Knowledge management II

1. **What is KM: Knowledge management** (**KM**) is the process of capturing, developing, sharing, and effectively using organisational knowledge. It refers to a multi-disciplined approach to achieving organisational objectives by making the best use of knowledge.

An established discipline since 1991 (see Nonaka 1991), KM includes courses taught in the fields of business administration, information systems, management, and library and information sciences (Alavi & Leidner 1999). More recently, other fields have started contributing to KM research; these include information and media, computer science, public health, and public policy. Columbia University and Kent State University offer dedicated Master of Science degrees in Knowledge Management.

Many large companies, public institutions and non-profit organizations have resources dedicated to internal KM efforts, often as a part of their business strategy, information technology, or human resource management departments. Several consulting companies provide strategy and advice regarding KM to these organizations.

Knowledge management efforts typically focus on organisational objectives such as improved performance, competitive advantage, innovation, the sharing of lessons learned, integration and continuous improvement of the organisation.[9] KM efforts overlap with organisational learning and may be distinguished from that by a greater focus on the management of knowledge as a strategic asset and a focus on encouraging the sharing of knowledge. It is an enabler of organisational learning.

History

Knowledge management efforts have a long history, to include on-the-job discussions, formal apprenticeship, discussion forums, corporate libraries, professional training and mentoring programs. With increased use of computers in the second half of the 20th century, specific adaptations of technologies such as knowledge bases, expert systems, knowledge repositories, group decision support systems, intranets, and computer-supported cooperative work have been introduced to further enhance such efforts.

In 1999, the term personal knowledge management was introduced; it refers to the management of knowledge at the individual level.

In the enterprise, early collections of case studies recognized the importance of knowledge management dimensions of strategy, process, and measurement. Key lessons learned include people and the cultural norms which influence their behaviors are the most critical resources for successful knowledge creation, dissemination, and application; cognitive, social, and organizational learning processes are essential to the success of a knowledge management strategy; and measurement, benchmarking, and incentives are essential to accelerate the learning process and to drive cultural change. In short, knowledge management programs can yield impressive benefits to individuals and organizations if they are purposeful, concrete, and action-oriented.

Research

KM emerged as a scientific discipline in the earlier 1990s. It was initially supported solely by practitioners, when Skandia hired Leif Edvinsson of Sweden as the world's first Chief Knowledge Officer (CKO). Hubert Saint-Onge (formerly of CIBC, Canada), started investigating KM long before that. The objective of CKOs is to manage and maximize the intangible assets of their organisations. Gradually, CKOs became interested in practical and theoretical aspects of KM, and the new research field was formed. Discussion of the KM idea has been taken up by academics, such as Ikujiro Nonaka (Hitotsubashi University), Hirotaka Takeuchi (Hitotsubashi University), Thomas H. Davenport (Babson College) and Baruch Lev (New York University). In 2001, Thomas A. Stewart, former editor at *Fortune* magazine and subsequently the editor of *Harvard Business Review*, published a cover story highlighting the importance of intellectual capital in organisations. Since its establishment, the KM discipline has been gradually moving towards academic maturity. First, there is a trend toward higher cooperation among academics; particularly, there has been a drop in single-authored publications. Second, the role of practitioners has changed. Their contribution to academic research has been dramatically declining from 30% of overall contributions up to 2002, to only 10% by 2009 (Serenko et al. 2010).

A broad range of thoughts on the KM discipline exist; approaches vary by author and school. As the discipline matures, academic debates have increased regarding both the theory and practice of KM, to include the following perspectives:

- **Techno-centric** with a focus on technology, ideally those that enhance knowledge sharing and creation
- **Organisational** with a focus on how an organisation can be designed to facilitate knowledge processes best.

- **Ecological** with a focus on the interaction of people, identity, knowledge, and environmental factors as a complex adaptive system akin to a natural ecosystem.

Regardless of the school of thought, core components of KM include people, processes, technology (or) culture, structure, technology, depending on the specific perspective (Spender & Scherer 2007). Different KM schools of thought include lenses through which KM can be viewed and explained, to include:

- community of practice
- social network analysis
- intellectual capital (Bontis & Choo 2002)
- information theory (McInerney 2002)
- complexity science
- constructivism(Nanjappa & Grant 2003)

The practical relevance of academic research in KM has been questioned (Ferguson 2005) with action research suggested as having more relevance (Andriessen 2004) and the need to translate the findings presented in academic journals to a practice (Booker, Bontis & Serenko 2008).

Dimensions

Different frameworks for distinguishing between different 'types of' knowledge exist. One proposed framework for categorizing the dimensions of knowledge distinguishes between tacit knowledge and explicit knowledge. Tacit knowledge represents internalized knowledge that an individual may not be consciously aware of, such as how he or she accomplishes particular tasks. At the opposite end of the spectrum, explicit knowledge represents knowledge that the individual holds consciously in mental focus, in a form that can easily be communicated to others. (Alavi & Leidner 2001). Similarly, Hayes and Walsham (2003) describe content and relational perspectives of knowledge and knowledge management as two fundamentally different epistemological perspectives. The content perspective suggest that knowledge is easily stored because it may be codified, while the relational perspective recognizes the contextual and relational aspects of knowledge which can make knowledge difficult to share outside of the specific location where the knowledge is developed.

The Knowledge Spiral as described by Nonaka & Takeuchi.

Early research suggested that a successful KM effort needs to convert internalized tacit knowledge into explicit knowledge to share it, and the same effort must permit individuals to internalize and make personally meaningful any codified knowledge retrieved from the KM effort. Subsequent research into KM suggested that a distinction between tacit knowledge and explicit knowledge represented an oversimplification and that the notion of explicit knowledge is self-contradictory. Specifically, for knowledge to be made explicit, it must be translated into information (i.e., symbols outside of our heads) (Serenko & Bontis 2004) Later on, Ikujiro Nonaka proposed a model (SECI for Socialization, Externalization, Combination, Internalization) which considers a spiraling knowledge process interaction between explicit knowledge and tacit knowledge (Nonaka & Takeuchi 1995). In this model, knowledge follows a cycle in which implicit knowledge is 'extracted' to become explicit knowledge, and explicit knowledge is 're-internalized' into implicit knowledge. More recently, together with Georg von Krogh and Sven Voelpel, Nonaka returned to his earlier work in an attempt to move the debate about knowledge conversion forwards (Nonaka, von Krogh & Voelpel 2006); (Nonaka, von Krogh & 2009).

A second proposed framework for categorizing the dimensions of knowledge distinguishes between embedded knowledge of a system outside of a human individual (e.g., an information system may have knowledge embedded into its design) and embodied knowledge representing a learned capability of a human body’s nervous and endocrine systems (Sensky 2002).

A third proposed framework for categorizing the dimensions of knowledge distinguishes between the exploratory creation of "new knowledge" (i.e., innovation) vs. the transfer or exploitation of "established knowledge" within a group, organisation, or community. Collaborative environments such as communities of practice or the use of social computing tools can be used for both knowledge creation and transfer.

Strategies

Knowledge may be accessed at three stages: before, during, or after KM-related activities. Organisations have tried knowledge capture incentives, including making content submission mandatory and incorporating rewards into performance measurement plans. Considerable controversy exists over whether incentives work or not in this field and no consensus has emerged.

One strategy to KM involves actively managing knowledge (push strategy). In such an instance, individuals strive to explicitly encode their knowledge into a shared knowledge repository, such as a database, as well as retrieving knowledge they need that other individuals have provided to the repository. This is commonly known as the Codification approach to KM.

Another strategy to KM involves individuals making knowledge requests of experts associated with a particular subject on an ad hoc basis (pull strategy) In such an instance, expert individual(s) can provide their insights to the particular person or people needing this (Snowden 2002). This is commonly known as the Personalisation approach to KM.

Hansen et al. propose a simple framework, distinguishing two opposing KM strategies: codification and personalization. Codification focuses on collecting and storing codified knowledge in previously designed electronic databases to make it accessible to the organisation. Codification can therefore refer to both tacit and explicit knowledge In contrast, th.e personalization strategy aims at encouraging individuals to share their knowledge directly. Information technology plays a less important role, as it is only supposed to facilitate communication and knowledge sharing among members of an organisation.

Other knowledge management strategies and instruments for companies include:

- Rewards (as a means of motivating for knowledge sharing)
- Storytelling (as a means of transferring tacit knowledge)
- Cross-project learning
- After action reviews
- Knowledge mapping (a map of knowledge repositories within a company accessible by all)
- Communities of practice
- Expert directories (to enable knowledge seeker to reach to the experts)
- Best practice transfer
- Knowledge fairs
- Competence management (systematic evaluation and planning of competences of individual organisation members)
- Proximity & architecture (the physical situation of employees can be either conducive or obstructive to knowledge sharing)
- Master-apprentice relationship
- Collaborative technologies (groupware, etc.)
- Knowledge repositories (databases, bookmarking engines, etc.)

- Measuring and reporting intellectual capital (a way of making explicit knowledge for companies)
- Knowledge brokers (some organisational members take on responsibility for a specific "field" and act as first reference on whom to talk about a specific subject)
- Social software (wikis, social bookmarking, blogs, etc.)
- Inter-project knowledge transfer

Motivations

There are a number of claims as to the motivation leading organisations to undertake a KM effort. Typical considerations driving a KM effort include:

- Making available increased knowledge content in the development and provision of products and services
- Achieving shorter new product development cycles
- Facilitating and managing innovation and organisational learning
- Leveraging the expertise of people across the organisation
- Increasing network connectivity between internal and external individuals
- Managing business environments and allowing employees to obtain relevant insights and ideas appropriate to their work
- Solving intractable or wicked problems
- Managing intellectual capital and intellectual assets in the workforce (such as the expertise and know-how possessed by key individuals)

Debate exists whether KM is more than a passing fad, though increasing amount of research in this field may help to answer this question, as well as create consensus on what elements of KM help determine the success or failure of such efforts (Wilson 2002). Knowledge sharing remains a challenging issue for knowledge management, while there is no clear agreement barriers may include time issues for knowledge works, the level of trust, lack of effective support technologies and culture (Jennex 2008).

KM Technologies

Knowledge Management (KM) technology can be divided into the following general categories:

- Groupware
- Workflow
- Content/Document Management

- Enterprise Portals
- eLearning
- Scheduling and planning
- Telepresence

Groupware refers to technologies that facilitate collaboration and sharing of organizational information. One of the earliest very successful products in this category was Lotus Notes. Notes provided tools for threaded discussions, sharing of documents, organization wide uniform email, etc.

Workflow tools allow the representation of processes associated with the creation, use, and maintenance of organizational knowledge. For example the process to create and utilize forms and documents within an organization. For example, a workflow system can do things such as send notifications to appropriate supervisors when a new document has been produced and is waiting their approval.

Content/Document Management systems are systems designed to automate the process of creating web content and/or documents within an organization. The various roles required such as editors, graphic designers, writers, and producers can be explicitly modeled along with the various tasks in the process and validation criteria for moving from one step to another. All this information can be used to automate and control the process. Commercial vendors of these tools started to start either as tools to primarily support documents (e.g., Documentum) or as tools designed to support web content (e.g., Interwoven) but as the Internet grew these functions merged and most vendors now perform both functions, management of web content and of documents. As Internet standards became adopted more and more within most organization Intranets and Extranets the distinction between the two essentially went away.

Enterprise Portals are web sites that aggregate information across the entire organization or for groups within the organization such as project teams.

eLearning technology enables organizations to create customized training and education software. This can include lesson plans, monitoring progress against learning goals, online classes, etc. eLearning technology enables organizations to significantly reduce the cost of training and educating their members. As with most KM technology in the business world this was most useful for companies that employ knowledge workers; highly trained staff with areas of deep expertise such as the staff of a consulting firm. Such firms spend a significant amount on the

continuing education of their employees and even have their own internal full-time schools and internal education staff.

Scheduling and planning tools automate the creation and maintenance of an organization's schedule: scheduling meetings,notifying people of a meeting, etc. An example of a well known scheduling tool is Microsoft Outlook. The planning aspect can integrate with project management tools such as Microsoft Project. Some of the earliest successful uses of KM technology in the business world were the development of these types of tools, for example online versions of corporate "yellow pages" with listing of contact info and relevant knowledge and work history.[23]

Telepresence technology enables individuals to have virtual meetings rather than having to be in the same place. Videoconferencing is the most obvious example.

These categories are neither rigidly defined nor exhaustive. Workflow for example is a significant aspect of a content or document management system and most content and document management systems have tools for developing enterprise portals.

One of the most important trends in KM technology was the adoption of Internet standards. Original KM technology products such as Lotus Notes defined their own proprietary formats for email, documents, forms, etc. The explosive growth of the Internet drove most vendors to abandon proprietary formats and adopt Internet formats such as HTML, HTTP, and XML. In addition, open source and freeware tools for the creation of blogs and wikis now enable capabilities that used to require expensive commercial tools to be available for little or no cost.

One of the most important ongoing developments in KM technology is adoption of tools that enable organizations to work at the semantic level. Many of these ls are being developed as part of the Semantic Web. For example the Stanford Protege Ontology Editor.