

# CONTRIBUTION OF INFORMATION TECHNOLOGY IN ENHANCEMENT OF KNOWLEDGE MANAGEMENT PRACTICES

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The role of Information technology (IT) in Knowledge Management (KM) is an essential consideration for any company wishing to exploit emerging technologies to manage their knowledge assets. Many IT tools are available today under the umbrella of Knowledge Management. These tools are there even before the word 'Knowledge Management' came to the horizon of management concepts or organizational initiatives. The motivation for this paper was to answer the research question: Does IT contributes to the enhancement of Knowledge Management Practices. This paper begins by exploring the potential of IT in managing knowledge, drawing from multi-disciplinary literature and previous Research. Then it provides an overview of technologies that can be applied to Knowledge Management and to assess their actual or potential contribution to the basic processes of knowledge creation and sharing within organizations.

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## 1. INTRODUCTION

Since the 1960s, IT has become an all-pervasive force in the business world, superseding more conventional tools for data storage and communication. Information technology (IT) has made it easier to acquire, store, or disseminate knowledge than ever before. Many organizations are employing IT to facilitate sharing and integration of knowledge. IT is important in its own right and remains a critical success factor in the development of an effective Knowledge Management Practices. It has been argued that IT has the potential to "redefine the management and control of innovation on a global basis through the removal of barriers such as time and distance" (Egbu, 2000, p.109).

The managers associated Knowledge Management with various other systems (including data warehousing, enterprise wide systems, executive information systems, expert systems, and the intranet), as well as various tools (e.g., search engines, multi-media, and decision making tools). Many researchers associated Knowledge Management with information technology infrastructure. Knowledge Management systems can be accomplished with different technologies, but the most effective of which would likely depend upon an organization's size and existing technical infrastructure.

There are two basic approaches to KM for which IT can provide support: codification and personalization. With the codification approach, more explicit and structured knowledge is codified and stored in knowledge bases. The main role of IT here is to help people share knowledge

through common storage so as to achieve economic reuse of knowledge. An example of such IT tools is electronic knowledge repositories. With the personalization approach, more tacit and unstructured knowledge is shared largely through direct personal communication. The main role of IT here is to help people locate each other and communicate so as to achieve complex knowledge transfer. Examples of such IT tools are knowledge expert directories and video-conferencing tools. Both these KM approaches are fundamental to understanding the role of IT in KM.

## 2. RESEARCH METHODS

Key methods of research used in the paper:

1. Literature Review: The potential of IT in managing knowledge has been studied, drawing from multi-disciplinary literature and previous research.
2. Questionnaire Survey: The research was conducted with sample of Medium sized enterprises and organizations operating in and near Chandigarh. The sample consisted of 25 organizations. The questionnaire includes a survey on the use IT tools by KM practitioner and is complemented with questions on incentives for using KM practices, results, responsibilities, etc.

## 3. LITERATURE REVIEW

### 3.1. Role of IT in Knowledge Management Practices

According to the Bose (2001), Knowledge Management Practices has three major components: 'People': who create, share and use knowledge, 'Process' the methods to acquire, create, organize and transfer knowledge and 'Technology' the mechanisms that store and provide access to data, information and knowledge created by people.

Edvinsson (2000) contends that IT tools such as the Internet are merely ‘enablers’ and that the true asset of an organisation is the brainpower of its workforce. Dougherty (1999) argues that IT should be seen as a tool to assist the process of Knowledge Management in organisations. Some organisations have developed software to encourage social interaction in organisations in the hope that a unique forum for tacit knowledge exchange will be established. For example, Teltech is a consultancy service offering KM services to businesses, including an Expert Network which brings together a network of thousands of technical experts to share and develop knowledge in technical areas (McCampbell et al).

One of KM’s leading practitioners Karl-Eric Sveiby describes the current practice of Knowledge Management as being divided into two tracks: IT-Track KM enables Management of Information. They are involved in construction of information management systems, AI [artificial intelligence], reengineering, groupware etc. To them Knowledge is Objects that can be identified and handled in information systems. This track is new and is growing very fast at the moment, assisted by new developments in IT. People-Track KM enables Management of People. They are primarily involved in assessing, changing and improving human individual skills and/or behavior. To them Knowledge is Processes, a complex set of dynamic skills, know-how etc, that is constantly changing. They are traditionally involved in learning and in managing these competencies. This track is very old, and is not growing so fast. The two tracks differ in their techniques and tools. In the IT track, the emphasis is on using software and the Internet capturing information in databases and improving communication.

### 3.2. Integration of KM Process with IT Technologies

There are large numbers of IT tools available to support knowledge management. Most of these tools provide support for only one or more of the four areas of the knowledge management systems.

- a. IT Support for Knowledge Creation: There are varieties of IT tools that facilitate the knowledge creation process. These are CAD systems, analysis systems, estimating systems, etc. These systems are being integrated both within and across disciplines, thereby facilitating the flow of information.
- b. IT Support for Knowledge Processing: The IT tools that enable the processing manipulation (storage, etc) of knowledge in an organisation are word processors, spreadsheets, desktop publishing systems and databases. These tools are now routinely used within organisations to ensure the smooth running of businesses.

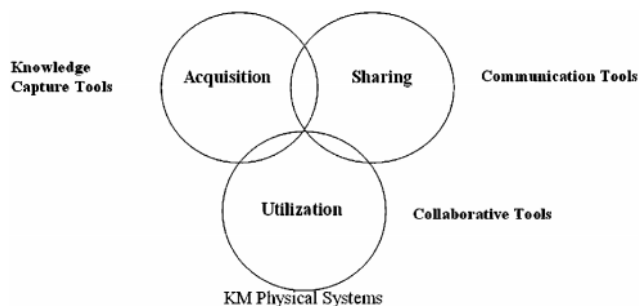
- c. IT Support for Knowledge Sharing: Knowledge sharing systems are utilized to support groups working together such that members of the group can share data, information and knowledge within a given context. Examples of these tools are intranets and other groupware systems such as video-conferencing, document management systems, bulletin boards, shared databases, electronic mail systems, etc. The use of these systems is growing in the industry
- d. IT Support for Knowledge Capture and Codification: Tools that are able to encapsulate knowledge and expertise in coded or symbolic form are vital for Knowledge Management in an organisation. They enable the setting up and maintenance of knowledge bases that preserve knowledge/expertise that might otherwise be lost when a key member of staff is no longer available. These tools are generally based on the concept of ‘artificial intelligence’, (AI) and are effective decision support systems.

Thomas B.Riley summaries the relationship between KM and technology as”

Knowledge Management and Technology	
Functionality	Technology
searching	search engines
categorizing	computer languages (XML, RDF)
composing	office suite applications
summarizing	artificial intelligence
storing	storage media
distributing	networks

### 3.3. Integration of KM Physical Systems with IT Technologies

Three kinds of physical systems are necessary for Knowledge Management. These are Capture Tools, Communication Tools, and collaboration Tools.



1. Capture Tools: These tools help in acquiring, codifying and storing structured and explicit knowledge. Examples of such technologies are intelligent database, Electronic whiteboards and

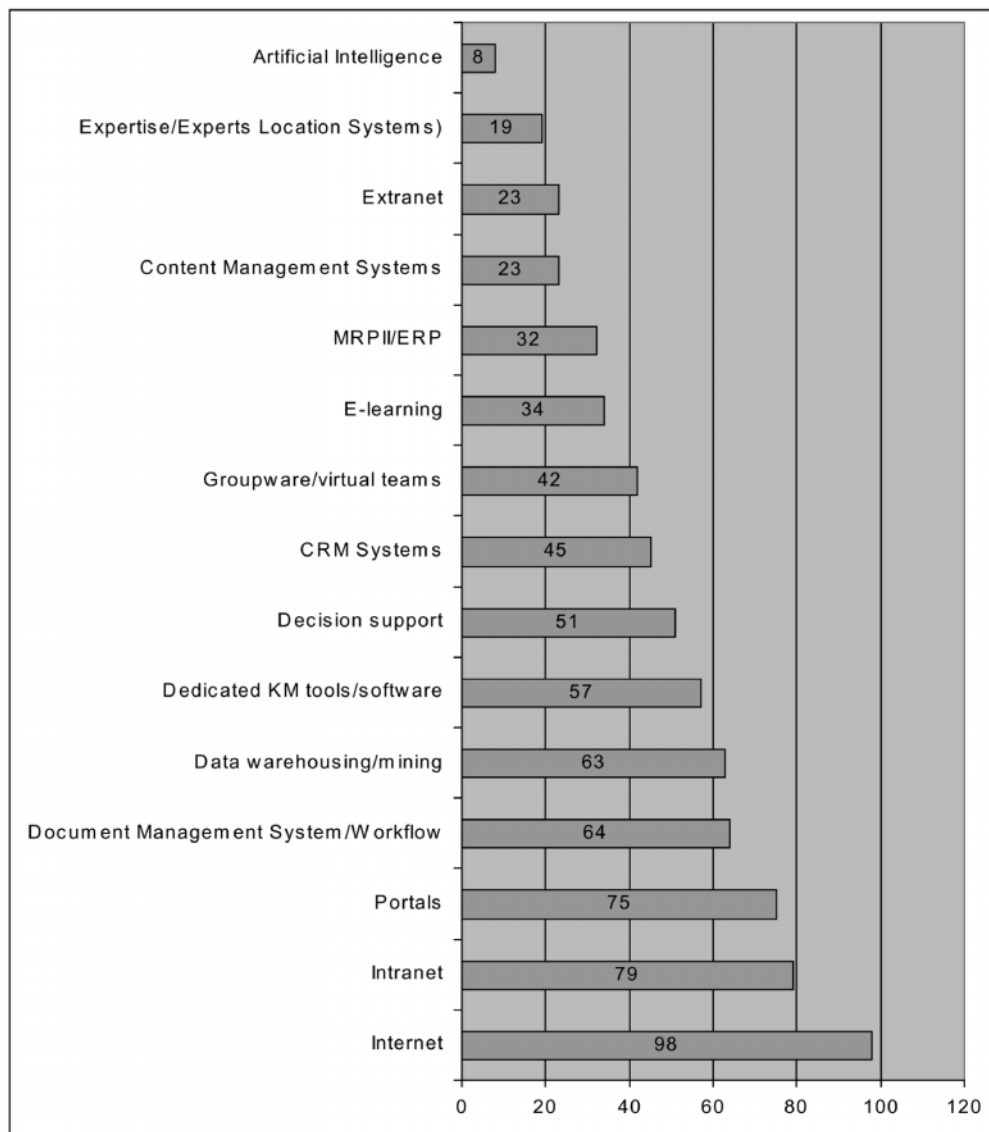
Data Web houses. Data Web Houses aggregate data across multiple sources and give decision makers the ability to run complex queries for high quality information (Haag et al, 2000).

2. Communication Tools: Collaboration tools promote knowledge creation and transfer. These tools are implemented to capture the informal content of messages and to communicate. Various tools used by organisations are: Videoconferencing, Multimedia and Knowledge maps.
3. Collaboration Tools: are a) Virtual Meetings (web-conferencing): Enable people in different locations to meet and share and view multimedia information, screens, files at the same time. b) Document Collaboration tools: allow team members to instantly alter a document they are working on from different workstations. Alterations by any member are reflected in real-time.

c) Informal Communication tools: allow users to hear and see other users; in essence allow a real-time chat. d) Groupware allows users to share access to email, diaries, calendars, and so on. Internal messaging as well as communication with the outside world is also enabled. Reports and anecdotes can instantly be sent and shared by users. With interactive web pages, groupware also has a database environment that allows for version tracking and workflow. Lotus Notes, meanwhile, has the ability to replicate data between workstations and servers to enables remote work that needs to be conducted on the road (Edwards, 1998).

4. DATA INTERPRETATION

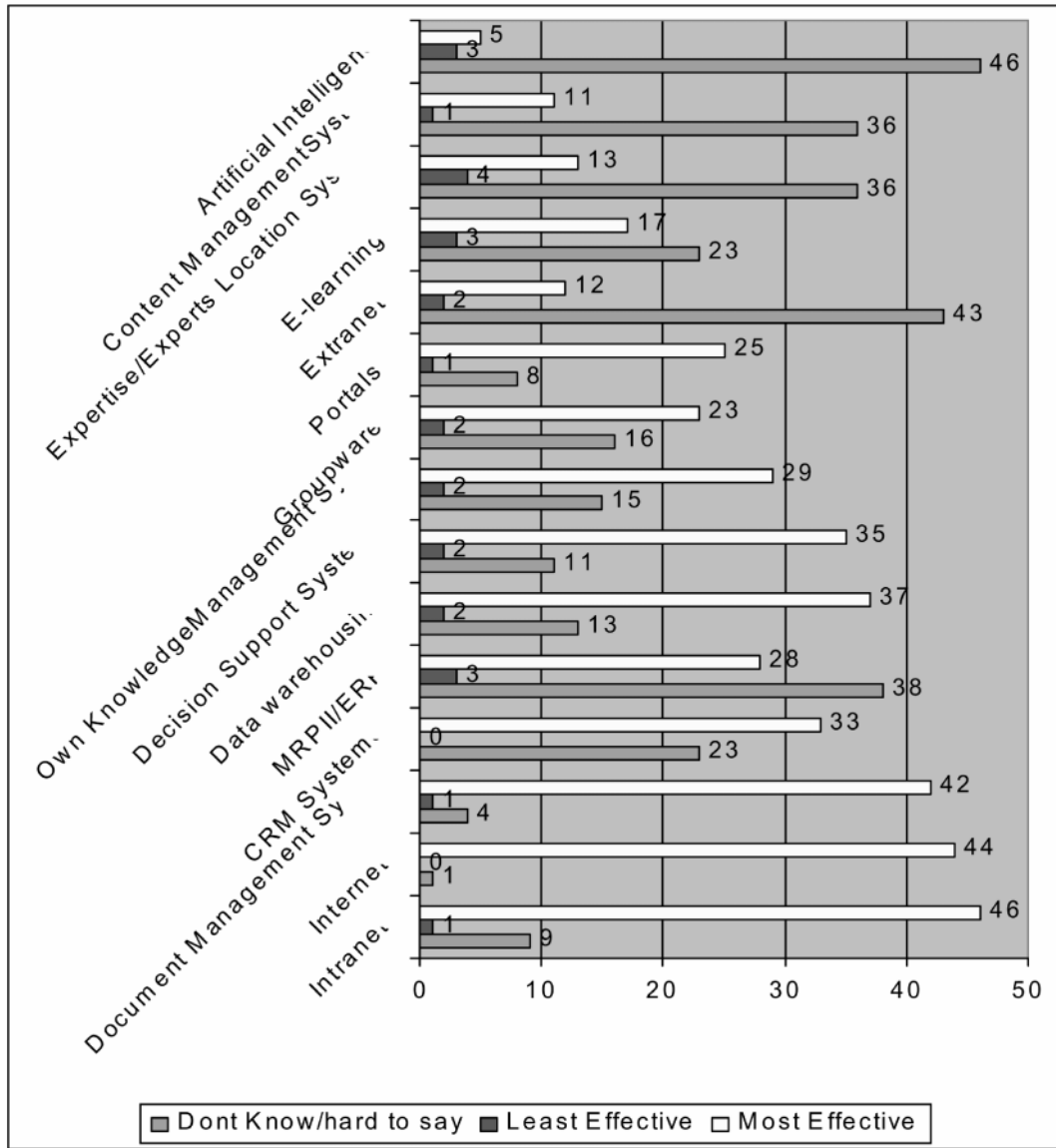
- a. The IT technologies that are used by the KM practitioners are:



98% of respondents said they had Internet access in place; intranet and corporate portals were used by 79 and 75% respectively. More than 50% said they use data warehousing technologies, document management and decision support systems. Less favored were content

management systems, extranet, experts/expertise location systems and artificial intelligence.

b. The respondents were asked to rate the most and least effective IT Tools:



Respondents found intranet (46%), Internet (44%) document management systems (42%) and CRM systems (33%) as the most effective technologies with regard to knowledge management. This could suggest that companies better assess widely used and recognizable technologies to which they have become accustomed than less known such as Expertise/ Experts location systems (13%) and artificial intelligence (5%).

practices. Many organisations employ IT in one form or another to manage their Knowledge. It is primarily used to store and transfer explicit forms of Knowledge. Tools such as video-conferencing may also be useful for the transmission of tacit Knowledge which is vital for effective Knowledge Management Practices. Many organisations have developed sophisticated methods for storing their intellectual capital, including patenting knowledge assets to protect trade secrets. Tools that are used and appreciated by the organisations adopting in Knowledge Management practices are intranet; Internet document management systems, corporate portals, search engines, and CRM systems. These are the most effective technologies with

5. FINDINGS

Information Technology has a remarkable contribution substantiating the need for Knowledge Management

regard to Knowledge Management. Other recognizable technologies are Expertise/ Experts location systems artificial intelligence, data warehousing technologies, Document management and Decision support systems, content management systems, Shared diaries and Groupware. These are the least favourable technologies.

## 6. CONCLUSION

It is clear that IT provides solutions to KM and increase the "efficiency" and "capability" of KM practices. But IT is just a facilitator of KM; Knowledge Management means much more than IT. IT provides member in an organization the platform to communicate and to get access to the right information at the right time for the right purpose. Also, it is acknowledged that IT is useful for the transmission of explicit and tacit Knowledge. The Internet and corporate intranets are commonplace in the organisation, for the effective acquisition and transfer of knowledge. However, despite greater availability of more sophisticated IT tools, such as Groupware and Knowledge maps, perceptions about more conventional techniques, such as telephone and face-to-face interaction, seem unchanged. People tend to prefer familiarity over change and incorporating new technologies into the workplace takes time and effort. It is recommended that managers recognize the benefits of IT and implement them in the workplace. There should be a balance between knowledge management initiatives and engagement of IT tools and infrastructure in order to exploit the benefits of KM to the fullest.

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