KM initiatives. Individuals are by nature reluctant to give up established habits and routines in favor of new ways of working. While moving from the old to the new, individuals undergo an emotional adaptation process. During this process, their reactions range from initial denial and defense, to curiosity and experimentation and, eventually, to consolidation and acceptance. In the KM initiative, this process has to be stimulated by supporting individuals' development towards acceptance. One way of doing so is by communicating the KM initiative's purpose and value [8], [20], [21], [36].

Given the characteristics of the neutral/passive behavior evidenced in the case study, it is assumed that at present – more than a year after its inception – many users still have a defensive attitude towards the KM initiative. This leads to the conclusion that more communication is required with the users. The lack of a defined communication and training concept can thus be regarded as a major limiting factor in the development of user acceptance.

The absence of a knowledge-friendly culture and of top-management support is furthermore regarded as reinforcing the low level of the perceived usefulness of KMS. Firstly, the identified cultural value of short-term orientation is regarded as reducing the perceived

usefulness, since users do not experience rapid benefits and are deterred by the need to make an upfront time investment to learn how to use the KMS. Secondly, active top-management support would help to counter the negative effect of a short-term focus by not only signaling the relevance of the KM topic but also by providing users with enough slack to allow for training and experimentation with the KMS [9], [10], [23], [25].

Organizational factors also negatively influence the perceived usefulness of KMS in the case study organization. As discussed in the previous section, the analyzed KM initiative lacks institutionalized KM processes and roles, and is therefore not embedded in the business and support processes that it is meant to support. This fact is assumed to greatly limit the support provided by the KMS and, consequently, its perceived usefulness. For instance, without KM processes and roles governing how content is created, classified, and stored, the effectiveness of the KMS' search function will be limited. Especially in an environment characterized by short-term orientation, a search function that does not deliver timely and accurate results reduces the perceived usefulness.

Concluding this analysis is a discussion of the system aspects that influence the perceived user-friendliness of KMS. The KMS implemented in the case study is a customized version of Opentext's Livelink Enterprise Server 9.5. Users have two ways of accessing the system: (1) via Windows Explorer, using a WebDAV interface, or (2) via the system's web-based user interface.

The WebDAV interface has been promoted as a way of using the KMS without having to change work habits. This communication measure was intended to promote the early adoption of the KMS, but has ultimately led to a reduction in the perceived usefulness of KMS. There are two reasons for this: Firstly, it promotes neutral/passive patterns of behavior, because it discourages users from experimenting and eventually changing their work habits. Secondly, due to a lack of training and experience, many interviewees judged the ease of use of the system's web-based user interface as low, describing it as too complex and counter-intuitive. As a result, most of the interviewed users have adopted the WebDAV interface. However, this interface only provides a fraction of the functions available through the web interface, therefore not reflecting the true capability of the KMS.

In order to increase the perceived usefulness of KMS in the case study initiative, it is crucial that all existing and new users are educated in the use of the KMS's web interface. Users need to learn how to leverage the KMS's functions for their day-to-day work.

Finally, the accessibility of the KMS is limited by the fragmentation of the functional communities as discussed in section 3.1. Since some community members have access to the KMS and others do not, collaborative

creation and exchange of information objects continue to be heavily reliant on e-mail instead of using the content management functions provided by the KMS.

3.3. Proposition of an integrated framework for KM initiatives

The findings of the case study analysis discussed in the previous two sections indicate that all three main theoretical concepts of this study (the integrated KMS architecture, the user behavior and acceptance of KMS model, and the context-specific influencing factors model) have to be addressed equally in order to successfully introduce KM into an organization. In the following, the relationships between the three theoretical concepts are discussed.

User acceptance partly determines the integrated KMS architecture's success by influencing the effectiveness of the KMS, but at the same time the integrated KMS architecture influences the perceived usefulness of KMS as well as the level of user acceptance. Firstly, the architecture provides the KM initiative with a clear structure and direction, making it easier for individuals to understand and internalize the initiative's values. Secondly, the architecture defines the functions of the KMS as well as KM processes and roles that the KMS is supposed to support.

Influencing factors also have a mediating effect on the user acceptance of KMS (see discussion in the previous section). However, it can be assumed that there is also a counter relationship in the opposite direction, in other words the analyzed KM initiative is being affected by the lack of a knowledge-friendly culture. Nevertheless, the initiative has a few active and committed users, who could promote the necessary cultural values, effectively helping to develop the initiative's culture.

The discussed reciprocal relationship shows that for KM initiatives to be successful, all three theoretical concepts have to be jointly taken into consideration. Therefore, the three theoretical concepts form a "best practices framework of KM" – thus completing the theory-building process. If all three theoretical concepts are balanced, this is regarded as being mutually reinforcing, leading to a virtuous circle of KM characterized by ever increasing benefits. Conversely, focusing on only specific aspects of one or more of the three theoretical concepts instead of taking an integrative perspective could increase the risk of the KM initiative becoming a vicious circle characterized by decreasing benefits. Organizations face the challenge of deploying the KM initiative's theoretical concepts to generate a virtuous circle, while avoiding the ever-present risk of falling into a vicious circle [14].

4. Key findings and further areas of research

Concluding the article, this section discusses the key findings in keeping with the research questions stated in section 1.1 and highlights further areas of research.

With regard to the first research question, we have modeled user acceptance of KMS as ranging from low to high and being reflected by negative, neutral/passive, or positive patterns of user behavior. User acceptance is influenced by the perceived usefulness of KMS. In turn, perceived usefulness is influenced by a number of technological, individual, organizational, and influencing factors, such as the perceived user-friendliness of KMS, the organizational culture, and user training.

Answering the second research question, the model states that the levels of user acceptance of KMS indirectly influence the KM initiative's success. It is argued that user acceptance influences the effectiveness with which the KMS is able to support KM processes and roles, which in turn affects the effectiveness with which KM processes and roles are able to support business and support processes.

Addressing the third research question, we have developed a "best practices framework of KM" from the case study findings. The framework consists of the integrated KMS architecture developed by Riempp and the influencing factors as well as the user acceptance models developed in this paper. All three elements of the framework should be equally considered in order to lead the KM initiative to success by creating a virtuous circle of KM.

The main contributions of this article are threefold. Firstly, the model of user behavior and acceptance of KMS illustrates the need for a balance between the technological and the social dimensions of KM. Secondly, the proposed user acceptance model takes a more holistic perspective than previous research in this field by not only looking at the factors influencing user acceptance, but also looking at user behaviors characterizing different levels of user acceptance and the impact the latter may have on the KM initiatives' success. Thirdly, an integrative framework for approaching KM initiatives is proposed, extending the conceptual toolbox available to KM researchers and practitioners.

Given the focus of this study on theory building, the concepts developed require further testing in order to determine their general applicability outside the case study's context.

Regarding the user behavior and acceptance of KMS model, further research could take the following directions. Firstly, the existence and relevance of other factors affecting user acceptance, besides perceived usefulness, could be analyzed. Secondly, the causal relationships between the perceived usefulness of KMS and their

various influencing factors need to be tested. Lastly, the relevance of the two aspects not addressed in this study on the perceived usefulness of KMS due to a lack of data, namely "cost and time" as well as "risk and mistake reductions", needs to be investigated.

Further research concerning the influencing factors model would be especially valuable regarding functional communities and their impact on the information flow in complex organizational settings such as global matrix organizations.

Finally, the preliminary findings with regard to the proposed "best practices framework of KM" should be tested. A possible approach could be to use multi case study research in order to compare KM initiatives with different degrees of success in order to analyze the role that the framework's three elements play with regards to whether the individual KM initiatives achieve their stated goals or not.

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