

KNOWLEDGE MANAGEMENT WITH INFORMATION TECHNOLOGY

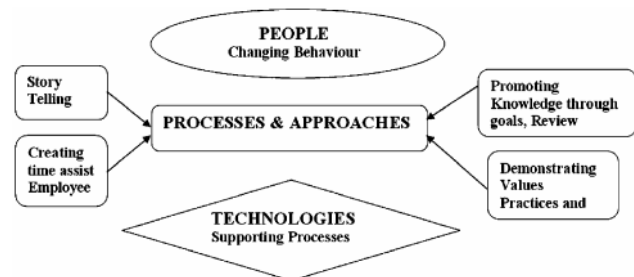
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Knowledge has long ago been recognized as an important asset for sustaining competitive advantage. Recently, the use of information technologies within an organization has been identified, by many companies, as an important tool for managing or sharing organizational knowledge in order to improve business performance. It comprises a range of strategies and practices used in an organization to identify, create, represent, distribute, and enable adoption of insights (a piece of information the act or result of understanding the inner nature of things or of seeing intuitively) and experiences.

1. INTRODUCTION

According to Dr. A. P. J. Abdul Kalam, India is a nation endowed with natural and competitive advantages as also certain distinctive competencies. During the last century the world has undergone a change from agriculture society, where natural labour was the critical factor, to industrial society where the management of the technology, capital and labour provided the competitive advantages. In 21st century, a new society is emerging where Knowledge is the primary production resource instead of capital and labour. Efficient utilization of this existing knowledge can create comprehensive wealth of the nation in the form of better health, education, infrastructure and other social indicators. "As we enter the 21st century we are moving into a new phase of economic and social development, which can usefully be referred to as a "Knowledge Economy", in which knowledge will be a key determining factor in organizational and economic success or failure.

Knowledge management is a newly emerging, interdisciplinary business model that has knowledge within the framework of an organization as its focus. It is ultimate competitive advantage for today's firm. Knowledge management involves people, technology, and process in overlapping parts. Knowledge management is the process of capturing and making use of a firm's collective expertise anywhere in the business-on paper, in documents, in databases (called explicit knowledge) or in people's heads (called tacit knowledge). It is the fuel or raw material for innovation- the only competitive advantage that can sustain a company in an unpredictable environment.



The Goal is to Present a balanced view of how computer technology captures, distributes, and shares knowledge in the organization by linking human expertise and documentation in an integrated Knowledge Management system.

2. INFORMATION AND KNOWLEDGE

Both information and technology has different meanings. Information is:

1. Any type of pattern that influences the formation or transformation of other patterns.
2. Is specific and organized for a purpose.
3. Is presented within a context that gives it meaning and relevance.

Knowledge is:

4. What is known in a particular field or in total; facts and information?
5. Recognition memorized personally or socially.

Both of these are different and each of them is converted to other. Intelligence is the energy which brings that transformation. Intelligence is:

6. The capacity to acquire and apply knowledge
7. Ability to think and understand things instinctively or automatically.

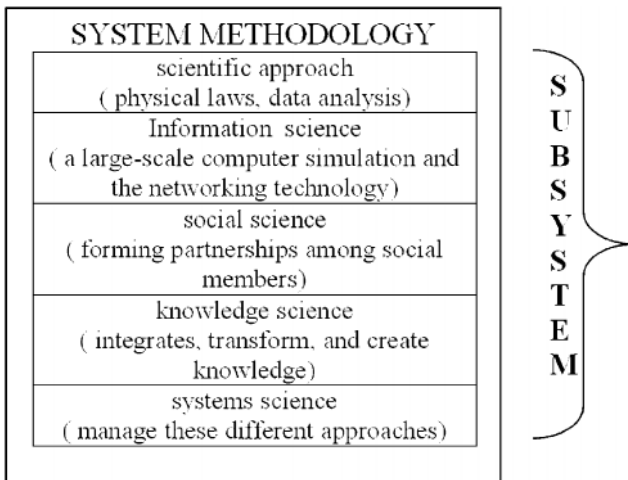
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Data and knowledge is converted in to information and a new knowledge is created with this data and information. This technique is known as intelligence. But we are not able to understand indirect observation, and the limitation of our ability to analyse things objectively. So we have been developed separately. One is knowledge management by the persons concerned. The other is knowledge management by information and communication technology. It is necessary to develop a systems methodology that uses both approaches systematically.

3. METHODOLOGY FOR KNOWLEDGE CREATION

We are developing a systems methodology that uses approaches in social and natural sciences complementarily and itself contains five sub systems.

The developing system can be called a knowledge-creating system. Statistical data and individual persons' fragmentary knowledge, and then new knowledge is created that nobody had before. Such knowledge must be tacit, otherwise someone including the system had it; this is a contradiction. Therefore, the system should have a process to convert tacit knowledge into explicit knowledge. This means that the members of the project or relevant people constitute a part of the system.



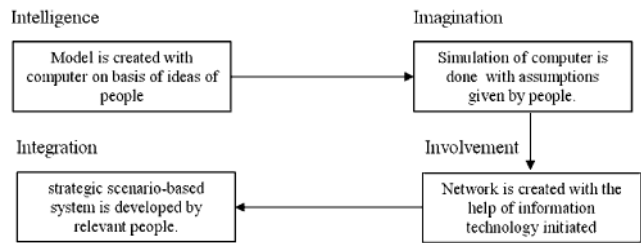
Intervention: What kinds of knowledge are necessary to solve the faced problem, and request three subsystems to collect them. It is based on natural sciences, mathematics, and engineering. The following subsystems:

Intelligence: We collect necessary data and information, analyze them with a scientific attitude, and make a model for simulation or optimization. Here, knowledge is a model.

Imagination: We simulate complex phenomena based on partial knowledge, using information technology. Here, knowledge is scenarios. It is mainly related to information science, economics, and statistics.

Involvement: We hear opinions of people by organizing a meeting or questionnaire survey. Here, knowledge is opinions. It is mainly based on management science, social science, and cultural sciences.

Integration: We evaluate reliability and justifiability of outputs from three subsystems and integrate them. Here, knowledge is solutions. It is related to systems science and knowledge science.



This methodology is a system because it has the following properties:

- Hierarchical structure.
- Emergent characteristics.
- Function of communication.
- Function of control.

4. WHAT IS KNOWLEDGE MANAGEMENT

Knowledge is commonly distinguished from data and information. Data represent observations or facts out of context, and therefore not directly meaningful. Information results from placing data within some meaningful context. Knowledge can be viewed both as a thing to be stored and manipulated and as a process of simultaneously knowing and acting – that is applying expertise. Knowledge can be tacit and explicit. In reality, these two types of knowledge are like two sides of the same coin, and are equally relevant for the overall knowledge of an organization.

Tacit knowledge is personal knowledge embedded in individual experience and is shared and exchanged through direct, eye-to-eye contact. Clearly, tacit knowledge can be communicated in a most direct and effective way. Existing tacit knowledge can be expanded through its socialization in communities of interest and of practice, and new tacit knowledge can be generated through the internalization of explicit knowledge by learning and training.

Explicit knowledge is formal knowledge that can be packaged as information and can be found in the documents of an organization: reports, articles, manuals, patents, pictures, images, video, sound, software etc. acquisition of explicit knowledge is indirect: it must be de-coded and re-coded into one's mental models, where it is then internalized as tacit knowledge. Explicit knowledge defines the identity,

the competencies and the intellectual assets of an organization independently of its employees; thus, it is organizational knowledge par excellence, but it can grow and sustain itself only through a rich background of tacit knowledge. Explicit Knowledge in contrast, can be more precisely and formally articulates.

Knowledge Management often encompasses identifying and mapping intellectual assets within the organization, generating new knowledge for competitive advantage within the organization, making vast amounts of corporate information accessible.

5. WHY WE NEED KNOWLEDGE MANAGEMENT NOW

- Market places are increasingly competitive and rate of innovation is rising.
- Competitive pressures reduce the size of the work force that holds valuable business knowledge.
- Life long learning.
- Innovation.
- Diversification.

6. KNOWLEDGE MANAGEMENT TECHNOLOGIES

Knowledge Management requires technologies to support the new strategies, processes, methods and techniques to better create, disseminate, share and apply the best knowledge, anytime and anyplace, across the team, across teams, across the organisation and across several organisations, especially its clients, customers, partners, suppliers and other key stakeholders. The key technologies are communication and collaboration technologies that are web based for internet and intranet usage, as well as mobile technologies such as PDA's, PC's, telephone and videoconferencing. New technologies are rapidly emerging that act as intelligent agents and assistants to search, summarise, conceptualise and recognise patterns of information and knowledge.

Early KM technologies included online corporate yellow pages as expertise locators and document management systems. Combined with the early development of collaborative technologies, KM technologies expanded in the mid-1990s. More recently, development of social computing tools (such as bookmarks, blogs, and wikis) have allowed more unstructured, self-governing or ecosystem approaches to the transfer, capture and creation of knowledge, including the development of new forms of communities, networks, or matrixed organizations. However such tools for the most part are still based on text and code, and thus represent explicit knowledge transfer.

Software tools in knowledge management are a collection of technologies and are not necessarily acquired

as a single software solution. Furthermore, these knowledge management software tools have the advantage of using the organization existing information technology infrastructure. Organizations and business decision makers spend a great deal of resources and make significant investments in the latest technology, systems and infrastructure to support knowledge management. It is imperative that these investments are validated properly, made wisely and that the most appropriate technologies and software tools are selected or combined to facilitate knowledge management. Knowledge management has also become a cornerstone in emerging business strategies such as Service Lifecycle Management (SLM) with companies increasingly turning to software vendors to enhance their efficiency in industries including, but not limited to, the aviation industry.

7. INFORMATION TECHNOLOGY FOR KNOWLEDGE MANAGEMENT

There is an ongoing lively debate about the role that information technology can play for knowledge management. On the one hand, information technology is used pervasively in organizations, and thus qualifies as a natural medium for the flow of knowledge. A recent study from the American Productivity and Quality centre shows that organizations embarking in knowledge management efforts generally rely, for accomplishing their goals, on the setting up of a suitable IT infrastructure (AP&QC 1997). At the other end of the spectrum, leading knowledge management theorists have warned about the attitude that drives management towards strong investments in IT, possibly at the expense of investments in human capital.

Nowadays information technologies are as much about creating direct connections among people through such applications as electronic mail, chat-rooms, videoconferencing and other types of groupware as they are about storing information in databases and other types of repositories. Investments in IT seem to be unavoidable in order to scale up knowledge management projects. The best way of applying information technology to knowledge management is probably a combination of two factors: on the one hand, the awareness of the limits of information technology, and of the fact that any IT deployment will not achieve much, if it is not accompanied by a global cultural change toward knowledge values; the focus for the conference on Practical Applications of Knowledge Management held in October 1996 in Basel, Switzerland (Wolf and Reimer 1996). Information Filtering has become a crucial type of IT support for knowledge workers, who are faced with ever increasing amounts of information, both from sources internal to the organization and from external sources such as the Internet and the World Wide Web. Sorensen et al. present an intelligent filtering system where individuals may have profiles, representing long-term "interests," that are used to measure the relevance of

information. These profiles can then be used to compile natural language queries into weighted graphs that capture the semantic content of the query with respect to the given profile. If the query is very specific, and contains a lot of related words, then the computational overhead of building a graph for the query and for the requested information pays back by returning answers that match accurately the interests of the user.

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