

Knowledge Management

Course Unit 1: Foundations

LESEPROBE

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Overview of the course 41850
“Knowledge Management“

Course 41850:	Knowledge Management
Course Unit 1:	Foundations
Course Unit 2:	Content Management
Course Unit 3:	Community Management & Collaboration
Course Unit 4:	Competence Management
Course Unit 5:	Selected Technological Aspects

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1 Introduction

1.1 Knowledge as a competitive advantage

Give a man a fish, and you feed him for a day.

Teach a man to fish, and you feed him for a lifetime. (Chinese Proverb)

In the age of globalization, knowledge management (KM) is gaining importance and has become vital for business success. The creation, transfer and retention of knowledge play a key role for any business process. It is especially crucial for corporations and large organizations that any employee worldwide can access important knowledge. The future of KM is still a major task on the organizational horizon, especially for organizations surviving in a society focused on knowledge or those that aim at expanding their market leadership (Probst et al. 2012b). Accordingly, service providers – such as outsourcing companies and management consultancies – are also encouraged to incorporate KM in their services. Additionally, small and medium sized organizations benefit from KM – although their processes and concerns (such as information overload) might look different from those of larger organizations. Many services offered by these providers are not aimed at creating new knowledge, but at retaining the existing knowledge in organizations. KM can help to optimize information flows in organizations and secure the current state of organizational knowledge. As the follow example shows, the loss of knowledge can lead to severe organizational impacts (De Long 2004):

Example: Boeing knowledge loss throws assembly lines into chaos

After Boeing offered early retirement to 9,000 senior employees during a business downturn, an unexpected rush of new commercial airplane orders left the company critically short of skilled production workers. The knowledge lost from veteran employees combined with the inexperience of their replacements threw the firm's 737 and 747 assembly lines into chaos. Management had to shut down production for more than three weeks, forcing Boeing to take a \$1.6 billion charge against earnings and contributed to an eventual management shakeup.

While the Boeing case is an extreme case, many modern companies face challenges related to loss of knowledge due to high fluctuation rates: Nowadays, employees remain at one company only for 10,8 years on average (Rhein 2010). Hence, companies not documenting their knowledge for future generations (e.g. in the form of patents, system documentations, reports) run the risk of losing competitiveness in the market when employees leave (e.g. to competitors). In this context, KM not only helps preserving knowledge, it also provides available information ready to be retrieved. Easy and quick availability of information and knowledge is another competitive prerequisite for companies, since it fosters efficient and effective work. Additionally, KM enables knowledge transfer. Through knowledge transfer, employees and management have more possibilities to decide on their actions, which in turn also enhances corporate efficiency and effectiveness.

If we were to transfer the Chinese proverb stated above into organizations, it might look as follows:

- Give an employee a singular task-related piece of information, and he or she will accomplish a specific task.
- Give an employee the skills to search and obtain the information him- or herself, he or she will accomplish all related tasks in the future.

As shown in the second part of the proverb, if employees know how to obtain required information, the added value is more sustainable for everyone.

Organizations that encourage continuous improvement of their processes and urge their employees to critically question the status quo are called “learning organizations” (Senge 2006). Such organizations make availability and retrievability of relevant knowledge a priority and motivate employees to exchange knowledge that might possibly be relevant for others. Through this at the same time independent and mutual process, employees’ interaction (and, consequently, employees’ satisfaction) is hoped to be improved. Employees and, hence, their knowledge retain within the organization. The challenge of KM, generally spoken, lies in the correct development and implementation of information technology (IT) as well as in organizational KM tools and methods, which all merge into one overarching and well-aligned KM system.

However, only seldom, the implementation of a holistic knowledge management system (KMS) is successful from the beginning, since such a system may overwhelm the users. There are many reports of KM failures due to the technical KM systems not being adopted by the employees. In addition, employees and management are often skeptical of incorporating KM into daily practice, since they fear presenting their entire knowledge could make them substitutable. Therefore, the ideal implementation of KM typically starts off in small steps, for example, by looking at different knowledge processes like knowledge acquisition, knowledge distribution, and knowledge use (Probst et al. 2012b). Furthermore, adequate communication is crucial to make KM processes and goals transparent to all employees.

1.2 Learning objectives of the course unit

The objective of this course unit is to provide an introduction into the topic of KM as well as into the key factors contributing to organizational KM success. Relevant definitions and the action fields of KM are introduced. The concept of KM as a competitive advantage is illustrated and an explanation is given as to why it is so difficult to generate and retain knowledge.

1.3 Structure of the course unit

Chapter 2 provides the basic definitions of **knowledge, information, information object, and knowledge management**. Next, the three layers of a KM architecture **strategy, processes, and systems** are introduced. Afterwards, the four KM action fields are explained: **content, collaboration, competence, and culture**, whereas

the fields content, collaboration and competence are also focus subjects of the subsequent course units of this module. The chapter closes with an exemplary, holistic KM architecture incorporating all the components introduced in Chapter 2.

Chapter 3 discusses basic KM processes, KM strategy, and KM success. Firstly, **business** and **KM processes** are contrasted. Then, KM strategy is depicted by illustrating typical **goals**, **critical success factors (CSFs)**, and **key performance indicators (KPIs)**. Additionally, a definition for **KM success** as well as frameworks and models for assessing KM success are provided.

In Chapter 4, the roles of culture and organization supporting successful KM are examined. **Culture**, various **values** and **measures** contributing to an organizational culture which embraces KM are discussed. Eventually, an **organizational model** for supporting KM is presented.

Chapter	Content	Recommended literature
2. Definitions and conceptual distinctions	<ul style="list-style-type: none"> • Definitions of knowledge, information, information object, and KM • KM layers according to the business engineering model: strategy, process, and systems • KM action fields: content, collaboration, competence, and culture • Architecture of KM systems 	Jennex 2007; Laudon et al. 2012; Probst et al. 2006; Riempp 2004; Smolnik 2006
3. KM strategy and processes	<ul style="list-style-type: none"> • Overview of processes, divided into business processes and KM processes • KM strategy, including goals, CSFs, and KPIs • Definition of KM success, introduction of respective frameworks and models 	Jennex & Olfman 2005; Jennex et al. 2012; North 2011; Porter 1991; Probst et al. 2006; Riempp 2004
4. Culture and organization	<ul style="list-style-type: none"> • Values and measures for KM • An organizational model for KM 	Davenport & Prusak 2000; Probst et al. 2012; Riempp 2004

Tab. 1: Overview of contents

2 Definitions and conceptual distinctions

In this chapter, the basic definitions for knowledge, information, information object, and knowledge management (KM) are given. These are used to introduce the business engineering model and its corresponding layers consisting of strategy, processes, and systems.

2.1 Basic definitions

2.1.1 Data

(...)

2.1.2 Information and information object

(...)

2.1.3 Knowledge

Do we know what we know? Surely, we do not always know what we know. In reality, knowledge is the result of cognition. Knowledge is never static. It can be very volatile, can turn obsolescent, lose its substance, or get irrevocably lost. There is a cycle of knowledge acquisition and loss – experts assume that each year, approximately five percent of worldwide knowledge is lost (De Long 2004). This is especially concerning since high-ranked managers recently agreed that “knowledge is the only meaningful economic resource” (Drucker 1995) and has to be gathered, saved, and protected. Nonetheless, using knowledge is of utmost importance since it is the only resource multiplying through use (Probst et al. 2012b).

Since there is no established or commonly agreed definition of knowledge, we first need to understand the nature of knowledge. Three basic characteristics of knowledge can be differentiated. Knowledge is **subjective**, i.e. tied to a specific person. Accordingly, the knowledge of one person is for any other person a mere collection of information (Krogh & Roos 1996). To be more precise, knowledge originates always from the conscious mind and the cognitive processes of an individual, which in turn reflect **mental models** of the observed reality (Smolnik 2006). Riempp (2004) explains mental models as dense networks of elements (“nodes”) and links between elements (“associations”) that structure and reflect an individual’s sensory experiences. In this context, two complementary, adaptive cognitive processes can be differentiated (Smolnik 2006, after Pulaski 1975; Glasersfeld 1997; Riempp 2004). During the process of **assimilation**, information is gathered and integrated into existing knowledge. By contrast, the **accommodation** process adapts existing knowledge to new insights and experiences.

Knowledge is **context-sensitive**, i.e. it never exists in isolation, but is always embedded into a specific context and cannot without further ado be transferred to a new context (Laudon et al. 2010). In this regard, context refers to “any information that can be used to characterize the situation of an entity. An entity is a person, place, or object that is considered relevant to the interaction between a user and an

application, including the user and applications themselves” (Dey & Abowd 1999, p. 3). While various classifications of context do exist, most authors distinguish between five core categories: individual characteristics, domain/target/task characteristics, physical factors (including used technology, environment, location), interpersonal factors, organizational factors, societal factors (e.g. Klein et al. 2012; Venkatesh et al. 2016)

Finally, knowledge is also **action-related**, i.e. it has to be *actively constructed* by a learning individual (Alavi & Leidner 2001), e.g. by communication, experience gain, action, recognition, reflection, and thinking (Smolnik 2006). Accordingly, a person has to know, for example, not only *how* a specific procedure looks like, but also *when* to apply it. The activities related to the knowledge gaining process build on existing experiences and intrinsic motivations (Smolnik 2006). Only when an individual experiences a moment of cognizance as a result of such activities, knowledge will be constructed (Schön 1987). However, although such activities may require some effort, there is no guarantee that they will eventually lead to new knowledge (De Bono 1975).

Beyond these three characteristics, it should also be noticed that knowledge is not static, but is object to constant construction and reconstruction (Smolnik 2006). With these considerations in mind, we derive our definition of knowledge as follows:

Knowledge is the cognition as well as the capacity for action and decision-making, which is stored in mental models of human beings and recalled from these. It includes theoretical cognitions as well as practical guidelines and instructions. Knowledge is bound to human beings; outside of them only results of explication attempts exist (information objects) (Riempp 2004). Knowledge is obtained through an individual process in a specific context and manifests in actions (Smolnik 2006).

An individual can consciously only access a part of her or his mental models. These conscious parts of the mental models are also called **explicit (exogenous)** knowledge, the unconscious parts **tacit (endogenous)** knowledge (Riempp 2004). Since explicit knowledge (e.g. actively learned contents of a curriculum such as the contents of this course unit, codified knowledge as documented in books or formulas) is accessible at any time, it can be communicated and documented (Nonaka 1994; Polanyi 1962). In organizations, exogenous knowledge is often reflected in documents, repositories, organizational processes, norms, practices, and routines (Jennex 2007). **Tacit knowledge** (e.g. knowledge about specific physical skills such as breathing or swimming, knowledge about various soft skills such as how to be empathic), the unconscious parts of a mental model, cannot easily be communicated. However, different explication mechanisms exist that help communicating (parts of) the tacit knowledge.

(...)

2.1.4 Knowledge management

Knowledge management (KM) “does not mean managing all that is known” (Quintas et al. 1997), but refers to managing the knowledge available within individuals, groups, and organizations. KM as a concept gained the attention of researchers and managers in the early 1990s and led to a large number of publications as well as corporate projects and structural changes (Riempp 2004). Tapscott (1996) even states that “the new economy is a knowledge economy” (p. 44). KM is not only relevant to IS research, but also to organization and management research, cognitive psychology, sociology, and education.

In the context of IS and management research, knowledge is often regarded a production factor (Probst et al. 2006a; North 2011), since it can lead to a coherence of the market capitalization and capital asset ratio, especially for knowledge-based firms. This effect implies a high appreciation of intangible assets which are strongly knowledge-based and part of an organization’s intellectual capital (Sveiby 1998). The knowledge-based theory of the firm, first introduced by Grant (1996), assumes for-profit companies to be knowledge-processing organizations. To achieve the aim of value creation, organizations should consider themselves as institutions for knowledge exchange. This approach also prevents organizations from being exploited by other parties.

Riempp (2004) sums up the following KM characteristics:

- KM is a systematic approach to reach organizational goals such as an increase in profits, cost reduction, or market share growth by optimizing knowledge use
- Individuals in organizations locate and capture knowledge, promote its exchange and distribution, and develop required content
- Activities corresponding with KM are explicitly or implicitly part of a KM strategy, implemented by KM processes and systems (see Section 2.2)
- The primary fields of action for KM are content, collaboration, competence, and culture (see Section 2.3)

It is important to see the distinction between information and knowledge as the latter goes much further – it allows for predictions and serves as a basis for decision-making whereas information just displays a current or past status (Bohn 1993).

To briefly condense the different aspects of KM, we provide the following definition:

Knowledge management (KM) is a systematic approach to achieve organizational goals through optimizing the utilization of knowledge (Riempp 2004).

It encompasses the systematic use of organizational instruments as well as information and communication technologies to create knowledge, make knowledge available, and use knowledge in order to reach well-defined process and organizational goals (Smolnik 2006). As such, knowledge management is an organizational support function.

2.2 Layers according to the business engineering model

(...)

2.3 Action fields: the four Cs

Riemp (2004) introduces four main action fields that are to be considered when designing and implementing KMS: content, collaboration, competence, and culture. These action fields structure the recurring activities of the different KM processes.

When knowledge bearers make their knowledge explicit, they generate **content** in the form of information objects, such as project reports, websites, or podcasts. Further, in order to reach common organizational goals, employees collaborate in physical or virtual rooms. Existing content and employees' **competences** form the base for such a **collaboration**. As result of the collaboration, both new content and new **competences** could be generated. Thus, content, collaboration, and competence have a reciprocal relationship with each other. These three action fields are strongly influenced by the organizational culture, for example through self-conceptions of employees or management principles.

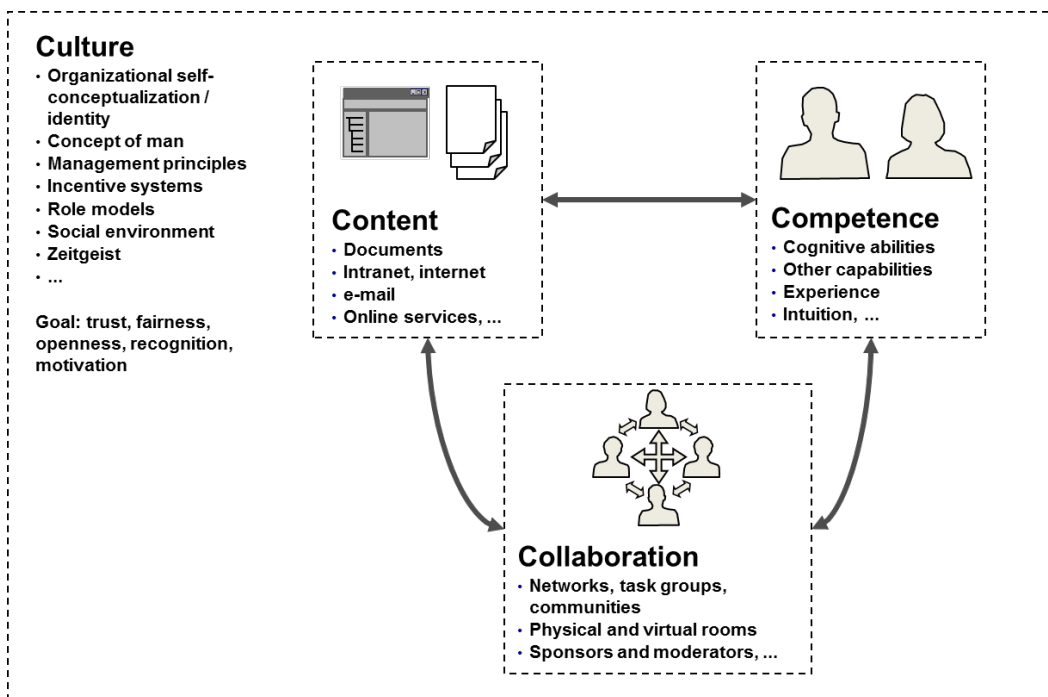


Fig. 3: The four KM action fields (based on Riemp 2004)

In the following, we give a brief overview over the different action fields. They will be further elaborated on in the subsequent course units.

Content

Content contains information and the associated context, is stored in information objects, and directly readable by human beings. The application of KM instruments can enrich the ability to represent content and generate context by supporting a variety of explication mechanisms with effective multi-media tools. Information is preserved, transported, and made available through easily accessible information

bases and consistent terminologies. Effective navigation, search and representation abilities facilitate the identification, recognition of context, and decoding of information by the recipient. Efficient content management can be a valuable accelerator for the improvement of product quality and cost reductions.

Course unit 2 is dedicated to content management, relevant roles for content management, and content management systems.

Collaboration

A community is an informal or semi-formal structure for collaboration that supplements the formalized organizational structures and processes. KM catalyzes the knowledge transfer in and between communities by creating a comfortable environment for getting to know each other and working together. Physical and virtual places as well as different channels for communication represent this environment.

Course unit 3 is dedicated to collaboration management, relevant roles for collaboration, and collaboration systems.

Competence

Competence incorporates all cognitive abilities and skills of a person as well as personal action and decision-making capacities. Therefore, it represents the accumulated knowledge of a person and is significantly shaped by experience. KM can enhance competencies by supporting learning processes and finding competencies by facilitating the efficient identification of suitable partners for knowledge exchange. Competencies can either refer to an individual, a group (collective competence), or an organization (core competencies of the firm (Prahalad & Hamel 1990)).

Course unit 4 is dedicated to competence management, relevant roles for competence management, and competence management systems.

Culture

An organizational culture that promotes openness, fairness, and trust encourages employees to exchange their knowledge. KM can contribute to a beneficial organizational culture, e.g., through incentive systems created for knowledge exchange or through an extensive offer of employee development measures. The concepts and importance of culture will be elaborated on in Section 4 of this course unit.

2.4 Architecture

In order to compose the KM strategy, processes, systems, and action fields previously introduced, Riempp (2004) proposes an architecture for an integrated KMS, which we briefly outline in the following.

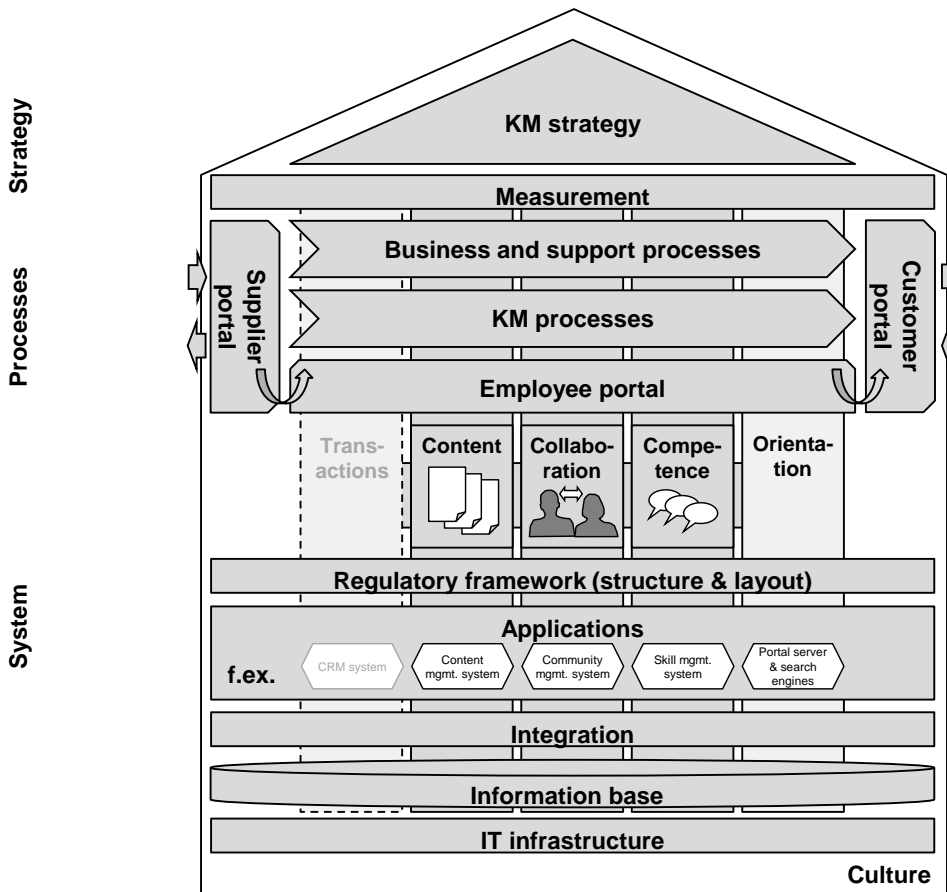


Fig. 4: Overview of an architecture for integrated KMS (Riemp 2004, p. 126)

(...)

From a KM perspective, the integrated KMS architecture is divided into four main pillars. The content pillar encompasses all functions required for the management of digital information objects and their context. The handling of competence profiles as well as functions to develop these can be found in the competence pillar. In the collaboration pillar, individuals meet in virtual and/or physical rooms to acknowledge, exchange, develop and use their knowledge for the fulfillment of tasks. The fourth pillar containing orientation functions such as search, navigation, and administration is relevant for all other pillars. Functions supporting the business and support processes, such as recording of entries, payments, orders, or order confirmations are displayed in the transactions pillar. Since such functionalities are not part of KM, they are shown in light grey as seen in Fig. 4.