Approach to KM through a Systematic Assessment: Case Study at an Austrian University

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Abstract: Organisations often focus on only one single aspect of knowledge management (KM). Due to the lack of a generic perspective and a systematic approach, such KM projects are likely to fail. This paper proposes a KM Assessment which is oriented on organisational processes. It measures the necessity of KM activities within a knowledge-intensive organisation. A detailed situation analysis enables to systematically deduce a specific KM approach for the organisation. The KM Assessment is based on a five-level-model of KM (culture, strategy, knowledge, data, processes), which indicates the five major operating fields of a successful KM, and four scopes of intervention (individual, team, organisation, organisational environment). In a first step, knowledge-intensive processes are identified. For the selected processes, major requirements of process-related stakeholders and key drivers for an effective KM are evaluated. In a next step, the knowledge base for the specific process is analysed using the scopes of intervention and first measures are identified. Based on the KM model it is analysed whether KM activities are already set or have to be evolved. Measures are deduced and implemented into the organisation. Universities are knowledge-intensive organisations; however, management systems are mostly not implemented. A case study realised within an Austrian University shows the benefit of the proposed KM Assessment in identification and implementation of KM measures for a specific research process. The here proposed assessment method is able to be conducted in research institutions as well as in industry. Depending on the desired depth of content, the assessment can be applied within some workshops or over a longer period.

Keywords: Knowledge management, assessment, implementation, higher education, research process

1. Introduction

In recent years, knowledge has been considered to be an important, if not the most important resource of an organisation to remain in business for long time (Schreyögg/Geiger 2003: 8; Helm et al. 2007: 212; KPMG 2000). The resultant necessity to deal with knowledge management (KM) is widely approved of. However, the opinions differ extremely concerning the characteristic of KM and its implementation. The majority of the approaches still consider almost exclusively the development of IT infrastructure (Wong/Aspinwall 2005: 69; KPMG 2000: 3). Yet, as Helm et al. state, this is not sufficient, but only a precondition for an effective KM (Helm et al. 2007: 232). In practice, a contrary position is often taken concerning human-oriented concepts. Newer approaches tend to focus on a more holistic view of KM in order to include all relevant dimensions.

Aside the multitude of existing approaches and models, another aspect hinders an easy integration of KM into organisations: There is no common sense about the very abstract discussed term “knowledge” (Schreyögg/Geiger 2003: 8). This is the reason why it is very difficult – especially for practitioners – to understand knowledge as an important resource and to deal with it in the organisation. Therefore, one of the most important questions still is how KM can be precisely integrated and implemented within organisations (Wong/Aspinwall 2005: 64). In many universities and research institutions, possible methods of KM are still not standard (James 2000: 42). One of few examples for KM is the use of IC reports to illustrate, evaluate and communicate intangible assets of universities. In Austria, every university is obliged to prepare an Intellectual Capital (IC) report as a kind of efficiency report on an annual basis and transfer it to the federal ministry of science and research, as it is defined in the university law of 2002 (Biedermann/Graggober 2005; Leitner 2003). The missing consciousness of the necessity of KM at universities mainly astonishes, as at universities a very intense discussion about and examination of knowledge is going on, especially concerning the creation of knowledge in research and its transfer in teaching and publications. Knowledge is a central resource and at the same time the most important product of universities (Luan/Serban 2002: 13; Araujo de la Mata 2003).

In literature, some possibilities are described how management of knowledge at universities can be structured more efficiently. Some examples are knowledge repositories (Cech/Bures 2003), central institutions for vocational training (Cech/Bures 2003), systematic processes and their adapted design for research projects (Araujo de la Mata 2003) or a systematic behaviour towards process knowledge (James 2000). These examples reveal that existing models are far away – more than in other sectors – from a holistic approach towards KM. Therefore, especially the question how KM can be implemented into existing structures arises at universities. This paper is aimed to present an approach which is based on a holistic perspective as well as universally valid success factors and which allows furthering the realisation of KM aspects in organisations. Basis for this implementation is a so called KM Assessment.

1.1 Knowledge and knowledge management

In this article, the term knowledge is based on the definition of Polanyi (Polanyi 1967) and Nonaka et al. (Nonaka/Takeuchi 1995) which differentiates regarding the epistemological dimension (degree of articulation), namely between tacit and explicit knowledge as types of knowledge. As explicit knowledge exists in different

forms, it seems reasonable to further distinguish between documented and "explicitable" (not yet documented)[1] knowledge.

Most of the knowledge in an organisation is possessed by individuals. This type we call individual knowledge. If a group of individuals shares knowledge, we talk about collective knowledge. Also we define organisational knowledge as knowledge available for all members of an organisation. External sources can also hold knowledge which might be of huge interest for the organisation so it should be taken into account. Hence, on a knowledge level, there exist four scopes of intervention (individual, team, organisation, and environment). There is a strong connection between knowledge and action as knowledge enables individuals or organisations to take action. Moreover, new knowledge is created through the process of learning. Therefore, knowledge is always to be regarded in context of a specific action.

1.1.1 Recommendations of action for development and transfer of knowledge

For a practitioner, the question comes up whether the definition of knowledge and its differentiation in specific types actually is of use. In the following it is shown in Figure 1 which general recommendations of action can be derived to transfer knowledge from one type to another or from one individual to a second.

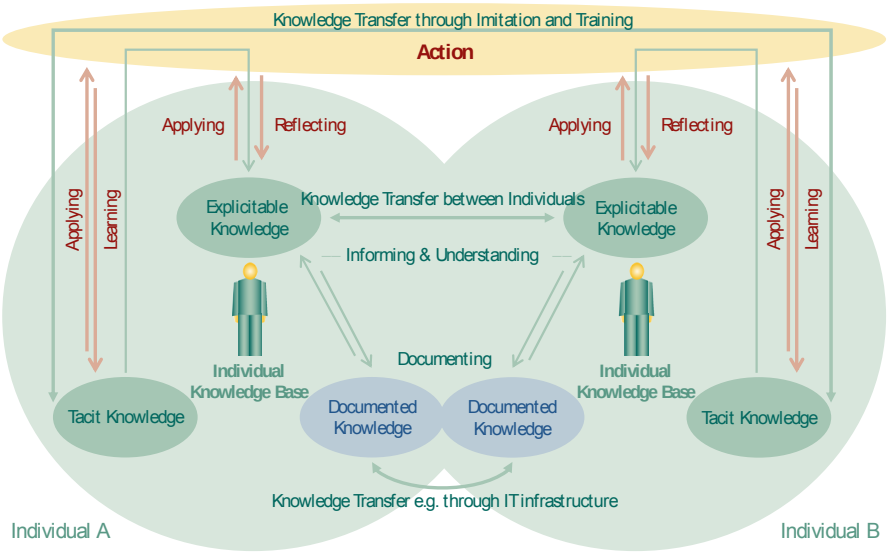

Figure 1: Recommendations of action for the development and transfer of knowledge

Figure 1 schematically shows the knowledge base of two individuals. Depending on the degree of articulation, knowledge is distinguished in documented, explicitable and tacit knowledge. Interactions are carried out on the levels of knowledge, data and action (see chapter 1.1.2).
For the transformation of knowledge from one type to another, the following possibilities do exist:

- By actually applying knowledge, tacit as well as explicitable knowledge can lead to action. The other way round also new knowledge can be generated by a feedback process on the undertaken action. This knowledge may be learnt tacitly or transferred into explicitable knowledge through reflexion.
- Explicitable knowledge is characterised as knowledge which still belongs to one person but is already possible to articulate. Through documentation it can be converted into documented knowledge (which is not necessarily the same as information). Conversely, informing and understanding can lead to internalisation of documented knowledge.

Regarding the knowledge transfer between individuals, three basic recommendations of action can be deduced:

- Transfer of tacit knowledge through imitation and training.
- Transfer of documented knowledge through IT infrastructure.
- Transfer of explicitable knowledge through cooperation of individuals. Communication therefore plays a central role.

1.1.2 Base model of knowledge management

KM is aimed to ensure the creation of individual and collective knowledge in an organisation, its application and transfer within business processes as benefit-oriented as possible (Davenport/Völpel 2001: 212). Those

[1] In German there is a verb for describing the process of making knowledge explicit. In this paper we therefore use "documented (expliziert) knowledge". "Explicitable (explizierbar) knowledge" is meant to describe the situation when knowledge which can be formulated into words and phrases exists, but has not been documented yet or distributed to a larger community.

prime activities are extended e.g. by activities delivered by Probst et al., known as the so called building blocks of KM (Probst et al. 1997). In order to guarantee a successful functioning of those activities, the purpose of KM is to develop supporting basic conditions. From knowledge perspective and a systemic point of view, the organisation can be divided into a technical and a social subsystem. Hence, different organisational levels are derived, their development enormously influences the KM in an organisation (Sammer 2000: 82; Willfort 2001: 8). In literature, such levels are level of action, level of data, level of knowledge and level of goals. A fifth one – the level of culture – is added, as culture has a strong impact on the organisational behaviour towards knowledge (Kayworth/Leidner 2003: 236).

The base model of KM on which this assessment is grounded, is illustrated in figure 2. The levels describe aspects important in working with knowledge. They define how organisational basic conditions can be designed to positively impact the creation, application and transfer of knowledge.

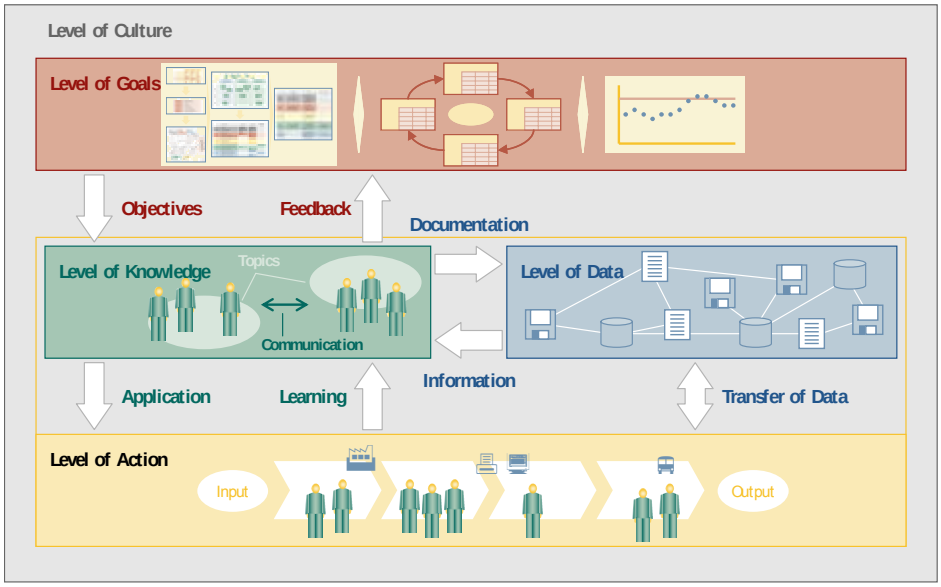

Figure 2: Base model of KM (Ditzel et al. 2007)

The differentiation between **knowledge and data level** is grounded on the traditional distinction between knowledge and information or data. The knowledge base includes all knowledge which is connected directly with persons. On this level, employees and their communication and cooperation play an important role. The level of data includes data and information of an organisation, which means externalised collective knowledge and the related IT infrastructure.

On the **level of action**, knowledge is applied for definite actions. Through awareness and interpretation adaptations for future actions are deduced – thus learning takes place.

The **level of goals** is superordinate to the three before mentioned levels. Goals for KM are derived from the overall business strategy. These goals are defined concerning the major knowledge activities and the definition of the basic conditions for KM on the different levels.

The **level of culture** covers all four before mentioned levels and can be seen as direct link to organisational culture. The level of culture has to focus on norms and values which support the management of knowledge. Therefore, it plays a very important role. It depends on the culture of learning and communication, for example whether employees are willing to share their knowledge or to communicate frankly, etc. In most cases it is not enough to install a new software tool or integrate a specific method to succeed in KM.

Between these five levels different interactions exist, whereby especially the four levels of goals, knowledge, action and data are directly connected. These interactions are demonstrated in Figure 2 as arrows.

1.1.3 Success factors of knowledge management

It is not possible to implement KM into an organisation as a traditional management system. Rather, the specific basic conditions of an organisation have to be analysed in order to design and improve the organisational processes in a knowledge-oriented way. It seems reasonable to relate on general success factors for KM as both theory and practice have identified very similar factors over a long period of time (Helm et al. 2007: 212). Helm et al. compared several findings of empirical studies and derived generally valid success factors of KM. Those success factors can be adapted to the organisations' situation and its specific requirements. In dependence of Helm et al., important success factors are shown for the five levels of the KM model in Figure 3.

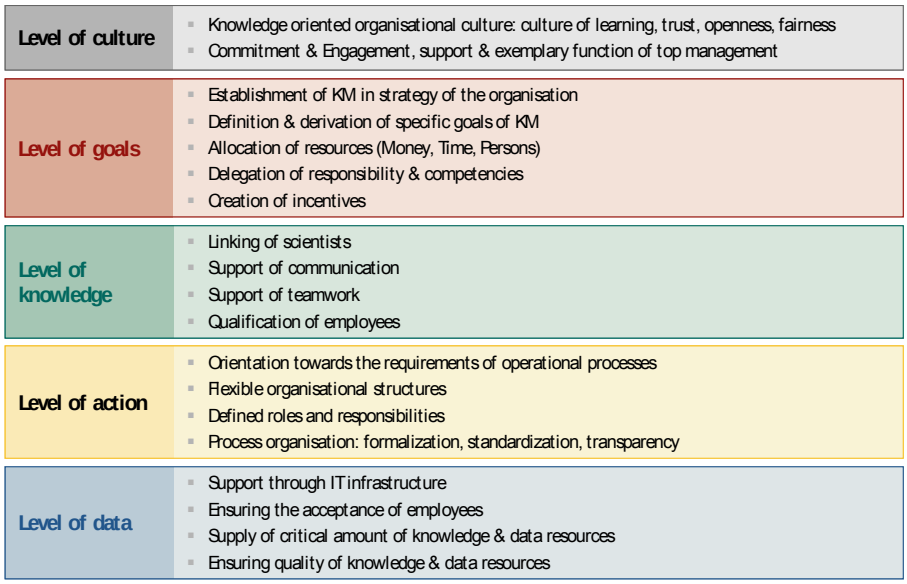

Figure 3: Success factors of KM

The above shown success factors provide an indication where organisations should emphasize establishing KM. Moreover, they help within the lead-through of the KM Assessment to identify essential performance drivers for the specific business process and to align necessary measures with it.

1.2 KM assessment

Although there exist a huge amount of publications on and approaches to KM, methods to analyse and to put KM holistically into practice are seldom found (e. g. the KM Maturity Model, Ehms/Langen 2002). In literature, especially in business process oriented KM approaches for knowledge and KM assessment have been developed (e. g. Heisig 2005; Strohmaier 2005; Bahrs/Gronau 2005). Moreover, it is more likely to find methods to evaluate specific knowledge aspects to derive precise measures (e. g. Verburg/Andriessen 2006; Freeze/Kulkarni 2005). However, for organisations which focus to implement systematically KM and considering its trans-sectional functions, a conglomeration of different approaches does not lead to the goal. It rather hinders a common sense for organisational potentials of KM, as no cross-departmental discussion and action occurs. Furthermore, the results of such implementation projects are difficult to benchmark between each other which complicates cross-departmental measures in the future.

Sammer (Sammer 2001; Bornemann/Sammer 2003) developed a tool to assess knowledge (management) in an organisation and to derive knowledge activities within seven steps. This tool is based on a four-level model of KM (level of goals, level of knowledge, level of business processes, and level of data). It represents a first step to view knowledge aspects integrated and in constant interaction between the four levels and four scopes of intervention. The nucleus of this assessment is to identify the most important requirements of relevant stakeholders and the perfection of knowledge aspects on all four levels. By the definition of performance drivers, measures are derived for future modelling of KM. The assessment of Sammer analyses mainly on an organisational level. Processes which are of huge importance for KM measures are not focused on enough. Therefore, the assessment is not sufficiently detailed to act knowledge-oriented on a process level.

Following the basic idea of Sammer, the assessment tool presented in this paper has been further developed and detailed. Firstly, the basic model of KM is extended to a fifth level (level of culture). Secondly, this approach focuses on knowledge intensive processes and the handling with knowledge in the processes itself. So business processes are the initial point for the successful implementation of KM as knowledge is mainly applied on the level of action. In addition, the majority of organisational knowledge is created in context of processes (Abecker et al. 2002: 4). Therefore, relating and developing KM on business processes seems to be reasonable. A further complement of our assessment tool is the identification of the knowledge base (which knowledge is where accessible in the organisation?). This is necessary as a systematic consecution and development of KM is only to succeed if the employees are conscious of which knowledge exists and which person is to be contacted. It depends on the basic conditions of an organisation which specific measures or change projects support organisational KM best. A project in human resources may have the same impact on the organisation as an improvement in business processes or the installation of data management systems – it depends on the stage of maturity of the organisation as well as industry depending factors.

Our assessment tool is aimed to measure the usefulness of KM activities within organisations. Furthermore, it systematically derives possibilities of actions to develop and improve KM due to a situation analysis. These are shown in a matrix of five levels and four scopes of intervention, based on the described KM model.

The procedure of the KM Assessment is shown in Figure 4. In a first step, knowledge intensive processes are identified by several factors due to a detailed analysis. For these selected processes, major requirements of the process-related stakeholders and further, key drivers for an effective KM are evaluated. In a next step (step four), the organisational knowledge base (experts, information media) is analysed using the levels of intervention. Then, first measures of optimisation for the business process or the organisation itself can be deduced. Based on the KM model it is analysed in step five, whether KM activities are already set or have to be evolved to fulfil the requirements of the stakeholders. Due to the detailed analysis, measures are derived and implemented in step six.

A case study realised at the Chair of Economics and Business Management (WBW) at the University of Leoben, Austria, shows the practicability of the proposed KM Assessment. Science at the chair is focused on industrial management in research, teaching and vocational training. Since the 1990s, principles of quality management (QM) have been taught to students. Moreover, they have been implemented into the chair and up to now they represent important elements for daily work. In 1995, WBW was certified in ISO 9001. In the following years, the QM system was continually developed towards Total Quality Management, which was awarded with the Austrian Quality Award in 1999. Since 2001, an IC report has been provided on annual basis. WBW has held an important role in the improvement of IC reports for research institutions and its inclusion in the Austrian University Law of 2002. The case presented in the following has been conducted with employees of WBW in workshops. The findings show that due to the long tradition of existing QM and KM at WBW, processes are well defined and the organisational structure knowledge-oriented. Nevertheless, potentials of improvement and specific measures can be identified from a KM perspective.

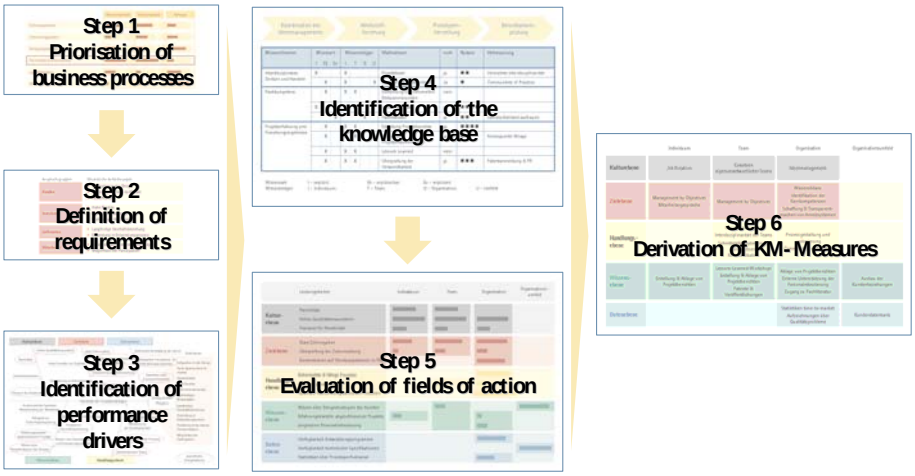

Figure 4: Procedure of the KM assessment

The tool is designed to be conducted as self-assessment within an organisation. It is of importance to build a team of several employees who as a whole know a lot about activities, processes and interactions of the analysed department to gain best assessment quality. Therefore, all relevant employees of top and middle management should be integrated into the project team. This leads to a common sense of KM as it is more likely that the employees identify themselves with the results of the assessment,

1.2.1 Prioritisation of business processes

As no specific business processes are defined for the KM Assessment in the beginning, it is recommended to choose those processes of an organisation which are most relevant concerning knowledge aspects. Huge benefit can be achieved through prioritising them according to indicators such as knowledge intensity, relevance for the organisational strategy, or stage of maturity of the process management.

Such prioritisation for the processes of WBW is demonstrated in Figure 5. The red bar shows how each indicator is fulfilled in the specific process. In this case, the research process (which includes internal/external research projects, PhD and publications) is to be analysed, as it is said to be the most knowledge intensive one. Furthermore, the research process is of high importance for reaching the organisational goals. Moreover, the maturity of process management is low as research processes are not easy to be standardised.

This prioritisation is the initial point of all steps consecutively following each other. Thus it is ensured to be focused on the actual requirements of the organisation and not on little relevant or highly developed business processes and their activities.

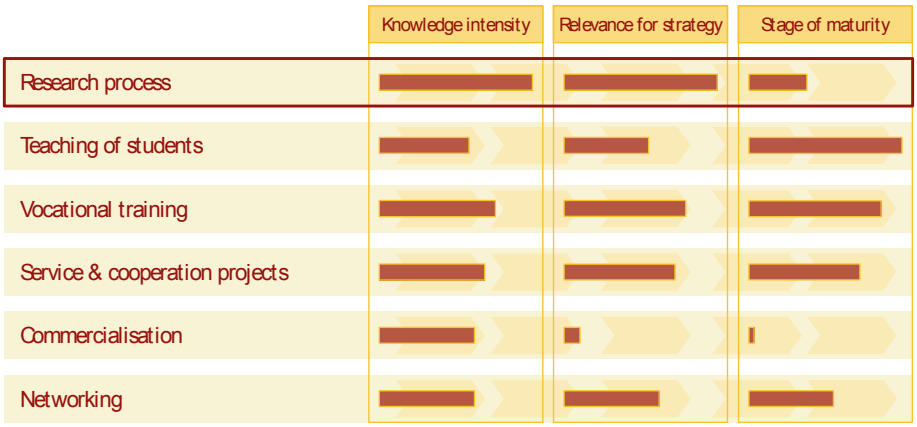

Figure 5: Step 1 – Prioritisation of business processes

1.2.2 Definition of stakeholders' requirements

It is advisable to align the assessment on requirements of relevant stakeholders in order to assure that the development of measures is convenient to the defined objectives. There exist different approaches for defining the relevant stakeholders (e.g. Müller-Stewens et al. 2001; Karmasin 2006).

Stakeholder	Requirements
Scientific Community	▪ Publication of research findings ▪ Innovative research concepts ▪ Extent of novelty of research findings
Industry	▪ Solution for specific problems ▪ Highly practice-oriented ▪ Integration in research process ▪ Anticipation of relevant research topics
Project partner	▪ Long term partnership ▪ Good communication and cooperation
Employees	▪ Connection with own research topic ▪ Results for own research topic ▪ Publication of research findings
University	▪ High rate of innovation and publication ▪ High quota on externally financed projects ▪ Good reputation
Students	▪ Up-to-date and practice-oriented subjects

Figure 6: Step 2 – Definition of requirements

Based on objectives and functions of the research process stakeholders are identified. Their requirements to WBW and its research process were defined in a workshop. For example it is of interest to the scientific community that innovative concepts or results of studies are published. For the university it is important that the chair supports the objectives e.g. to establish a good reputation in both scientific community and industry. The requirements of the stakeholders are necessary to define the performance drivers of the research process in step three.

1.2.3 Identification of performance drivers

For the prioritised process, performance drivers are determined by a cause-and-effect chain following the levels of KM, which impact mostly – from a knowledge perspective – the achievement of defined objectives of the process. It is advised to enlarge the team for this step to gain more information. The success factors presented in chapter 3 are helpful for better identification of performance drivers for each of the five levels.

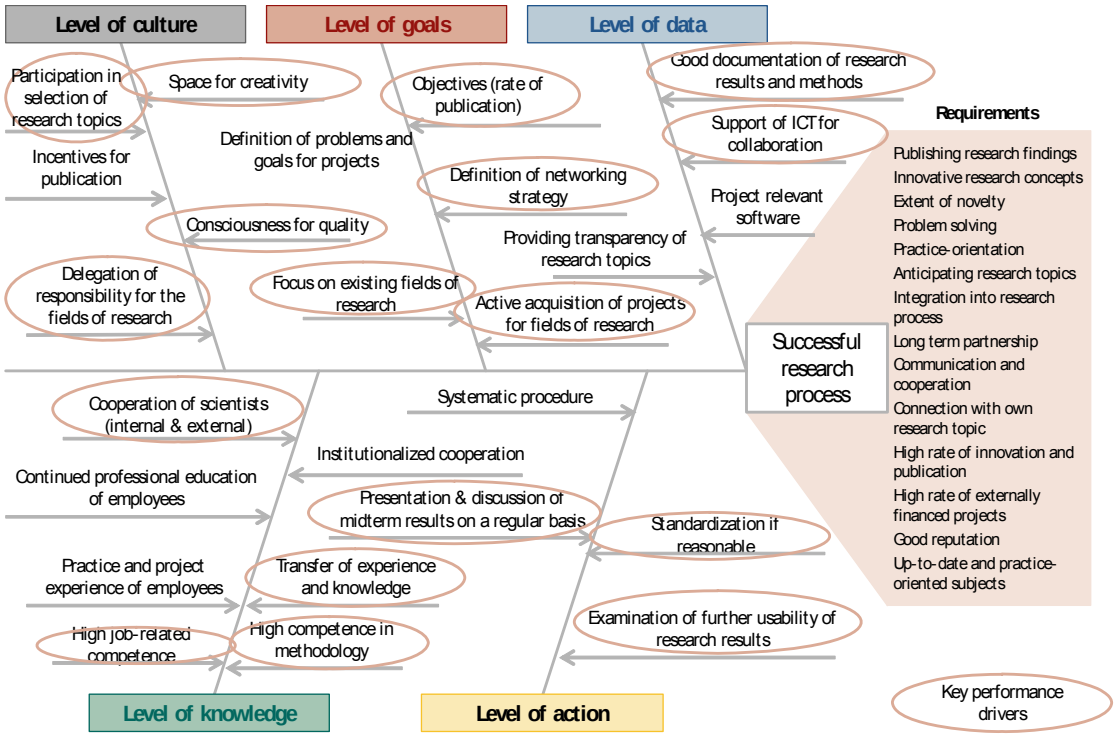

Figure 7: Step 3 – Identification of performance drivers

The identified performance drivers provide a solid basis for further assessment and development of a knowledge-oriented organisation. For the research process of WBW, main drivers were defined to fulfil the requirements and to satisfy its stakeholders. Drivers which are circled in red are most important for reaching the goals. These are focused on in step five.

1.2.4 Identification of the knowledge base

This step is aligned to identify potentials of improvement regarding the knowledge base of an organisation. By and large, existing approaches of business-process-oriented KM are of very analytic nature. Knowledge aspects are integrated in very detailed steps into existing processes in form of knowledge objects and carriers and their relations to each other. In contrast to such approaches, this assessment tool is more of a qualitative procedure for meeting the tacit and explicit character of knowledge better. This can be complemented by the use of knowledge maps (see Schuhbauer/Schwinghammer 2005).

On one hand knowledge base – for a process or an organisation – exists of different relevant topics, on the other hand of knowledge carriers, who possess knowledge about these topics. On the level of knowledge, it is about individuals, teams, the whole organisation itself or the external environment of the organisation. On the level of data it is about documents or data bases.

The identification of the knowledge base is carried out in two phases. Firstly, relevant topics are identified along the process. In a second step, each topic is analysed in regards of types and carriers of knowledge. The matrix in Figure 8 represents a useful framework to carry out this step easily. For each type and carrier of knowledge existing actions, which are respectively necessary, are discussed. When Figure 1 is used for the discussion, the derivation of measures turns out to be easily realisable. If there already exist activities of KM, their benefit is evaluated (no point: no benefit; five points: high benefit) and further improvement measures are indicated.

Figure 8 illustrates the identification of the knowledge base for the research process at WBW. In extracts, relevant topics and persons are assigned to defined steps of the research process and further allocated due to their type and carrier of knowledge. As the chair implemented a QM system more than ten years ago and has been providing an annual IC report since 2001, a lot of measures are already successfully installed. Nevertheless, some points can still be improved to gain higher benefit through knowledge orientation (e.g. identifying lessons learned).

Topic of knowledge	Type of knowledge			Carrier of knowledge				Measures	Existing?	Usefulness	Improvement
	I	E	D	I	T	O	U				
Project management	X			X				Learning in project team	Yes	■ ■ ■ ■ ■	
			X			X		Description of process	Yes	■ ■ ■ ■	Specific additions e.g. Lessons Learned
			X			X		Software tool	Yes	■ ■ ■ ■	List of available software
Research funding		X					X	Information through CTT	Yes	■ ■ ■ ■ ■	
			X				X	List of possibilities for research support	Yes	■ ■ ■ ■ ■	
Social competence	X			X				Learning in project team	Yes	■ ■ ■ ■	Enforced accompanying at pre. of midterm results
								Feedback through HD and PM	Yes	■ ■	Enforced feedback
Research methodology		X		X				Discussion table between employees	Yes	■ ■ ■ ■	Meetings on regular basis
			X		X	X		Project reports	Yes	■ ■	Description of methodology
Job-related		X		X	X			Informal discussion	Yes	■ ■ ■ ■ ■	
competence			X	X				Making own publications internally available	No		
			X			X		Library	Yes	■ ■ ■ ■ ■	
Project experience		X		X	X			Project reports	Yes	■ ■ ■	Consequent storage
Research findings		X		X	X			Storage of project documentation	Yes	■ ■ ■ ■	
		X		X	X			Lessons Learned	No		
		X		X	X			Checking usefulness	Yes	■ ■	Formalization

Type of knowledge: I – tacit; D – documented; E – explicitable
Carrier of knowledge: I – Individual; T – Team; O – Organisation; E – Environment
HD – head of department; PM – project manager; CTT – Centre for Technology Transfer

Figure 8: Step 4 – Identification of the knowledge base

Such a structured identification of topics and their carriers of knowledge makes it easy to deduce recommendations of action through discussions in workshops. Explicit carriers of knowledge, who are only available for some individuals, could be placed at the collective's disposal e.g. by developing IT infrastructure. If there are areas of topics in which only a few individuals have tacit knowledge of, possible measures of knowledge transfer could improve the communication between these two groups. As an alternative, knowledge acquisition could be implemented, for the case that certain knowledge is not available in the organisation at all.

1.2.5 Evaluation of fields of action

In contrast to the identification of the knowledge base, in step five the focus is not laid on knowledge itself. Moreover, the step aims to evaluate the behaviour towards and working with knowledge in form of concepts, activities and specific instruments; hence, the basic conditions for creating, applying and transferring knowledge. A framework of 20 fields of action – derived from five levels of the KM model and their confrontation with four scopes of intervention – underlines the systematic procedure of the KM Assessment.

In Figure 9, the procedure is illustrated for the evaluation of the 20 fields of action for WBW. Performance drivers for each level, which were identified in step three, are analysed regarding different scopes of intervention. Firstly, it is evaluated whether the specific scope of intervention is relevant for the performance driver. If so, it will be highlighted by a dark colour.

In a next step, the actual occurrence of this field of action is evaluated, shown as a bar in Figure 9. The gap between relevance of the field of action and existing activities or instruments are easily visible. In order to document working results, it is advisable to generate an extra table with all data about existing activities. Potential of improvement can be identified either because of a lack of activities in a field of action or because of activities that do not support performance drivers sufficiently. Concerning measures of communication for example, it is not only of importance to make communication media available or to provide enough time to talk with other people. Especially occurring barriers should be analysed in detail, as it is not ordinary for example that employees from different management levels or departments communicate easily or are willing to.

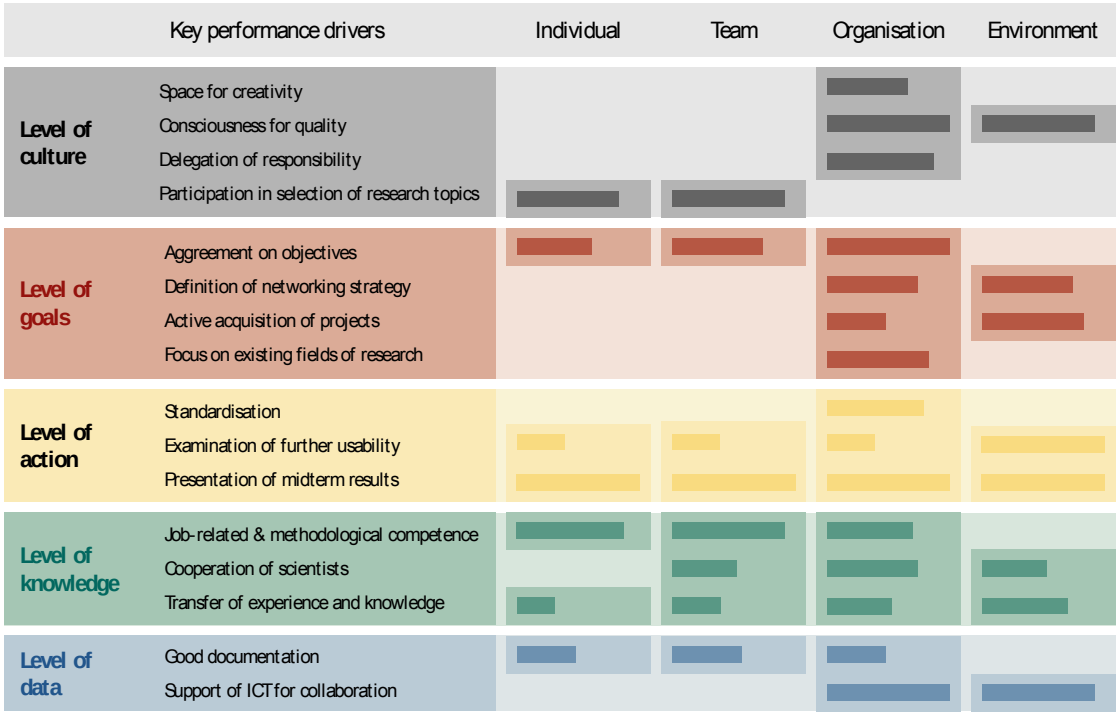

Figure 9: Step 5 – Evaluation of fields of action

Due to the evaluation of fields of action, recommendations for KM which are customised to the organisation and benefit-oriented offer starting points for improvement and change projects.

1.2.6 Derivation of KM measures

The last step of the KM Assessment aims to derive measures on the basis of the identified potential of improvement in steps four and five. It is important to focus on the requirements of stakeholders and the necessary knowledge base. The defined measures can relate to the specific process or to the organisation and its behaviour towards knowledge related topics. Such instruments do not have to be focused only on KM. On the level of culture for example it could be aimed to enlarge the number of knowledge promoters or the exemplary function of the top managers.

The result of the assessment is a definition of necessary fields of action filled with activities or instruments to be put into practice. Figure 10 shows the findings for the case study. All highlighted fields of action have been identified to be important; now measures are derived for them. However, not all fields are equally important so for some fields, existing activities are efficient enough. At WBW, the behaviour towards and working with knowledge is already very satisfying. Hence, only “little” improvements, but which seem to be important nevertheless, have been identified. Additional time units should lead to more intensive research and the publication of these findings. This could be supported by a growing realisation of request research. On the level of data and knowledge, the identification of lessons learned at team or individual level and the consequent storage of project reports and publications should improve the development of the knowledge base.

If the assessment is able to point out lots of potentials, a last prioritisation can be helpful to bring them in an order of relevance. This might be advantageous because in most cases there is a lack of appropriate resources to fulfil them all in contrast to the number of projects to tackle.

1.3 Conclusion

The here proposed KM Assessment is a method to derive measures for the successful implementation of KM and a continuous improvement of KM activities in an organisation, but it does not deliver a detailed road map for the implementation of KM strategies. The KM Assessment supports the systematic analysis of KM potential within an organisation. Derived measures are oriented on the requirements of the stakeholders towards the organisation and its identified process. Moreover, measures are aligned on necessary knowledge for the knowledge-intensive process.

The two main assessment steps consist of first analysing for a specific process the relevant knowledge base (step 4) and then evaluating which KM measures have already been implemented or need to be implemented (step 5). For analysing the knowledge base of business processes there exist much more detailed approaches like modelling methodologies and tools in business process oriented KM (Heisig 2005) or more specific approaches as the knowledge audit (Liebowitz et al. 2000). Those methods can be used for a further analysis.

	Individual	Team	Organisation	Environment
Level of culture			No measures necessary	No measures necessary
Level of goals	No measures necessary	No measures necessary	Definition of networking strategy Further request research	No measures necessary
Level of action	Consistency in putting description of process into practice	Consistency in putting description of process into practice	Additions in description of process Proposition for structure of project report	No measures necessary
Level of knowledge	Identification of Lessons Learned Providing time after PhD to publish findings, etc.	Identification of Lessons Learned Enforced accompanying at the presentation of midterm results Continuity in meetings	Feedback on social competence through HD and PM	Intensification of international networking
Level of data	Making own publications available Consequent storage of project reports	Consequent storage of project reports	Knowledge portal Drawing up a list of available software	No measures necessary

Figure 10: Step 6 – Derivation of KM measures

Especially at universities, methods of KM are still not standard, although the characteristic of universities is very knowledge-intensive due to the creation of knowledge in research and its transfer in teaching and publications. The KM Assessment supports the university to become more knowledge-oriented in its structure and processes and enforces a better behaviour towards knowledge of the employees. The here proposed assessment method is able to be conducted in research institutions as well as in industry. Depending on the desired depth of content, the assessment can be applied within some workshops or over a longer period.

Although KM at WBW has quite a long history, a systematic assessment has revealed further possibilities for improvement. The implementation of identified measures at the WBW led to a more efficient behaviour towards knowledge and a better design of KM on the level of actions. Furthermore, knowledge transfer between individuals in projects or due to lessons learned has remarkably been improved.

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