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KNOWLEDGE MANAGEMENT IN UNIVERSITY LIBRARIES IN THE INFORMATION TECHNOLOGY ERA

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Abstract *Knowledge Management (KM) is one of the most important and valuable tasks in University libraries. There are varieties of knowledge in the world. The traditional sources of knowledge in libraries are manuscript, hard bounded books, journals, magazines, newsletters, newspapers, documents etc. In other words we can say that KM is limited up to paper work only. The new techniques and technologies are injecting a new culture in Knowledge Management system. A time will come when the paper work of library will be replaced with digital or electronic versions. Managing knowledge assets can be a challenge with the advent of new technologies such as Internet, information technology (IT), information and communication technology (ICT), networking service organisations (ERNET, NICNET, OCLC, INFLIBNET etc.), databases (www.manupatra.com, www.lexisnexis.com/ in/ legal, www.lexisnexis.com/ academic, www.westlawindia.com,www.jstor.org etc.), data mining, web casting etc. Therefore the concept of KM can be put forth with these words: "Getting the right knowledge to the right people through right processes on right time by utilising efficient IT infra-structure".*

Keywords: *Data, Information, Knowledge, KM, Hardware, Software, IT, ICT*

Introduction

KM in university libraries and knowledge management organisations (KMO) should be focused on effective research and development of knowledge, creation of knowledge bases, exchange and sharing of knowledge between libraries, staffs, users, and researchers, speeding up explicit processing of the implementing knowledge, and realising of its sharing knowledge management which will inject new blood into the library culture.

Universe of knowledge is rapidly changing its form, process of creation and organisation as well as mode of dissemination and accessibility. Transition from traditional paper based materials to digital materials has changed the expectations and information needs of the user community. Accordingly, traditional libraries/KMOs now hold electronic and digital materials accessible to the public. Knowledge is the organised form of information and is the creation of human mind. It is dynamic in nature and multidimensional in size which is evolved through time and used by the society. According to Dr. S.R. Ranganathan, "Knowledge management is a sum total of information conserved by civilisation".

KM is not only about managing or organising books, journals, theses, dissertations, searching on the Internet or arranging the circulation of materials, however each of these activities can, in some way, be a part of the knowledge management spectrum and process. KM is about enhancing the use of organisational knowledge through sound practices of information management and organisational learning. It is the process of transforming information and intellectual assets into enduring value. It connects people with the knowledge that they need.

KM envisions getting the right information within the right context to the right person at the right time for the right purpose. It includes the intact cycle of discovery, creation, storage, dissemination, and utilisation of knowledge. IT is the critical resource for supporting KM. It is technology that has made KM possible and has considerably reduced costs and increased speed of information and knowledge transmission.

Data

Data are facts and figures which relay something specific, but which are not organised in any way and provide no further information regarding patterns, context etc. We may also define the unstructured facts and figures that leave the least impact on the typical manager. In other words data are raw facts that have no context or meaning on their own such as statistics, list of items, name, address etc.

Information

Arrangement of data in such a manner which has the specific meaning and value is called information. According to Davenport and Prusac (2000), "For data to become information, it must be contextualised, categorised, calculated, and condensed". Gandhi (2004) defines information as "When data is organised in a logical, cohesive format for a specific purpose, it becomes information".

Knowledge

Knowledge is a fluid mix of framed experience, values, contextual information, and expert insights that provide a framework for evaluating and incorporating new experiences and information. It originates and is applied in the minds of knower. In organisations, it often becomes embedded not only in documents or repositories but also in organisational routines, processes, practices, and norms.

In hierarchical view, knowledge is the product of information. When information is analysed, processed and placed in context, it becomes knowledge. This has been reflected in the definition of knowledge as information processed in the mind of individuals (Alavi & Leidner, 2001).

Types of Knowledge

Two forms of knowledge are popularised by the Japanese scholars Nonaka and Takeuchi (1995), which have dominated discussion on the nature of the knowledge in KM. Based on the work of Polanyi (1966) they promoted recognition of the tacit – explicit knowledge classification. In other words, knowledge is classified into two groups - (1) explicit/ codified knowledge and (2) tacit/ non-codified knowledge.

Explicit/ Codified Knowledge

Explicit knowledge is the component of knowledge that can be codified and transmitted in a systematic and formal language. It is therefore fairly easy to identify, store and retrieve. This knowledge is most easily handled by knowledge management system (KMS), which are very effective at facilitating the storage, retrieval and modification of documents and text.

From a managerial perspective, the greatest challenge with explicit knowledge is similar to information. It involves ensuring that important knowledge is stored; and that the knowledge is reviewed, updated or discarded. Explicit knowledge is found in: databases, memos, notes, documents, CD, Floppy, HD, e – books, e – journals etc.

Tacit/ Non–Codified Knowledge

Tacit knowledge is personal, context specific knowledge that is difficult to formalize record or articulate; it is stored in the heads of the people.

The tacit knowledge was originally defined by Polanyi in 1966. It is sometimes referred to as know–how and refers to intuitive, hard to define knowledge that is largely experience based. Because of this, tacit knowledge is often context dependent and personal in nature. It is hard to communicate and deeply rooted in action, commitment and involvement.

KMS hasa very hard time inhandling this type of knowledge. An information technology system relies on codification, which is something that is difficult/impossible for the tacit knowledge holder.

Tacit knowledge is found in the mind of human stakeholders. It includes cultural beliefs, values, attitudes, mental models, skills, capabilities, expertise etc.

Knowledge Management (KM)

KM is the systematic management of organisations knowledge assets for the purpose of creating value and meeting tactical and strategic requirements.It consists of the initiatives, process, strategies and systems that sustain and enhance the storage, assessment, sharing, refinement, and creation of knowledge.

KM therefore implies a strong tie to organisational goals and strategy and involves the management of knowledge that is useful for some purpose and which creates value for the organisation. Knowledge management is managing the corporation's knowledge through a systematically and organisationally specified process for acquiring, organising, sustaining, applying, sharing, and renewing both the tacit and explicit knowledge of employees to enhance organisational performance and create values.

Expanding upon the above definition of knowledge management, it involves the understanding of:

- Where and in what forms knowledge exists.
- What the organisation needs to know.
- How to promote a culture conducive to learning, sharing and knowledge.
- How to make the right knowledge available to the right people at the right time.
- How to best generate or acquire new relevant knowledge.
- How to manage all of these factors so as to enhance performance in light of the organisation's strategic goals and short term opportunities and threats.

KM must create and provide the right tools, people, knowledge, structures, culture etc. so as to enhance learning; it must understand the value and applications of the new knowledge created; it must store this knowledge and make it readily available for the right people at the right time; and it must continuously assess, apply, refine and remove organisational knowledge in conjunction with concrete long and short term factors.

KM is a process that has been heavily influenced by the growth and application of computer technology to data and information management. That may explain why traditionally, knowledge management has been located in IT departments. IT can support KM it two ways: by providing the means to organise, store, retrieve, disseminate, and share explicit knowledge and information rapidly around the organisation and around the world; and by connecting people with people through collaborative tools to capture and share tacit knowledge.

IT can improve knowledge flows, but cannot guarantee them. Even the most successful of technological solutions can be frustrated by lack of time and motivation for knowledge sharing, and inability to truly capture tacit knowledge and use this knowledge effectively. It is also worth noting that some organisations function well without formal KMS by exploiting IT such as intranets (Webster, 2007).

Groupware(messaging and email), document management, workflow, data warehouse, multi – media repositories, intranets and portals, information retrieval technologies and search engines, business modeling, intelligent agents, and other technologies can be grouped by category such as content management, knowledge transfer/sharing and collaboration or as distributive and collaborative technologies (Martin, 2008).

Hardware

Different types of hardware generally used in KM are dot-matrix printer, inject printer, laser printer, barcode printer, barcode scanner, CD writer, data computing unit, digital camera, planetary scanner, portable barcode reader, network laser printer, servers, computer work stations, microphones, HD, CPU, sound card, touchpad, touch screen, concept keyboard, graphic tablet, bar code reader, magnetic ink character recognition(MICR), magnetic get, optical character recognition(OCR), magnetic stripe readers, sensors, biometric devices, plotter, projector, speaker, head phones, LED, DVD, CD, magnetic tape, flash memory(USB memory sticks) etc.

Software

To bring the hardware establishment in to activation, proper software facilities are required by the library/ knowledge management organisation (KMO) to serve up-to-date information/ knowledge to the users. Different kinds of software are used in KMO which are as CDS / ISIS, SOUL, Libsys, koha, SLIM++, Winsis, Win soft, Winlis, chronicles 2001, e–Granthalaya, Libsuit ASP+, Greenstone, Winspiris, Adobe Acrobat Reader, Photoshop, D–space etc.

Network Services

The Internet has become an indispensable resource for knowledge management organisations worldwide to enhance the collection, improve services and operations. It has made easy access to knowledge sources like books journals, electronic publications, e-book, e-journals, e-theses, e-dissertations, e-magazines, e-newspapers, e-newsletters, e-documents etc. The Internet can be successfully utilised for providing reference services because various primary and secondary sources of information are available online. It is possible to access the resources of knowledge of others knowledge management organisation through the Internet. It is also possible to have the entire collection of KMO through web OPAC (online public access catalogue) and to make a request for a document through e-mail. Many organisational Internet service providers prevail like Online Computer Library Centre (OCLC) in the USA, British Library's Automated Information Services (BLAISE) in Britain, Joint Academic Network (JANET) in UK, National Informatics Centre Network (NICNET) in India, Education and Research Network (ERNET) in India, National Information System for Science and Technology (NISSAT) in India, Information and Library Network (INFLIBNET) in India, as well as metropolitan area networks in India such as – CALIBNET (Calcutta), BONET (Bombay), PUNET (Pune), MALIBNET (Madras), MYLIBNET (Mysore), HYLIBNET (Hyderabad), ADNET (Ahmedabad), DELNET (Delhi) etc.

Information Technology (IT)

Information technology (IT) is a term that covers the acquisition, processing, storage and dissemination of information/ knowledge. It involves the application of computers and communication technology in the task of information handling and information flow from the generation to the utilisation levels. It is restricted to system dependent on microelectronics based combination of computers and telecommunication technologies. The IT is

the boon for mankind. It gives accessibility to information at fingertips. There has been discussion on "Information highways" and high tech KMO. The promising and diversified possibilities of IT have reduced the space and time between the people, countries, and continents and ultimately have led to the emerging concepts "Global Society" and "Global Village". Hence it is essential to give a bird's eye view of IT and its changing trends in relation to KMOs.

Information and Communication Technology (ICT)

ICT facilitates to preserve and provide anytime access to materials of all sorts i.e. text, photographs, manuscripts, audio, and moving images etc. Therefore, the basic purpose of ICT is full exploitation of local and global resources. Kenney and Rieger (2000) state that libraries are digitising materials because of the continuing value of such resources for learning teaching, research, scholarship, documentation, and public accountability. In addition, ICT raises the profile of the institutions, as worldwide users can know and use the institutional collection from remote locations, which was not possible with print publications. These merits have led to the significant growth of various national and international digitisation projects during the last ten years. Today such libraries/KMOs are having great future due to their built characteristics such as improved accessibility, improved searching, reduced time lag in publication, improved display, potentiality of quality copying and speed etc.

IT and ICT for KM

Some of the IT and ICT applications for KM are as follows –

Intranets

In the last few years, intranets have emerged as an important KM tool. Intranet is a computer network within an organisation, which uses www (World Wide Web) conventions and is accessible only to an authorised set of users. They provide several benefits compared to other types of IT applications. Intranets are easy to use and provide universal access to different platforms. At the same time, it allows person to person interaction. It can lower the communication cost. Additionally, it prevents outsiders from accessing sensitive information of an organisation, while linking employees to the outside world. It is widely to expand an organisational access to information and knowledge.

Extranet

It refers to an Internet based method that links an organisation with other specific organisations/people. Extranets are only accessible to those specified organisations/people and are password protected.

Data Warehousing

This is data management technology that incorporates information from multiple data sources and makes it easier to explore hidden meaning of data. It is a repository of information/ knowledge collected from multiple source stored under a unified schema at a single site. With a data warehouse, people can access large amount of information that can be examined from different perspective. This can enhance decision making and policy making quality. When used with appropriate analysis tools, valuable knowledge can be extracted.

Data Mining

It is the process of extracting useful information/knowledge from large data stored. This technology is used to find patterns, trends or relationships in large collections of data and predict future behaviours from them with the purpose of supporting organisation decisions.

Knowledge Mining

This is a new form of data mining. Knowledge mining is a process of extracting previously unknown knowledge from a variety of information/ knowledge sources. Knowledge mining can significantly improve the power of knowledge search by integrating various information sources stored outside of the traditional technology, e.g. related data and information on the web can be collected using software agent technology such as web spider.

Search Engines

These play a key role in making knowledge workers more prolific by giving them the information they need in an organised way. By using keywords, users can retrieve matching information.

Document Management Systems

These are repositories of important organisational documents and are therefore are important storage of explicit knowledge. Documents give the user knowledge with more contents and details.

Discussion Board

It is general term for any online "Bulletin Board" where you can leave and expect to see response to massages you have left. It enables multiple, simultaneous or a synchronous

textual conversations between geographically distributed participants.

Groupware

This is a technology that can overcome space and time barriers for group's interactions. Its focus is on helping knowledge workers share their expertise, particularly in a physically dispersed environment. It includes software for information sharing, electronic meeting, scheduling work flow management and email networks to connect members of the group.

Document Repository

It is a computer based application for storing and retrieving documents in an organised way. It is generally equipped with a search engine that uses key word matching and similar techniques, to locate and retrieve documents of potential interest to users.

Importance of IT in KM

The combination of computers, databases and telecommunications, especially the Internet, networking services provides organisations with an incredible number of options for improving the way organisations function. IT and ICT provide a systematic and professional approach to the management of information technology service provision. Following are the main benefits:

- Reduced service costs
- Saves the time of users as well as staffs
- Quality and quantity improvement
- Improved user services
- Improved user satisfaction through a more professional approach to service a more professional approach to service delivery
- Improved productivity
- Information technology helps to minimize the benefits
- Provides confidence to managed and cover risk to achieve the organisational goal.
- Reducing risk and errors
- Faster and easier recovery of data and disseminate the information.

Challenges Faced by KM in IT Era

According to many experts of KM, creating a culture of knowledge sharing is the prime challenges that most of the organisations face in implementing KM due to variety of formats, copyright issue, technology obsolescence, finance issue, cultural heritage, digital divide, digital reading, lack of national policy etc. Most people in the organisations think that knowledge is power they tend to have, hence making them share it within the organisation becomes a very difficult task.

The effective way to transfer knowledge for people is to find others who have it and talk to them. This, however, becomes difficult when organisations grow large or where knowledge content of tasks is high. Various formal mechanisms are thus needed to make this sharing happen. This can be through people to people sharing and they who expertise in this should be tapped asynchronously when needed.

Conclusion

Knowledge has become a key success factor in the global economy. IT has been generally accepted as a critical enable for the successful KM implementation. It becomes quite important to ensure that knowledge in the minds of resources is safeguarded. It is found that while about 26% of knowledge in the average organisation is stored on paper and 20% digitally, an amazing 42% is stored in employee's heads. There have been many instances where the learning and knowledge is lost when resources move to newer roles. With a concerted effort, use of information technology in knowledge management will helps to increase organisation operational efficiency and cater to the ever-increasing needs of clientele. Information/ knowledge professionals have to recast their roles as knowledge professional. The librarian's roles should not be limited to being the custodians of information but they have to acquire skills to keep themselves updated so as to cope intelligently and objectively with the effective and efficient knowledge management in organisation. Information technology and systems can provide effective support in implementing knowledge management in organisations knowledge manager should train themselves and their staff to develop the appropriate knowledge management systems and use information technologies to equipped KMOs to provide better, faster and pin pointed services to its users.

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