
CHANGING DIMENSIONS OF MANAGEMENT: INFORMATION MANAGEMENT TO KNOWLEDGE MANAGEMENT AND ITS APPLICATION IN LIBRARIES

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Abstract

With the advent of Information Technology and its application in Libraries, concept of document management has been drastically changed to information management and again with the proliferation of information world wide coupled with internet, the entire scenario of information management has started its change to knowledge management, which is a recent origin term. Knowledge Management has become a new research area in comparison to other research areas such as data processing, information management, and network management. The innermost assignment of a library is to accumulate, systematize, preserve, and endow with access to knowledge and information. In fulfilling this gigantic mission, libraries preserve a valuable record of culture that can be passed down to succeeding generations. Libraries are an essential link in this communication between past, present, and future. Whether the cultural record is contained in books or in electronic formats, libraries ensure that the record is preserved, managed and made available for wide range of its usability.

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1. Information : A Concept

Information is the outcome of the human excavation, which is known as knowledge. Information, thus, produced may be abstract or concrete. It is also a message that can be transmitted by a transmitter to a receiver. Information basically acts as a trigger set a human being on action plan and it may be very well compared with kinetic and potential energy where, the former moves things and the latter is recorded and acts as the reservoir. Lack of proper, complete and authentic information seldom leads to disillusion and improper decision that bring serious threat to the various developmental plans. Hence, the importance of information as a resource has been recognized for centuries. The Oxford English Dictionary defines 'Information' as the action of informing; formation or component of the mind or character, training, instruction, teaching; communication of edifying knowledge. The concept of information has been visualized by different authors in different angles. Information, hence, can be viewed as,

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- Knowledge communicated or received concerning a particular fact or circumstances;
 - Communication or reception of knowledge or intelligence. It is a knowledge communicated by others or obtained through investigation, study or instruction;
 - A concept, statement, and idea or an association of concepts, statement, and the ideas;
 - Communication of knowledge derived from observation, study, experience, or instruction.
 - Message conveyed or intended to be conveyed by a systematized body of ideas, or its accepted or acceptable substitutes

The genuine, pinpointed, extensive, and judicious information is one of the crucial factors accountable for the augmentation and expansion of a society. Information happens to be one of the indispensable and effectual tools to resolve the current problems faced by an individual, a community, and an organization as well.

Electronics encompasses an exceptionally broad range of technology. Electronics is essential, for example, in telecommunications, an ever-increasing volume of information is transmitted in digital form. Digital techniques, in which signals are converted into groups of pulses, allow the intermingling of voice, television, and computer signals into one very rapid series of pulses on a single channel that can be separated at the receiving end and reconstituted into the signals originally sent. Because the digital pulses can be regenerated perfectly after they become attenuated with distance, no noise or other degradation is apparent at the receiving end (Encyclopedia Britannica CD: 2001). Further, the unstinted growth of information irrespective of the fields in the midst of Information Technology (IT) era shaped mayhem for the availability of pinpointed, authentic and timely information in a structured form that paved the way to establish the multidimensional, multidisciplinary, and versatile information in an organized form. The management of the increased complexities of prolix information due to technological revolution, causing technological advancement - thereby, intensive research and development, varied tastes of information of the user communities, and more pertinently the information explosion in the 21st century created much impact upon the information managers and the decision making authorities to obtain, store, process, retrieve, and dissemination of the same in an organized form. Thus, knowledge may be defined as an organized body of information or understanding of facts that by thorough assimilation, one can acquire which in turn, helps in the generation of new knowledge or information.

The information is one of the most effective tools that ameliorate to solve the day-to-day problems of the society. Lumberton, however, discloses that, the term information and knowledge revolution has far reaching economic, social and political consequences. In the present state, both information and knowledge have primacy over the building, land and machinery. Information is thus delineated as the knowledge, intelligence of news irrespective of the subjects on which it has been taught. Bertrand Russell, in

connection with his celebrated theory of descriptions has categorized information in two ways i.e, (a) Knowledge by acquaintances and (b) Knowledge by description. He, however, has argued that information that is based on direct experience is basic and needs no justification, which is otherwise known as “Knowledge by acquaintance.” The information that is not based on direct experience is known as “Knowledge by description.” One is justified in calling such information knowledge, if one can show that it can be traced back to and thus ultimately rests upon knowledge by acquaintance (Encyclopedia Britannica CD 2001).

Knowledge is the totality of ideas that are generated out of human mind at different points of times that also emanates from the very interaction of human beings with nature and its surroundings that infect, has no definite shape in its structure. It is the human intellect that organizes itself into different modules for assimilation and use.. Dewey has identified the following five main functional stages through which knowledge can effectively be acquired which include:

1. Identification and definition of the problems faced by an individual;
2. Observation, Collection, Organization, and Classification of relevant data that may solve the problem;
3. Formulation of tentative hypotheses, which provide guidelines while solving problems;
4. Testing of hypotheses through collected data; and
5. Analysis of data and formulation of conclusions.

The knowledge that is generated and is made available through the Industrial and Commercial Organisations, Research institutions, Universities, and such other Academic institutions, when applied after testing by a researcher creates a new dimension of knowledge over the existing one. Thus, the effective utilization of the existing knowledge in a field of research leads to new inventions, discoveries, and innovations. It can, therefore, be inferred that, the onus of information rests upon knowledge-organization.

2. Generation of Information

Preoccupation with information and knowledge as an individual, organizational, and societal resource is stronger today than at any other time in history. The present, however, has several new dimensions relative to the information resource: modern information systems collect and generate information automatically; they provide rapid, high-resolution access to the corpora of information; and they manipulate information with previously unattainable versatility and efficiency.

Modern information systems also bring new efficiency to the organization, retrieval, and dissemination of recorded information. The control of the world’s information store has been truly revolutionized, revealing its diversity in hitherto unattainable detail. Information services provide mechanisms to locate documents nearly instantaneously

and to copy and move many of them electronically. New digital storage technologies make it economical for some to obtain for personal possession those collections equivalent to the holdings of entire libraries and archives. Alternately, access to information resources on electronic networks permits the accumulation of highly individualized personal or corporate collections in analog or digital form or a combination of both.

Digital information is stored in complex patterns that make it feasible to address and operate on even the smallest element of symbolic expression, as well as on larger strings such as words or sentences and on images and sound. From the viewpoint of digital information storage, it is useful to distinguish between “structured” data, such as inventories of objects that can be represented by short symbol strings and numbers, and “unstructured” data, such as the natural-language text of documents or pictorial images. The principal objective of all storage structures is to facilitate the processing of data elements based on their relationships; the structures thus vary with the type of relationship they represent. The choice of a particular storage structure is governed by the relevance of the relationships it allows to be represented to the information-processing requirements of the task or system at hand. Further, the rapid developments in computers, telecommunications, and other technologies have made it possible to store and retrieve information in many different forms and from any place with a computer and a telephone connection. The terms digital library and virtual library have begun to be used to refer to the vast collections of information to which people gain access over the Internet, cable television, or some other type of remote electronic connection.

3. Information Management

The proliferation of information, computer technology added with skills and development of telecommunication in manifold dimension have resulted a positive brunt on the acquisition, storage, organization and proper dissemination of information. The Libraries and Information Centers in the helm of present information technology age no longer reckoned on the traditional shape of meeting the requirements of the users rather, they adopted new technological devices to satisfy the varied tastes of information requirements of the user community.

Information Revolution in the rudder of present technological scenario has resulted to generate the term Information Management. The unprecedented explosion of information through Internet, Intranet and other electronic sources has also resulted for creation of Information overload almost in every service organizations in general and Library and Information Center in particular. The overwhelming growth of information from all quarters became a serious concern to propagate the right information to the right reader in right time in such an electronic environment. The Librarians and Information Officers necessitated the change in management system of information and adopted new budding techniques in relation to the process involved in information generation, collection, storage, processing and dissemination, utilization and above all feedback. The ontogenesis of a system to grip information is the most complex and it involves considerable investment. Social activities of such dimensions

have to be planned and guided to give maximal benefit to all sections of the society. This is in general the objective of the Information Management (Rao, 2002).

Efforts to explore an identity for Information Science almost continue unremittingly. Despite the fact that, there exists a unanimous opinion by the scientists regarding prominent role of information to human society, both the concept of 'Information' and the 'Science' remain tangled in loosely defined terminological controversies and multifaceted opinion. It may not be out of place to mention that, the term 'Science' has some greater connotations. The extent of its nature and scope is away from a common viewpoint. Broadly, electronics and knowledge contribute to the origin of Information Science.

There is no universal accepted definition of information management though the concept was generated during 1980s. (Ravichandra Rao, 2002). But, information management has been defined in various ways. While, Keary (1997, pp.35-7) has defined it as a methodology for identifying all available information in an organizing, Taylor and Farrell (1992, pp.319-22) has highlighted it as Management of Information System in the angles of IT application in libraries for organizing of information resources, acquiring, management, and retrieval; System Analysis and Design and more specifically as Data Management. These are primarily required for effectual means of information use and for decision making. In the words of Ravichandra Rao (2002) Information Management is not only about managing the processes of selection, collection, processing, controlling and dissemination of information but also enabling the effective use of information. Information Management is thus, can be broadly defined as a methodology for proper acquiring of information in any form whether traditional or electronic such as, On-line Databases, CD-ROM Databases, Web Sources etc, and organization of information resources in libraries, for the purpose of retrieval and dissemination of the same in the right manner.

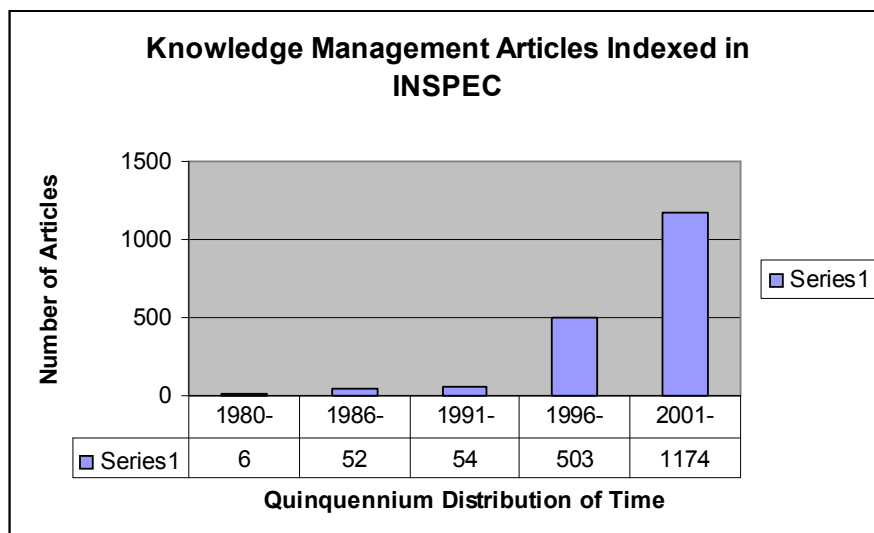
4. Knowledge Management

Knowledge has been widely recognized as a primarily commodity in the current knowledge-based economy. The optimum use of the products and resources as well, from the Computer Technology Systems in an edifice and consolidated form including accumulated pool of information generated from the brains of the scientists in their fields and more specifically the Personal Knowledge precipitated to the establishment of Knowledge Management. It is the end result to contrive the irresistible growth of information in an effectual way with the help of the modern technological devices and has thus, became an indispensable path in the highly competitive service oriented including business environment which require more responsive, innovative, and competitive including efficiency. Knowledge Management is a revolutionary method by which, the dispersed knowledge available from diversified sources are captured, assimilated and converted into a powerful competitive intelligence through various electronic segments such as CD-ROM, DVD-ROM, Web, Pen drive, Floppy, Hard disks, Software etc. Moreover, Knowledge Management can be defined as a study of strategy, process and application of technologies to acquire, select, organize, share and influence

critical information and apply expertise to improve the qualities of information services in the libraries. It embodies synergistic integration of information processing capacity and creative capacity of human beings in order to maximize the responsiveness and flexibility of organization (Siau, 2005, 117-23.).

It may not be out of place to mention that, INSPEC (<http://www.iee.org/publish/inspec>), which is a bibliographic database, provides access to the world wide literature on Physics, Electrical Engineering and Electronics, Control Theory and Technology and Computers. INSPEC which accumulates more than 7,503,985 citations, covers 4000 journals including the fields in Communications, Computer Applications, Computer Hardware and Software, Information Technology and Office Automation. From 1980 to 2005, it has indexed 1789 articles on Knowledge Management (Zhuang; 2006). The data pertaining to articles available on Knowledge Management in INSPEC from 1980 to 2005 are reflected as under corroborated with a graph for crystal clear.

Sl.No.	Years	No. of articles
1	1980-1985	6
2	1986-1990	52
3	1991-1995	54
4	1996-2000	503
5	2001-2005	1174



5. Momentum of Knowledge Consciousness

The initiation of Knowledge Management, as a strategic lever is not fresh. During 1970s and 1980s the expectations of harnessing knowledge was to solve many business problems at the early stage through Knowledge based Computer System i.e, 'Expert System', but subsequently it emerged a viable tool in the field of Library and Information Service.

It may be mentioned that, the more wide-ranging view of the all-encompassing role of knowledge in business activities, has evolved from a number of management authorities including practitioners as portrayed by Amidon in 1997 (Skhrrme, 2004). This visualizes the evolution and convergence of thinking and writing about knowledge as a strategic focus, alongside other initiatives such as agile manufacturing, innovation and the learning organization. The types of knowledge i.e, the Explicit Knowledge and Tacit Knowledge including the conversion processes can be described as follows.

The four conversion processes they describe are:

- Tacit-to-tacit (socialization) - where individuals acquire new knowledge directly from others;
- Tacit-to-explicit (externalization) - the articulation of knowledge into tangible form through dialogue;
- Explicit-to-explicit (combination) - combining different forms of explicit knowledge, such as that in documents or on databases;
- Explicit-to-tacit (internalization) - such as learning by doing, where individuals internalise knowledge from documents into their own body of experience.

5.1 State of Knowledge Practice

Knowledge adds substantial value to a Library and Information Service apart from other areas of its applications especially through its products, processes, dissemination and knowledge workers. The product contribution of knowledge is described by Davis and Botkin (1994).

The most common activities in the Knowledge Management initiatives are as follows and these can be well initiated, developed, and disseminated by Library and Information Centers to satisfy the varied needs of the user communities including commercialization of knowledge as a part of marketing of knowledge products and services.

- Creation of knowledge teams - people from all disciplines to develop the methods of knowledge management
 - Sharing of best practices - from one part of the organization to another, through databases, but also through personal interaction and sharing events
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- Development of knowledge databases - best practices, expert directories, market intelligence etc.
- Creation of Knowledge Centres - focal points for the development of knowledge skills, managing and enhancing knowledge databases and facilitating knowledge flow
- Collaborative Technologies - the use of Intranets (internal Internet) or groupware for rapid information access
- Intellectual Capital teams - to identify and audit intangible assets such as knowledge.

6. Contents of Knowledge Management in Libraries

According to Shanhong, the contents of Knowledge Management broadly can be grouped as follows which can be applied for innovative outputs in the Library and Information Centres (www.ifla.org)

6.1 Knowledge Innovation Management

Knowledge Innovation Management in Libraries and Information Centres is associated with the management of the production, dispersion and relocation of knowledge both in house and network systems as well developed by the concerned institutions and organizations and it includes three primary aspects, namely, Theoretical Innovation Management of Knowledge, Technical Innovation Management and Organizational Innovation Management.

While the Theoretical Innovation Management is to enrich and enlarge the theoretical and practical research fields of library and information science through pursuing the latest development trends in library science, the Technical Innovation Management is to manage the network systems of technical innovation. In the changing circumstances and technical gadgets, the Libraries and Information Centers need to adopt the Knowledge Management through technical expertise. The Organizational Innovation Management is to create a set of effective organizational management systems adaptable to the requirements in the electronic library era to support and strengthen knowledge management activities, by optimizing the functional departments and operation procedures of libraries. Formulation of management plans, coordination of Knowledge Management activities, establishment of leading groups of Knowledge Flow, evaluation of information to shape knowledge, creation of knowledge through electronic resources are some of the important accomplishing tasks for application of Knowledge Management activities (Sheng;1999; 29-32).

6.2 Knowledge Sharing Management

Knowledge Sharing Management is another important dimension of Knowledge Management and Knowledge Dissemination Management. The strategy of utilizing a Knowledge Management System to capture and distribute knowledge requires that

individuals contribute their knowledge to a system for the use of unknown persons, instead of keeping it to themselves or sharing it only with known others. Some individuals follow the knowledge is power dictum by hoarding knowledge. As there are a multitude of knowledge users, it is very difficult to acquire knowledge that already exists in the minds of knowledge creators as restricted by various objective and subjective conditions. Therefore, Libraries and Information Centres may play the part of knowledge creator by using diversified Medias and Channels to disseminate various new knowledge. The Internet, in spite of its ocean of un-scaled information can facilitate the users to search knowledge and acquire information. At this juncture, the role of Library and Information Centres become paramount who scan the information, bundle it according to available device and need of users and manage it for proper dissemination of filtered information. Further, it is necessary to strengthen Knowledge Dissemination management in libraries as follows:

- Uninterruptedly strengthening the creation of libraries' own document resources and deepening the development of document information resources;
- Continuously raising the quality of libraries' staffs and strengthening continuous engineering education of working staffs;
- Giving full play to the special role of the expert system in knowledge dissemination;
- Making a comprehensive utilization of all media to ensure security of operation of networks, and prevent online criminal activities and online dissemination of inappropriate information (Sheng; 1999; 29-32).

6.3 Knowledge Application Management

During 21st century and especially in the domain of Internet, the Library and Information Centers requires being abreast with the latest services for the clientless by way of acquiring pinpointed, exhaustive, versatile, filtered, and needing based information for greater academic benefits including the attachment and hence, knowledge services must be based on high-speed information networks which can be carried out by way of;

- Setting up virtual libraries or information centers for enterprises, governments, public organizations and scientific research institutions. It is difficult for an enterprise or a social organization to put sufficient manpower, material and financial resources on information gathering, organizing and developing. It is also impossible and unnecessary to spend a large amount of funds on information resources for their own use. Libraries can create virtual libraries or information centers for these organs separately according to their respective information requirements by using abundant information resources on the high-speed information networks.
 - Setting up digitized knowledge services which is actually a development trend of libraries in the 21st century. This presupposes: creating step by step the users-oriented information service systems such as information dissemination, information search and special supply of information; quickening the creation of digitized libraries; studying the methods, means and techniques of information
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distribution and search with the Internet as the base and WEB technique as the core.

- Digitizing libraries' resources. The electronic libraries or digitized libraries are the technical modes and development trends of libraries in the knowledge economy era. The knowledge services of libraries in the future will start with creation of databases comprising electronic journals and books in different languages that have discipline features and can operate on high-speed information networks. Great efforts should be made to transform all existing large non-electronic information resources into electronic information and integrate them into electronic libraries.

6.4 Human Resources Management

Human resources management takes it as its basic starting point to train high quality specialized talents and to revitalize the library undertaking. In practice, attention is required to be agreed to diversity and variation of library staffs' requirements, strengthening management of different library staffs by applying contingency management approach.

7. Technologies for Realizing Knowledge Management of Libraries

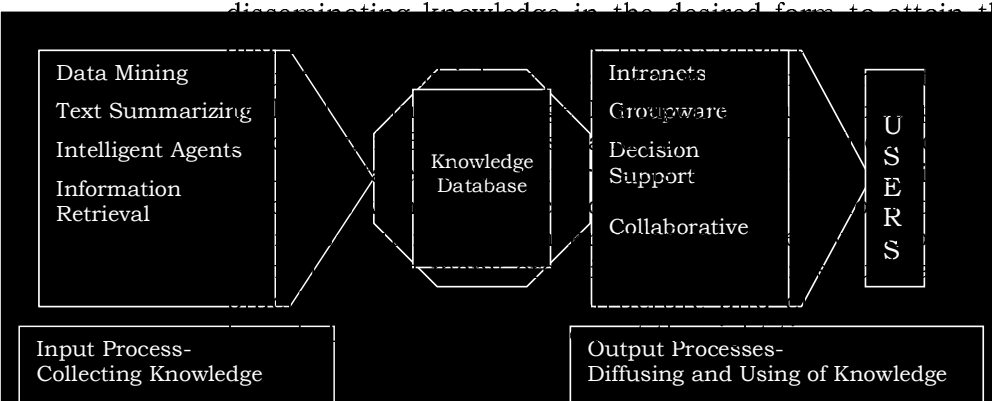
One of the aims of knowledge management in libraries is to promote the knowledge exchange among library staffs, strengthen innovation consciousness and abilities, and arise the library staffs' enthusiasm and abilities for learning, making the knowledge most efficiently applied to business activities of the library, and rebuilding the library into a learning organization. Therefore, the main train of thought in realizing knowledge management of libraries is a rational design of the organizational structure and business procedures of libraries, and cultural fostering, as well as modernized information support, thus creating an environment and incentive mechanism for innovation, exchange, study and application of the knowledge. Though it is tough job to apply all technological applications and compile, regrouping, organize and disseminate the right information to the right users at right time still, it is necessary for the Library and Information Centers to adapt to the changing environment and make knowledge processing value chain. The data mining, text summarizing, intelligent agents, information retrieval etc. are some of the basic components of input processes and are viable tools for creation of knowledge database which can be disseminated through intranets, groupware, decision support, and collaborative as output process. This has been depicted in Figure-2 for better clarification and understanding.

Figure 2 - Computer support for knowledge processes

8. Conclusion

The Libraries and Information Centers act as bridge for turning the results of knowledge innovation into realistic productive forces. Information Technology in the present era has become an indispensable tool in all-organizational growth in systematizing and disseminating knowledge in the desired form to attain the objectives.

The Libraries and Information Technology provides and exploited. Information Technology provides many advantages such as, (i) management, though complex in the systems and employees and forging alliances. Knowledge Management requires a technology, human resources to ensure that the right



1. Encyclopedia Britannica CD, 2001
2. KEARY (Mal). Information Management as an instrument of change. *Managing Information*. 4(3), 1997, p35-7.
3. RAVICHANDRA RAO (I K). Issues and Challenges in Information Management in the context of fast emerging electronic sources. In. *Proceedings of Information Management in e-libraries*. 2002. IIT, Kharagpur.
4. SHENG Xiaoping. Knowledge Management of Libraries in the 21st Century, *Library Magazine*, 1999;(8),29-32

5. SIAU (N F) & TIAN (Y). Knowledge Management mechanisms of financial service sites. Communications of the ACM. 48(6), 117-23.
6. SKHRME (D J). From Information Management to Knowledge Management: Are you prepared?. On line Information. 2004.
7. TAYLOR (Allan) and (FARRELL) Stephen. Information Management in context. Aslib Proceedings. 44(9), Sept 1992. 319-22.
8. www.ifla.org (Accessed on 10.12.2006)
9. ZHAUNG (Dongsong). Knowledge Management in Organization. Journal of Database Management. January-March, 2006.

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