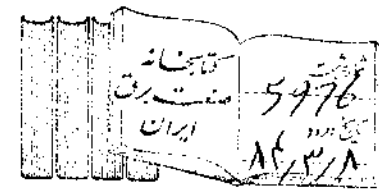


# KNOWLEDGE MANAGEMENT

4416 115



by  
*Pankaj Sharma*



Knowledge management



01BL0000005976

کتابخانه سازمان توانیر (صنعت برق)

**APH PUBLISHING CORPORATION**  
5, ANSARI ROAD, DARYA GANJ,  
NEW DELHI-110 002

## Introduction to Concepts of Knowledge Management

---

*A survey by the Cranfield School of Management finds that European companies spend 3.3% of their revenues on knowledge management (that is, on technologies and activities aimed at finding, collecting and sharing knowledge) and will be spending 5.5% in three years - more than EU companies spend on R&D.*

### Overview

Today knowledge drives the economy. Throughout the world, there is a drastic change in attitudes of both the academicians and the business community. Demands of competitive world have forced the commercial organisations to strive for the professionally managed end results. Today the top-line and the bottom-line both holds their respective relevance in the profitability models of the organisations. Gone are the mechanical scenarios when businesses were more dependent on the production model and held low relevance for the skill sets of the individuals. In terms of importance machines and mechanical processes always preceded the human skills.

Today an organisation, no matter whether it's an academic organisation or a commercial one has understood the potential of latent knowledge that often lies untapped within the non-mechanical resources of the organisation. More and more

organisations are shifting towards a knowledge driven system and is utilising the knowledge management processes to enhance their effectiveness and competitiveness.

The economy of the day is more service oriented. Even the traditional organisations, which were heavily dependent on the assembly lines, are shifting their focus towards service capabilities. Organisations of 21st century differentiate themselves by not what they can churn out from their machines but how well they can help you in experiencing the ultimate pleasure of using their offerings. The "me too" market has pushed down their top lines forcing them to recalibrate on the skill sets that they have often neglected.

### The Skill Set Dilemma

Often when I have asked senior managers to list the resources they possess they list all those resources that appear in balance sheets. Things like cash, machinery, stocks etc. Yes, no doubt they are integral resources that an organisation has but what about those resources which are intangible yet the most important one.

Human skills, knowledge are such resource. It is intangible and often its value cannot be adjudged but I consider this to be the most important resource that an organisation has. At this juncture I won't go into the details or definition of what exactly it's knowledge is but can only state that knowledge drives the organisations. Whether it's knowledge about your customers, or the vendors, the state of economy or even about your neighbour, knowledge in all forms help you in making logical and more prudent decisions.

But mere knowing is not enough. The critical step is utilisation of that knowledge to enhance your preset goals. Knowledge can act as a guide not as an implementer. Knowledge infrastructure has its own pros and cons, while it gives a user a great tool to achieving pre set goals it also offers a degree of vulnerability to the system. Often I have seen that

this factor acts as deterrent for the organisations that want to implement a full-fledged knowledge centric infrastructure. But nevertheless the real benefits of a knowledge management process are much greater than the perceived flaws in the system. Yes no doubt it does have a slight degree of permeability but it provides an open forum where a consolidation of human skill sets can take place driving the organisation to great heights.

### Components of Learning

The Oxford Dictionary (1974:480) defines the verb "to learn" as "to gain knowledge of or skill in, by practice, study or being taught".

Although learning of the individual is not identical with learning of organizations, individual learning is the *conditio sine qua non* for organizational learning (*cf.* Argyris & Schon 1978: 9ff, Hedberg 1981: 6, Klimecki et al. 1991:127 and Kim 1993: 37ff). We won't go into details of individual learning theories for here we are more interested in the organizational learning.

According to Pawlowsky (1992:221), team learning has the vital function of knowledge transfer, with which individual learning knowledge is transformed into organizational knowledge, which can then be shared by all other organizational members. Senge (1990:10) goes even further and suggests, "unless teams can learn, the organization cannot learn". It is argued here claiming that only team learning leads to organizational learning might be a too one-sided view, as it would deny the fact that individuals can learn directly for the whole organization as well as for themselves, and can distribute this explicit knowledge acquired through various communication channels. However, the case might look different for tacit (implicit) knowledge, which is best transferred through personal contacts, i.e., in teams (*cf.* Chapters 8 and 9).

Individual knowledge and individual abilities to learn are combined by team learning, which forms the smallest organizational unit of organizational learning (obviously apart from individuals). The performance depends on individual learning characteristics and on the context of the team within the whole organization. The connective function of team learning achievements plays a major role in the transfer of individual learning to organizational learning (Reber 1992:1243).

There lies a great amount of difference between tacit and explicit knowledge. Explicit knowledge is more than academic knowledge; by and large, the distinction determines who owns the knowledge. Explicit knowledge is most likely the property of the firm. One way or another it is either data or work product. But since tacit knowledge cannot be codified, it effectively remains the property of the knowledge worker. Companies have certainly tried to own this knowledge. While the company employs them, knowledge workers are ethically—and sometimes contractually—prohibited from sharing their knowledge with competitors. But if the knowledge worker leaves the firm, they'd take that knowledge and its inherent value with them.

### Organizational Learning

Organizational learning is a process of knowledge acquisition or generation of an organization, performed through individuals, which can be accomplished by teams. It is based on organizational memory that is expanded, which can improve organizational actions.

The notion of *Organizational Learning* (OL) has become very prominent in the near past. Managers see OL as a powerful tool to improve the performance of an organization. Thus, it is not only the scholars of organization studies who are interested in the phenomenon of OL but also the practitioners who have to deal with the subject of OL.

Generally, one can distinguish between two different processes of organizational change that are associated with OL:

- Adaptive learning, i.e., changes that have been made in reaction to changed environmental conditions and
- Proactive learning, i.e., organizational changes that have been made on a more willful basis. This is learning which goes beyond the simple reacting to environmental changes.

Huber (1991) stated that there are four constructs, which are integrally linked to organizational learning process; they are knowledge acquisition, information distribution, information interpretation, and organizational memory. He clarifies that learning need not be conscious or intentional.

Ulrich et al. (1993:55) also include organizational knowledge only indirectly, as well as new individuals: "Organizational learning occurs as the systems and culture in the organization retain learning and transfer ideas to new individuals. This kind of learning is shared across organizational boundaries of space, time and hierarchy."

Argyris (1977) defines organizational learning as the process of "detection and correction of errors." In his view organizations learn through individuals acting as agents for them: The individuals' learning activities, in turn, are facilitated or inhibited by an ecological system of factors that may be called an organizational learning system" (p. 117).

Another definition of organizational learning stems from Kim (1993:43 and 1993a:67): "Organizational learning is defined as increasing an organization's capacity to take effective action."

Organizational learning involves a different kind of learning components than an individual learning. As (Duncan & Weiss 1979) has pointed out that "the process within the organization by which knowledge about action-outcome relationships and the effect of the environment on these

relationships is developed". In his view, "a more radical and result oriented approach would take the position that individual learning occurs when people give a different response to the same stimulus, but organizational learning occurs when groups of people give the same response to different stimuli." He stressed at what can be termed as organizational specific response to the stimuli.

There is a great amount of debate about whether or not organizations can learn and many just take the approach that organizational learning is the sum total of the individual learning occurring in the workplace (Argyris & Schon, 1996; Levitt & March, 1988; Normann, 1985; Weick & Westley, 1996).

What would happen if our focus shifted to one that is more anthropological and, therefore, focused on group learning? What if there was a shift from seeing learning as just cognitive to seeing it as occurring when groups try to make sense out of their world? As a result of this new view of organizational learning what would be some of the necessary shifts in attitudes.

### Learning Organization

A "Learning Organization" is one in which people at all levels, individually and collectively, are continually increasing their capacity to produce results they really care about.

The term learning organization is the concept which is now being used for an integration of a set of ideas that have emerged from organizational research and practice over the past three or four decades on ways of organizing work in such a way that the often-conflicting demands of organizational effectiveness and individual job satisfaction are simultaneously met. The learning organization is, in many ways, a natural evolution of older participatory management themes of the 1970's and more recent emphasis on empowerment and self-managed work-teams.

A learning organization is not so much characterized by its altered structure (flatter and less hierarchal) and redesign of work (emphasis on teams), but by the transformation of the relationship of the organization to the individual and increased capacity for adaptation and change.

What's in it for the people? Learning to do is enormously rewarding and personally satisfying. For those of us working in the field, the possibility of a win-win is part of the attraction. That is, the possibility of achieving extraordinary performance together with satisfaction and fulfillment for the individuals involved.

Senge (1990) defines the Learning Organization as the organization "in which you cannot *not* learn because learning is so insinuated into the fabric of life." Also, he defines Learning Organization as "a group of people continually enhancing their capacity to create what they want to create." I would define Learning Organization as an "Organization with an ingrained philosophy for anticipating, reacting and responding to change, complexity and uncertainty."

The concept of Learning Organization is increasingly relevant given the increasing complexity and uncertainty of the organizational environment. As Senge (1990) remarks: "The rate at which organizations learn may become the only sustainable source of competitive advantage."

McGill et al. (1992) define the Learning Organization as "a company that can respond to new information by altering the very "programming" by which information is processed and evaluated."

### Organizational Learning vs. Learning Organization

Ang & Joseph (1996) contrast Organizational Learning and Learning Organization in terms of process versus structure.

McGill et al. (1992) do not distinguish between Learning Organization and Organizational Learning. They define

Organizational Learning as the ability of an organization to gain insight and understanding from experience through experimentation, observation, analysis, and a willingness to examine both successes and failures.

Lave and Wenger's (1990) practice-based theory of learning as "legitimate peripheral participation" in "communities-of. practice." Much conventional learning theory, including that implicit in most training courses, tends to endorse the valuation of abstract knowledge over actual practice and, as a result, to separate learning from working and, more significantly, learners from workers.

Together Lave and Wenger's analysis and Orr's empirical investigation indicate that this knowledge-practice separation is unsound, both in theory and in practice. We argue that the composite concept of "learning-in-working" best represents the fluid evolution of learning through practice. We have to view the two concepts in terms of the business imperative.

While organizational learning process is a process centric function a learning organization is a knowledge centric concept. Organizational learning emphasis on functions which lead to development of the systems, which will enhance the knowledge assets of an organization, while the learning organization is an evolutionary viewpoint towards the KM endeavor. It should be noted here that these two concepts are in a way not separate but supplementary in nature. For an effective and a result-oriented system it is extremely necessary that both go hand in hand.

## OTHER CONCEPTS OF LEARNING

### Adaptive Learning vs. Generative Learning

#### *Adaptive Learning*

Adaptive learning environments try to link instructional science with computational science. For computational

scientists, artificial intelligence has long been the focus of research efforts. For instructional scientists, the computer is increasingly perceived as a tool for enhancing learning. It is not surprising then that researchers are willing to combine traditionally distinct areas and to engage in interdisciplinary work in order to develop adaptive learning environments.

The ultimate goal of such work is to "develop computer systems that provide or support effective learning experiences for a wide range of learners across a broad spectrum of knowledge domains" (Jones, Greer, Mandinach, du Boulay, & Goodyear, 1992, p. 395).

The research reported in *Adaptive Learning Environments: Foundations and Frontiers* indicates that, in spite of the challenges, researchers are making progress in capitalizing on the possibilities offered by the combination of merging of the two disciplines of instructional science with computational science. Perhaps the most well-known type of adaptive learning environment is that of the intelligent tutoring system.

Such systems are characterized by a knowledge base, a tutoring strategy and, finally, a student model (McCalla, 1992). This student model is what makes an ITS an adaptive system since it is used in order to modify instruction to accommodate the needs of the student being tutored.

The system can monitor the student's progress through a particular knowledge base and. interpret where the student is and provide feedback on how he or she should proceed. While earlier version of ITS's suffered from a rigidity of prespecified and predictable control paths, more recent ITS research is focussing on creating flexible instructional plans and knowledge bases.

Nonetheless, ITS research still faces considerable challenges in representing large knowledge bases, in varying the student model and in providing a sufficient array of

tutoring strategies (McCalla, 1992). An environment integrating so many components into one module represents a highly complex and sophisticated system—one which would be difficult to design effectively.

A further weakness of intelligent tutoring systems is that they “fail to consider the context of learning and social interactions fundamental to learning processes” (Jones, Greer, Mandinach, du Boulay, & Goodyear, 1992, p. 384). Other criticisms of ITS’s include the fact that they are modeled on an instructionist approach that emphasizes transfer to the student of knowledge that the tutor possesses. Du Boulay and Goodyear (1992) question in its entirety the notion of domain knowledge and the ability of ITS’s to represent it. They note that a domain such as the history of chemistry, is “a human invention”.

### *Generative Learning*

Generative learning is a theory that involves the active integration of new ideas with the learner’s existing schemata. Cognitive research has shown that learners immersed in generative learning environments generate sub problems, sub goals, and strategies for achieving a larger task. Generative learning strategies can be broken down into four elements: (1) recall, (2) integration, (3) organization, and (4) elaboration. Strategies from these four areas can be used alone or in conjunction with one another to achieve a learning goal.

Recall involves the learner pulling information from long-term memory. The goal of recall is to learn fact-based information. Techniques include repetition, rehearsal/practice, review, and mnemonics.

Integration involves the learner to integrating new knowledge with prior knowledge. The goal of integration is transform information into a more easily remembered form. Integration methods include:

- Paraphrasing (outline in a narrative format)
- Summarizing (retelling the content in order to interpret or explain concisely)
- Issue trees
- Generate questions or examples
- Generate analogies and metaphors

The current view of organizations on adaptive learning is about coping. Senge (1990) notes that increasing adaptiveness is only the first stage; companies need to focus on Generative Learning or “double-loop learning” (Argyris, 1977). Generative learning emphasizes continuous experimentation and feedback in an ongoing examination of the very way organizations go about defining and solving problems. In Senge’s (1990) view, Generative Learning is about creating - it requires “systemic thinking,” “shared vision,” “personal mastery,” “team learning,” and “creative tension” [between the vision and the current reality]. [Do Japanese companies accomplish the same thing with “strategic” and “interpretive” equivocality“?] Generative learning, unlike adaptive learning, requires new ways of looking at the world.

Generative learning theories assume the learner is not passive receiver of information, rather is an active participant, working to construct meaningful understanding of information found in the environment.

Comprehension occurs by formulating connections between perceived information, prior knowledge and other memory components. This participation actively engages students in interactions with subject matter.

In contrast, adaptive learning focuses on solving problems in the present without examining the appropriateness of current learning behaviours. Adaptive organizations focus on incremental value additions based upon the past track record of success. Essentially, they don’t question the fundamental assumptions underlying the existing ways of doing work.

The essential difference is between being adaptive and having adaptability. To maintain adaptability, organizations need to operate themselves as evolving entities. There should be a frequent and a continuous change in structures, processes, domains, goals, etc. This has been emphasized in the optimal adaptation theory (Nystrom et al. 1976; Hedberg et al. 1976; Starbuck 1983). Hedberg et al. (1977) argue that operating in this mode is efficacious, perhaps even required, for survival in fast changing and unpredictable environments. They reason that probable and desirable consequences of an ongoing state of experimentation are that organizations learn about a variety of design features and remain flexible.

Although these two concepts have their bases in the educational learning perspective yet we find that the concepts hold their relevance even in a normal corporate learning environment. These two concepts thus should be considered when developing an effective knowledge management module.

### Knowledge and Knowledge Management: Definitions and Insight

#### What is "knowledge"?

Aren't we managing knowledge already? Well, no. In fact, most of the time we're making a really ugly mess of managing information. In practice, business writers often use the terms information and knowledge interchangeably.

Knowledge has two basic definitions of interest. The first pertains to a defined body of information. Depending on the definition, the body of information might consist of facts, opinions, ideas, theories, principles, and models (or other frameworks).

Knowledge also refers to a person's state of being with respect to some body of information. These states include ignorance, awareness, familiarity, understanding, facility, and so on.

There are many thoughtful and thought-provoking definitions of "knowledge"—including the important distinctions Gene Bellinger et al. make in "Data, Information, Knowledge, and Wisdom", in which he defines states knowledge as a collation of the events and incidents to which an individual might be subjected to. Nevertheless, Nickols provides a good, sensible, functional definition, and it is sufficient for our purposes.

Nickols' two kinds of knowledge parallel Michael Polanyi's often-quoted distinction between *explicit knowledge* (sometimes referred to as *formal knowledge*), which can be articulated in language and transmitted among individuals, and *tacit knowledge* (also, *informal knowledge*), personal knowledge rooted in individual experience and involving personal belief, perspective, and values.

In traditional perceptions of the role of knowledge in business organizations, *tacit knowledge* is often viewed as the real key to getting things done and creating new value. Not explicit knowledge. Thus we often encounter an emphasis on the "learning organization" and other approaches that stress internalization of information (through experience and action) and generation of new knowledge through managed interaction.

In the opinion of the editors of Knowledge Praxis (a knowledge management magazine), quibbles about fine distinctions in the meaning of knowledge are just not very important. It doesn't matter whether a written procedure or a subject matter expert provides a solution to a particular problem, as long as a positive result is achieved. However, observing how knowledge—is acquired and how we can apply knowledge—whether tacit or explicit—in order to achieve a positive result that meets business requirements ... that's a different and very important issue.

## Definition of Knowledge Management

### *What is Knowledge Management*

In this portion of the Knowledge Management Forum we have provided summaries of various descriptions of knowledge management. Authors were encouraged to include links to more complete remarks or to referenced works. The contents of this page were last updated March 31, 1996.

**From the introduction to; "An Open Discussion of Knowledge Management", Brian (Bo) Newman, 1991.**

Knowledge Management is the collection of processes that govern the creation, dissemination, and utilization of knowledge. In one form or another, knowledge management has been around for a very long time. Practitioners have included philosophers, priests, teachers, politicians, scribes, Liberians, etc. Our very own teacher or mother also represents this genre.

If Knowledge Management is an ageless and broad topic then what role does it serve in today's Information Age? These processes exist whether we acknowledge them or not and they have a profound effect on the decisions we make and the actions we take, both of which are enabled by knowledge of some.

All of us agree that many of our decisions and actions have profound and long lasting effects, it makes sense to recognize and understand the processes that effect or actions and decision and, where possible, take steps to improve the quality these processes and in turn improve the quality of those actions and decisions for which we are responsible?

Knowledge management is not a, "technology thing" or a, "computer thing", but an extensive concept which uses technology to mere facilitate the flow of information. The technology portion is a redundant and a non-dynamic factor

in the entire process. If we accept the premise that knowledge management is concerned with the entire process of discovery and creation of knowledge, dissemination of knowledge and the utilization of knowledge then we are strongly driven to accept that knowledge management is much more than a "technology thing" and that elements of it exist in each of our jobs.

### **Knowledge Management Argot by Dr. Arthur J. Murray**

Argot: The vocabulary used by a particular group, usually an underworld group.

- Corporate Knowledge: The collective body of experience and understanding of an organization's processes for managing both planned and unplanned situations.
- Corporate Knowledge Management: The process whereby knowledge seekers are linked with knowledge sources, and knowledge is transferred.
- Epistemology: The study of the nature and foundations of knowledge.
- Etymology: The study of the history of change of a linguistic expression.
- Knowledge: A set of models describing various properties and behaviors within a domain.
- Morphology: The study of patterns and structure of word formations in language.
- Ontology: The study of relationships that give rise to meaning of expressions.
- Taxonomy: A framework for the classification and arrangement of objects (used to build a classification hierarchy).