


Subject: Library and Information Science

Production of Courseware

 -Content for Post Graduate Courses

Paper No : 01 Knowledge Society

Module : 08 Knowledge Management



Development Team

Principal Investigator
&
Subject Coordinator

Dr. Jagdish Arora, Director
INFLIBNET Centre, Gandhinagar

Paper Coordinator

Prof K S Raghavan
Visiting Scientist, Centre for Knowledge Analytics
and Ontological Engineering (KAnOE), PES Institute

Content Writer

Dr Kavi Mahesh
Dean of Research, Professor of Computer Science and
Director, Centre for Knowledge Analytics and

Content Reviewer

Prof K S Raghavan
Visiting Scientist, Centre for Knowledge Analytics
and Ontological Engineering (KAnOE), PES

Knowledge Management

I. Objectives

To provide the student with an understanding of

- The Meaning of Knowledge Management
- Factors that have necessitated effective KM in enterprises; and
- The Processes and methods of KM.

II. Learning Outcome

On completion of this module, you should understand what knowledge management refers to; the factors that have necessitated knowledge management; what the different kinds of knowledge are and what we mean by enterprise knowledge. You should also know the steps in the knowledge management process.

III. Structure of the Module

1. What is Knowledge Management?
2. Factors Contributing to the Emergence of KM\
3. KM as a Discipline
4. Relevance of KM
 - 4.1 Knowledge Fragmentation
5. Where is KM Applicable?
6. KM in Practice
 - 6.1 Content- and collaboration-based KM
7. The KM Problem and Process
 - 7.1 KM Activities
8. References

1. What is Knowledge Management?

What does it mean to manage knowledge? Can knowledge indeed be managed? Is it just information that we manage in Knowledge Management (KM)? Isn't knowledge already being managed by people everywhere? Is KM, like AI, another attempt to replace human knowledge and skills by machines in running an organization? These are questions that arise in any discussion on KM. KM is essentially about knowledge transfer from one person to another within an organization. Members of an organization possess different kinds of knowledge. Broadly, knowledge within an enterprise can be classified into tacit and explicit knowledge. Michael Polanyi was probably the first one to categorize knowledge in this manner which was subsequently emphasized by Nonaka [1, 2]. The goal of KM is to facilitate effective transfer of the knowledge to others who have a need for the knowledge in carrying out their tasks and discharging their responsibilities in the organization. It is assumed that the person who receives the knowledge has the required capabilities to apply the knowledge for the overall benefit of the organization.

According to Wikipedia, Knowledge Management (KM) is the process of capturing, developing, sharing, and effectively using organizational knowledge.

“Knowledge management is the strategic management of people and knowledge representations along with associated content and information in an organization, using technology and processes, so as to optimize knowledge sharing and utilization, by transferring knowledge directly between people or indirectly through systems, to derive overall benefits to all aspects of the functioning of the organization” [3].

KM refers to a multi-disciplinary approach to achieving organizational objectives by making the best use of knowledge. KM focuses on processes such as acquiring, creating and sharing knowledge and the cultural and technical foundations that support them. KM aims to create and expand wealth and / or societal value by providing people with access to individual and organizational knowledge. The idea is that this knowledge, in turn, will lead to the creation of a open and dynamic reservoir of knowledge, skills and competencies to support innovation, decision-making and performance improvement. It is essentially a multi-disciplinary approach to promoting the goals and objectives of an organization by making optimal use of knowledge available within the organization. KM efforts typically focus on organizational objectives such as improved performance, competitive advantage, innovation, and continuous improvement of the organization through knowledge sharing. In this sense KM does overlap to a certain extent with

organizational learning, but the difference lies in the fact that KM practices consciously recognize organizational knowledge as a strategic asset to be captured, made accessible and put to effective use.

It is generally agreed that as a discipline KM came into being in the early 1990s. In the last two decades, the discipline has matured and has become a component of academic programmes of business schools, i-schools and as a specialization even in the more conventional LIS programmes. Academic programmes on KM generally include the following three different perspectives:

- Technology-centric perspective which focuses on technologies that support and enhance knowledge sharing and knowledge creation;
- Organizational perspective with a focus on how organizations need to be restructured and designed to facilitate knowledge sharing and knowledge processes
- Ecological perspective that focuses on the interaction among people and between people and knowledge

In implementing KM practices in an enterprise, all these three have to be factored in.

2. Factors Contributing to the Emergence of KM

Before looking at the dimensions and processes of KM, it is helpful to have a general idea of the factors that have necessitated conscious efforts for developing systems intended to manage knowledge in organizations. A wide range of factors have contributed to this. The increasing globalization of markets in an environment of sustained technological innovation coupled with major breakthroughs in information and communication technologies has completely redefined the foundations of the modern organization as an economic enterprise. The survival and growth of an organization in the present context, therefore, depends on the ability of the organization to take into consideration several factors in its planning, decision-making and problem-solving processes. Some of the important factors are:

- Increased competition;
- Volatile market;
- Geographically distributed operations;

- Heightened consumer awareness;
- Increasing workforce diversity;
- Stringent regulatory regimes.

These factors have driven, and in turn have been driven by, an increasing complexity of products, services and the processes that create value, resulting in profound changes in the structural and functional dimensions of the organizations. Another major factor is the very short shelf life of products and technologies. This is not all; globalization has also forced a reduction of asymmetries between market participants across and within countries, has eased technology adoption, enabled free flow of information across markets, eliminated or lowered artificial trade barriers and has led to initiation of a global process of rationalization of intellectual property laws. The consequence has been that the value proposition of most enterprises, independent of their geographic location or distribution, is today significantly impacted by the new paradigms that guide the global organization. The death of distance has had the effect of forcing all enterprises to adapt to the context defined by the new age organization, irrespective of whether it is a local enterprise or a global enterprise. The modern organization has indeed become a very complex entity requiring fundamental shifts in the mobilization, organization and transformation of resources employed in the production of goods and services. It is in this context that organizations have come to realize the importance of knowledge as a key driver in ensuring the success of an organization.

In the last few decades knowledge and effective KM have come to acquire a predominant position in determining the success of enterprises. It should not, therefore, come as a surprise that the present economy is widely termed as the knowledge economy, i.e. an economy in which knowledge is a major economic factor of production, growth and development. Organizations have come to identify knowledge as a major factor having the potential to influence and impact the relationship between the traditional factors of production in the process of value creation. This is especially so in large organizations in which there is significant spatial and temporal disconnects among the members of the workforce. The recognition of the role of knowledge in the production of goods and services and in value creation has led to a re-definition of the status of knowledge; knowledge especially in large corporations is increasingly being seen as a positional good rather than as a public good. In the changed setting in which organizations have to function today, there is a need for knowledge infusion and knowledge-based decision-making across a wide range of organizational functions.

The recognition of the importance of knowledge has in turn led to according primacy to human resources within the organization as in any organization it is the employees who possess knowledge; knowledge resides in the minds of people.

3. KM as a Discipline

KM as a field of study in the social technology space is driven both by the practical needs of knowledge era organizations of the 21st Century and the growing interactions between pairs of related broad areas including cognitive sciences, information sciences, economics and management sciences. The figure 1 displays the position of KM among related subject-fields belonging to the four areas; clearly many of these fields are themselves at the intersection of two or more areas as shown. KM is of interest to a variety of researchers and practitioners from these backgrounds for several reasons:

- It has the potential to be well grounded in fundamental studies in well-developed areas such as epistemology, psychology, classification theory, etc.;
- It is constrained at the same time, by the practical realities of business organizations such as returns on investment, measurement of benefits and economic parameters such as quality and productivity;
- It poses challenges to mature information sciences by demanding highly flexible classification and retrieval mechanisms, intelligent technologies for automatic classification and summarization, and reliable architectures for the integration and ubiquitous delivery of a good mix of structured data, text and multimedia.
- It provides a new framework for devising innovative solutions to a range of management problems such as enterprise resource planning, personnel recruitment, training, allocation, performance assessment and compensation, using knowledge as a central focus rather than monetary performance as the only dimension onto which all other data is projected
- It takes a much more practical approach to the problems of automating the processing and application of knowledge (by allowing direct human–human interactions and dealing only with metadata) as compared to the unrealistic

and unfulfilled objectives of AI which sought to eliminate the role of humans and have machines represent and understand knowledge and human language.

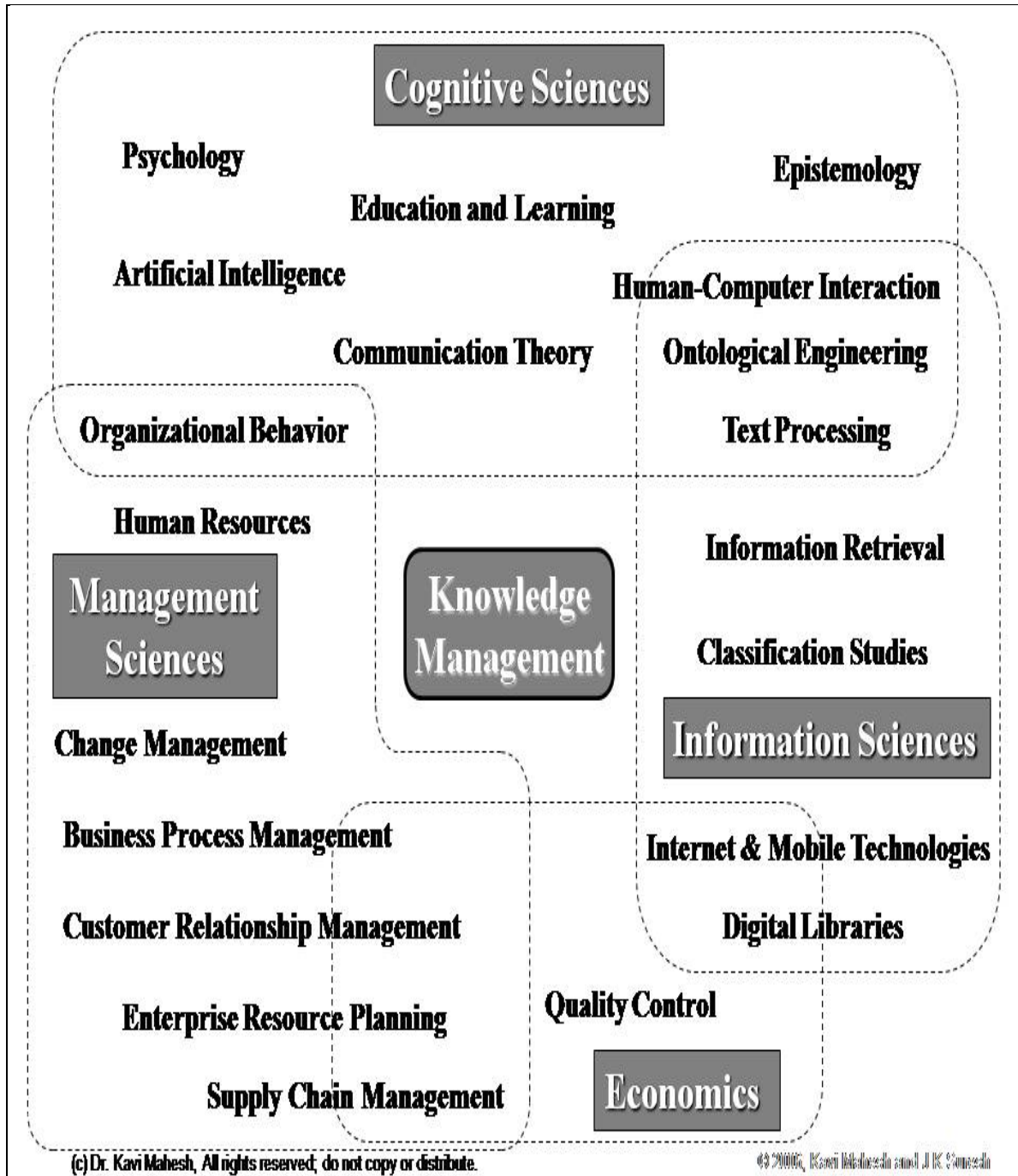


Fig.1: Inter-disciplinary Nature of KM

4. Relevance of KM

Looked at from the viewpoint of management of an enterprise, the important issue that emerges from the developments and changes outlined above is the challenge they pose for the creation of responsive structures to address the complexities in the demand and supply chains of value. What are the drivers of value and how can the various processes in the organization ensure enduring value creation on a sustainable basis? Organizations also need to identify and implement the measures aimed at value creation. These are substantial challenges in the face of disconnects created by factors such as employee throughput, work specialization, customer preferences and heterogeneity, the pace of technological change and diversity in the behavioral and temporal dimensions of a distributed organization. These needs to be addressed both at the strategic and operational levels:

At the strategic level preserving the competitive edge through adequate processes, quality, skills and learning requires constant attention and top management mindshare. At the operational level, major challenges are instilling a culture of belonging and alignment with organizational goals, refining processes and systems for sharing knowledge seamlessly across spatial and temporal boundaries, and developing the ability to easily disband, regroup and develop human resources.

Knowledge, be it related to products, processes or markets, has become a central theme affecting the delivery of value at either level. It has also resulted in the emergence of systems and methods for speedy, effective and efficient application of knowledge in the production of goods and services through organizational processes. In the process, organizational structures have undergone significant changes to accommodate the new role of knowledge. Also, social and cognitive relationships within the organization are seen as being critical in determining the dynamics of value creation, leading to a focus on capturing and management of cognitive abilities of individual employees to cater to the needs of the organization. In the process, organizational hierarchies have become flatter over time with a view to minimize the social and cognitive distances between the employees. However, all organizations have multiple layers and there will be a distance between the different layers. Broadly organizations belong to one of the following three types:

- There are organizations having only a few knowledge intensive functions allowing the creation of a unit to which all such functions are assigned. In such a situation the social and cognitive distances between people will be very less, at least within the unit; however, the cognitive distance between

employees of different units could be substantial. The factory model could be easily deployed.

- A second type is characterized by flat hierarchies where cognitive and social distances tend to be very small across most parts of the organization, e.g., consulting firms, legal firms, etc. Since knowledge itself constitutes a significant part of the value delivered by such organizations, deploying factory models becomes very difficult.
- A third type of organization is characterized by small distances between the middle and top layers and significant distances between the middle and the lower more populous levels as also between the employees at lower levels. These organizations are normally heavily dependent on technology and innovation (e.g. organizations in which the work force is geographically scattered, or those that provide a wide range of customized technology and business services; most Indian software companies such as Infosys, TCS, etc belong to this category). The increased cognitive distances poses difficult challenges in effectively translating the value goals of the top management into appropriate organizational strategy and work flow, or in transmitting the concerns of the field workers to the top management. Enhancing workforce competency, strengthening internal communication and maintaining employee motivation are critical.
- In the last two decades organizations have responded to this challenge through various mechanisms that support knowledge exchange. A central feature of these efforts is the creation of an environment that stokes the imagination, creativity and the sense of belonging and purpose of the individual through the development of an organizational culture that acknowledges and promotes knowledge-sharing practices as the primary enablers for value creation. There is emphasis on networking and communication among employees, adoption of rigorous and standardized processes, progressive human resource (HR) practices, collaborative problem-solving and the like. All these measures have collectively come to be labeled as knowledge management (KM) practices.

4.1 Knowledge Fragmentation

Another factor that makes KM relevant is knowledge fragmentation which is also a characteristic of large organizations. Let us remember that effective KM in an

organization is intended to leverage the collective knowledge of the organization. This means that KM should translate into a mechanism for design, development and deployment of methodologies, processes and infrastructure for encouraging and motivating employees to share and exchange knowledge and integrating this into the production process. This is best illustrated by considering a few typical situations that an employee in the field working on a specific problem might encounter:

- Someone must have done this before!
- I don't want to start from scratch!
- When he moved mid-way, everything went out of the door with him!
- They've done this better!

These issues bring to the fore the need for:

- Utilizing current expertise;
- Leveraging learning from previous experience;
- Enabling rapid scaling up;
- Mitigating the risk of attrition;
- Sharing best practices.

In real life situations, many more problems, specific to every function in the organization, are encountered and solved on a regular and perhaps routine basis by employees. This is normally done through their informal networks and contacts. However, factors such as growth, additional complexities of the product or service mix, employee attrition, geographic distribution (of production or markets) and competition can quickly disrupt these networks and make them dysfunctional, or compartmentalize them with little scope for aiding the resolution of similar problems elsewhere in the organization. In such situations, the knowledge gained from experience is fragmented and, in the absence of efforts to connect its production with its consumption, the continued reinvention of the wheel leads to a sub-optimality of value infusion in the organization. Also, since increased specialization creates a tendency for silos to develop, strong coordination is necessary between functions to ensure the continuity of value flow across them. Establishing channels for promoting knowledge exchange is therefore the first step towards bridging silos to develop a platform for optimizing organizational value.

Another form of fragmentation can result from the KM infrastructure itself. For example, improperly classified knowledge assets, unmanaged development,

maintenance and synchronization of different KM systems and enterprise workflow applications, overlapping KM initiatives, inappropriate KM processes and inadequate training, promotion and motivation for KM can result in the fragmentation of knowledge by reducing its availability to potential consumers. Thus knowledge fragmentation is an issue that not only makes KM necessary but also impacts its practice in significant ways.

5. Where is KM Applicable?

Notwithstanding all that has been said in the foregoing paragraphs, it should not be assumed that organized, systematic and formal KM efforts are mandatory in every organization. There are certain types of organizations in which KM efforts are likely to provide significant benefits and some others where they may not. It is also possible that even within an organization certain functions may benefit more from KM than others. So we need to understand whether KM is required to be established across the entire organization or could be limited to a few segments of the organization. There are no easy answers to these questions. KM is likely to be highly applicable and useful in organizations where products and services are varied or ill defined. Some examples are:

- Consulting organizations;
- R & D establishments;
- New ventures;
- Large, global organizations;
- Organizations with multiple product or service lines in competitive markets.

In a consulting organization, for example, a generic approach to customer problems is tempered with the tacit and explicit knowledge of both individual consultants and the entire organization through KM to provide optimal solutions. Similarly, in global organizations, KM aids the exchange of knowledge across geographical and functional compartments to enable higher operational efficiency and better integration with markets. A formal KM setup, however, appears to be less relevant in situations where the value unlocked by KM is insignificant compared to that provided through other means, where the mix of products and services is well defined and fixed, and where the production processes that generate or update knowledge do not change or change over a long cycle time. Some examples are:

- Production through licensed technology for defined needs with low overall output demand (e.g. specialized services and products provided by sole vendors to aerospace programmes, or niche technology system development for a country's national defence systems). Such markets are characterized by high entry barriers and inelastic market boundaries;
- Manufacture with demand assurance (e.g. goods, services, infrastructure development and products for certain types of governmental and defence contracts);
- Monopolies and oligopolies with low factor variability (e.g. captive power plants at coal pit-heads or industries with long-term contracts with assured input availability and distribution of output);
- Enterprises operating under the protection of trade barriers, quotas and permits;
- Certain types of transactional businesses (e.g. small and medium retailers and banks with low growth plans);
- Industries where complexity is low;
- Small organizations.

However, these distinctions are not static, and the introduction of a few complexities in such organizations may lead to striking consequences from a KM standpoint. For example, consider a manufacturing company, which transforms itself into a real-time flexible organization. In the new organization, a time varying mix of customer orders for products can potentially be executed by the company with varying risks and rewards associated with accepting orders for a given productive capacity. In this situation, the processes of dynamic planning, scheduling, coordination and execution of orders performance would be governed at each step by knowledge-based decisions made by a larger number of people across the organization than before. This may create the need for KM to enable optimal throughput of value by addressing the newly created coupling between varying customer needs and the production process. Most organizations are somewhere in between the above two types and have different degrees of need for KM. The following are the primary objectives of introducing KM in an organization:

- Improving quality and competitive advantage;
- Increasing productivity and reducing costs;
- Improving efficiency of operations;
- Reducing overall risk for the organization and enhancing its long term stability and growth;
- Capturing knowledge to reduce the impact of member attrition;
- Building competency continuously;
- Promoting innovation and collective problem-solving;
- Ensuring better morale of members;
- Enabling new areas of operations for the organization through collaborative discovery of opportunities; and
- Growing the intellectual capital and brand value of the organization.

6. KM in Practice

KM in some form is generally practiced in every organization. Knowledge sharing in any organization usually takes place in two ways: Informal knowledge exchange by way of personal contacts and relationships between the employees and casual interactions among them. This is something that is natural to human beings, especially among co-workers in any organization. Informal knowledge sharing is also known as organic or natural knowledge exchange. However, informal knowledge sharing is dependent on the degree of voluntarism of individual employees and the nature of relationships they maintain with other employees. Large organizations with geographically scattered workforce cannot rely on such informal networks to be effective.

KM is essentially concerned with formal mechanisms and systems created in an organization to motivate and facilitate knowledge sharing. Formal KM systems do

not seek to replace informal knowledge-sharing practices prevalent in an organization. In fact one of the objectives of formal KM is to nurture informal knowledge exchanges taking place in the organization. Formal KM mechanisms are essential to make knowledge available to everyone in the organization every time they need it to carry out their organizational responsibilities effectively. Informal knowledge exchanges are important in any organization and should not be ignored or blocked while introducing formal KM practices. Rather, formal KM should enrich informal KM. It should legitimize what was being done unofficially and encourage further knowledge exchange.

6.1 Content- and collaboration-based KM

The original and time-tested means for transferring knowledge is directly from one member to another in a collaborative fashion involving synchronous communication. Such a transfer is interactive by its very nature and allows for employing a variety of mechanisms such as nonverbal signs and gestures, seeking and obtaining clarifications, reverse transfer for the listener to confirm that the transfer has been correct, etc., that make the transfer effective. For direct transfers through collaboration, the scope and role of KM, in addition to providing the necessary communication infrastructure, is to manage the metadata of who knows what in the form of an expertise directory that classifies what people know in a systematic way. However, while direct transfer is very effective, it is not quite scalable due to time constraints on experts, difficulties in synchronizing knowledge exchange, member attrition and widening geographical, cultural, linguistic and time-zone spreads in large organizations. Because of this, in practice, collaboration is often informal and less direct as in interactions through electronic mailing lists, on-line discussion threads, bulletin boards, chat rooms, weblogs, virtual meetings and communities of practice, some of which also use short pieces of content to aid the transfer of knowledge. Inventions of writing, paper and printing, further enriched by the introduction of computers, computer networks and their applications such as on-line storage and on-line communication have enabled indirect transfers of knowledge through content or written communication: books, papers, reports, e-mails, discussion forums, etc. In an indirect transfer, the communication can be asynchronous. The two parties may not know each other and may never meet.

Libraries are among the early content-based knowledge dissemination systems and can be considered as a traditional mechanism for scaling up the scope of indirect transfers. With the introduction of computers, a member can use computer systems to browse through or search online a repository of organizational knowledge or

obtain information about others' knowledge. Indirect transfer of knowledge through content employs embodiments in spoken or written language in addition to other graphical media (collectively referred to as content). However, the embodiments in this case are not generated dynamically at the time of transfer; rather, they are captured and stored by a knowledge management system. Moreover, they must necessarily be accompanied by sufficient metadata, background, contextual descriptions and constraints on applicability to support search and retrieval. This is essential in the absence of interactions that characterize direct transfers. The lack of human communication mechanisms makes additional attributes essential to enable efficient selection of knowledge assets that are both relevant and applicable to the context of a knowledge need in the organization. There are two basic requirements for indirect transfer:

- An agent to store and manage sufficiently rich metadata and make it available to needy members; the agent can take a variety of forms such as a publisher, a library or an information store such as a website, KM system or on-line discussion forum;
- A mechanism for identifying a piece of knowledge and matching it against a knowledge need. In an ideal situation, anyone who needs some knowledge is always in close proximity to a person who possesses that knowledge (not just physically but also in terms of organizational roles and their relationships). In reality, this is true only in small organizations. In large organizations, several factors prevent the organization from being structured in this way. For example, knowledge use may have to be geographically removed from the source due to conflicting needs such as proximity to customers. In such organizations it is insufficient to merely facilitate direct knowledge transfer by providing communication infrastructure; there is a greater need for formal KM system for bridging the gaps in locations, time zones, languages and cultures. In other words, KM in such environments must necessarily depend heavily on indirect transfer mechanisms.

7. The KM Problem and Process

Knowledge needs as a part of organizational processes such as understanding the market, answering customer's queries, designing a solution to a problem or planning an event. The KM problem is essentially one of matching the context of the present knowledge need to prior contexts of knowledge use or knowledge stored in systems to identify the ones most relevant in meeting the present

knowledge need. This is a non trivial problem in any large organization where a typical context of need matches a number of potential prior contexts (or appropriate generalizations and abstractions of such contexts). The organization has to put in place a set of systems, technology and tools, people, processes and strategies for capturing, storing and retrieving metadata about such prior contexts. However, the problem is often made easier by shared organizational cultures and processes, complementing the role of technology in well-managed organizations. An important sub-problem in performing the match efficiently is to extract a subset of the attributes – called knowledge attributes – of present and prior contexts so as to be able to efficiently find relevant and applicable matches. Matching only data attributes such as record structure, syntax, size and encoding and information attributes such as language, dialect, version, template and format, author's name, date, previous usage statistics, ISBN, classification numbers, etc may not produce relevant and applicable matches. Knowledge attributes describe the knowledge itself as well as its applicability in a context and include such attributes as the subject, themes, abstract, target audience and ontological mappings (e.g. in OWL), etc. These attributes enable better matching of contexts and more effective application of the knowledge by:

- Normalizing against differences in terminology, language and usage, culture and world views, etc.;
- Linking it with other assets in related areas or through other similarities in knowledge attributes (e.g. in terms of applicability);
- Taking the KM solution beyond the content of knowledge by representing attributes that indicate the applicability of the knowledge to specific contexts where it may be re-used.

This is best understood by a simple illustration; consider a knowledge need where one is trying to locate a document that might satisfy that need. It is unlikely that the need would be satisfied by the person being able to specify, or extract from the context, data attributes such as its format (e.g. HTML or PDF), or information attributes such as its URL address or the author's name. It is more likely that attributes such as the subject matter or an abstract will help in matching the need with the resource. The KM problem lies in being able to provide relevant and applicable matches using such knowledge attributes given a large organization with large volumes of captured content and a large number of experts.

The matching process is enabled by knowledge representation, which is essentially an embodiment of metadata about the knowledge, the knowledge itself, optionally, being embodied in structured or unstructured encodings. The role of knowledge representation in KM is to serve as the set of knowledge attributes necessary for efficiently finding relevant and applicable matches for the context of a knowledge need. When knowledge representations for the knowledge and knowledge expertise available in an organization are in place, KM could be seen as a way of performing actions on knowledge. Thematically, an action in KM involves an agent, a theme, a beneficiary and often one or more instruments (see Figure 2). The agent of an action in KM is a member or a group in the organization. The object of the action is always knowledge. For practical purposes, we can assume that a representation of the knowledge (either just metadata or content that embodies the knowledge) is the actual object of an action on knowledge. The action is one of creating, acquiring, capturing, embodying, classifying, reviewing, rating, ranking, searching, retrieving, sharing, publishing, transferring or re-using knowledge. KM actions often use instruments to assist the agent in acting on the theme. All the KM systems, databases, software products and tools are instruments for KM. The beneficiary of an individual KM action can be any member or group of members related to the action. KM is different from information management in the sense that the object of its actions is knowledge not information. It is much more significant for KM that even the actions, instruments and benefits of KM are very different from those of data or information management. The benefits resulting from operating on knowledge attributes are also different from the well-known benefits of information management. For example, KM benefits are less readily amenable to measurement, take longer to realize and tend to have a greater impact on the holistic attributes of an organization such as its brand value and overall ability to survive and grow over time.

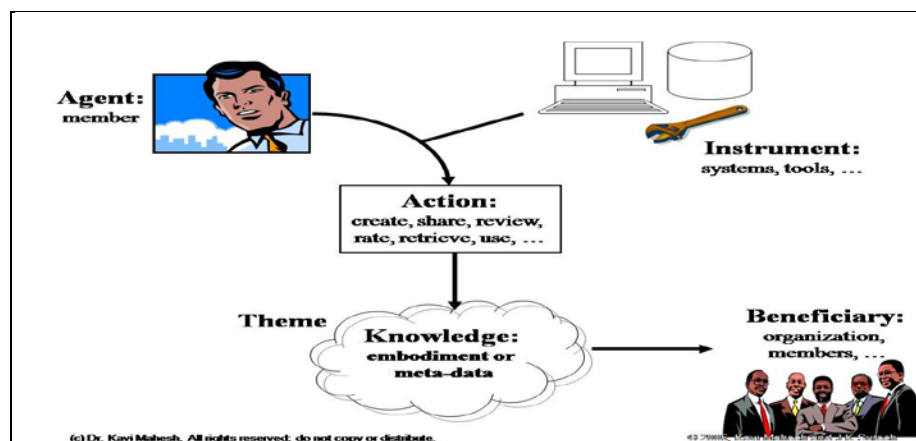


Fig.2: Thematic role diagram for action in knowledge management

7.1 KM Activities

There are five primary activities in KM followed by three secondary ones in an organization where it is fully implemented.

- **Represent knowledge:** The representation may include a classification into different types of knowledge, a template or schema for each type and various lists of values for metadata attributes among other things. The representation must be a standard at least within the organization to ensure proper sharing and communication;
- **Store knowledge:** Content and metadata that are generated following the representation scheme are stored in various repositories. Content typically includes documents and web pages but may also be threaded discussions, e-mail messages and other informal or unstructured pieces, text or multimedia. In some implementations, some of the data or content is also captured automatically by systems. Storing may involve classifying according to taxonomy, ontology or other classification scheme and indexing to support search, retrieval, navigation and browsing of what is stored. Every unit of knowledge that is stored is a knowledge asset with a unique identification and a well-defined boundary
- **Integrate knowledge:** Ideally a KM solution should synthesize related pieces of knowledge into a single composite asset on a particular topic. A typical KM solution today supports only minimal forms of knowledge integration through linking and cross referencing. KM solutions should also integrate the knowledge with business processes and information systems across the organization.
- **Deliver knowledge:** Knowledge should be delivered to users in several ways: through search and retrieval mechanisms, via browsing and navigational facilities, through subscription mechanisms for particular types of knowledge, through notification of updates or new additions, and through other forms of customization and personalization. Knowledge delivery may need special computing and communication technologies such as mirror sites, staging servers, and handheld and mobile technologies.
- **Facilitate collaboration:** A KM solution facilitates the sharing of knowledge that people have through collaboration. Infrastructure for collaboration generally includes such technologies as whiteboarding,

application sharing, collaborative authoring or online meeting apart from network and telecommunication infrastructure. Collaboration in large organizations is also facilitated by a directory of expertise

- **Manage quality:** Apart from the above primary activities, a KM solution must assess and manage the quality of knowledge that is shared and utilized the organization. Assessing quality may involve facilitating reviews and ratings, and computing and publishing scores and ranks. Quality measures indicate the perceived utility of a knowledge asset so that users can decide whether to invest their time and effort in using that particular asset.
- **Measure usage and benefits:** Investments made in KM must be justified by monitoring the usage of KM systems and processes and their impact on output parameters of the organization (such as productivity and product or service quality) to demonstrate the benefits of KM. This may be necessary to obtain additional funding for expansion of the KM programme and to motivate people to participate further in KM.
- **Nurture_KM:** A KM solution must also provide mechanisms to nurture and refine KM on a continuing basis. Motivating the members of the organization to contribute to further KM practices by way of incentives such as rewards and recognition plays a key role.

8. Summary

This module has explained the meaning of knowledge management and examined the need for and importance of KM in enterprises. The difference between tacit knowledge and explicit knowledge are explained. An idea of the inter-disciplinary nature of KM is given. The situations in which KM is applicable are highlighted and the steps in KM are mentioned. The key elements of a KM vision are highlighted.

8. References

- 1.** Polanyi, M. (1967). The tacit dimension. London: Routledge and Kegan Paul.
- 2.** Nonaka, I. and Takeuchi, H. (1995). The Knowledge-creating company: How Japanese companies create the dynamics of innovation. Oxford University Press.
- 3.** Suresh, J.K. and Kavi Mahesh (2006). Ten steps to maturity in Knowledge Management. London: Chandos Publishing