

## **Impact of Information Technology and Role of Libraries in the Age of Information and Knowledge Societies**

D K Singh

Mohammad Nazim

### **Abstract**

*Information technology is currently taking center stage and transformed the whole world into a global village with a global economy, which is increasingly dependant on the creative management and distribution of information. The enormous advantages it has in easing the delivery of information around the world. The paper discusses the impact of information technology and role of libraries in the age of knowledge and information societies. It also highlights the problems faced by the Library & Information Service (LIS) sector in India and achievements over the years using modern information technologies.*

**Keywords :** ICT, Information Technology, Library Services, Knowledge Management

### **1. Introduction**

Information technology has transformed the whole world into a global village with a global economy, which is increasingly dependant on the creative management and distribution of information. Over the past decades the world has been experiencing significant changes in which the need to acquire, utilize and share knowledge has become increasingly essential. Now, in the 21st century, the age of knowledge and information is in its higher gear. This is an age when invisible knowledge and information take the role of prime movers leading all sector (1). The World Bank has used metaphor "knowledge is development". Lack of knowledge is largely responsible for underdevelopment (2). In a knowledge and information-oriented society, creative brains become leaders of economy and knowledge workers are in great demand. If knowledge can be equated with development, then the wider the knowledge gap, the broader the development gap.

#### **1.1 Emergence of Information and Knowledge Societies**

Some 10,000 year ago the early ancestor of mankind, subsisted by hunting and gathering, started to building agrarian societies. The old agrarian societies began their transitions to industrial societies in mid-18th centuries (3). Expansion of intellectual activities in industrial societies, such as industrial production, international trade and transactions, and technological advancement, stimulated mass distribution of education and creation of libraries. Industrial societies continued their enormous material development throughout the 20th century.

The information society has passed through four transformational stages of development, the most radical stage starting at the tail end of the 20th century. This stage has brought a never-ending revolution, particularly with the introduction of information and communication technologies (4). During this period, there have been unprecedented developments, profoundly affecting the social

---

structure – the decline of manufacturing sector as compared to the prospering information-rich service sector is one example of such developments (5).

The concept of knowledge societies is often used to denote a development in or second generation of information society. Whereas the information society aims to make information available and provide the necessary technology, the knowledge society aims to generate knowledge, create culture of sharing and develop applications that operate mainly via the Internet (6). The goal of knowledge society is to fill social needs, create wealth and enhance the quality of life in a sustainable manner.

India is moving fast towards becoming an information society as the Government of India is paying due attention to the use of information technology (IT). The Prime Minister of India constituted a National Task Force on IT and Software Development in May 1998 with the purpose of formulating a long-term National IT Policy to convert India into an IT software superpower. These steps are helping India to shift from an “economy of goods” to a “knowledge economy” or “knowledge driven economy”. The beginning of the knowledge society has been made through creation of parks and corridors, and the Prime Minister has given a mission of converting India into a “knowledge society” by the year 2008. Today, India is one of the largest exporters of knowledge workers (7).

## **2. Role of Libraries**

In the modern knowledge society libraries have a new role and there are various types of library models. In the modern society, where the use of electronic services and Web-based information sources constantly increases, libraries are managed in a more democratic way, have more flexible communication system and work organization, and their service development is based on the quality and user-orientation of services. In the modern knowledge society libraries have a new role and there are various types of library models. These are as follows:

- ◆ traditional library as a memory institution
- ◆ library as a learning and research centre
- ◆ library as a cultural and communication centre
- ◆ electronic library
- ◆ digital library
- ◆ virtual library as library without walls

Libraries had been performed many important roles in the past agrarian and industrial societies. But those roles were limited in scope. In the 21st century, libraries have to perform pivotal roles in disseminating and sharing the culture of knowledge. In this age of knowledge libraries should be repositories of all of the knowledge and information accumulated by human kind. They will have to store all kinds and forms of material and information and disseminate beyond the geographical boundaries. Today's advanced information technology is enabling libraries to accomplish this immense task.

Exchange of knowledge has always been the most important objectives of libraries. Various systems have been developed to share and exchange the records of human knowledge. Universal Bibliographic Control and Universal Availability of Publications are two major programs of IFLA (International Federation of Library Associations and Institutions) to exchange knowledge world over. OCLC is the world leading library network in USA for sharing intellectual knowledge among academic community in all over the world. But libraries in the 21st century should fulfill more dynamic role. They should exchange knowledge and information with users inside and outside their country, thus going beyond their traditional reference and lending services. This would possible when libraries agreed to expand their roles beyond the geographical boundaries by using state of art technologies.

The modern libraries certainly can not be passive repository for books and other printed materials. The opposite requirements of storing increasing collection in various forms and of maintaining easy access to most part of it can only be balanced by deploying information and communication technologies. Libraries should upgrade their services by digitizing their resources for online use. These services should be accessible to anyone, regardless of time or location, through digital communication devices.

Libraries can play significant role in providing a good education and knowledge of high quality. Individuals around the world, no matter how poor they may be, can access whatever knowledge and information they need by visiting libraries via the internet, such as the library of congress.

### **3. Problems and Opportunities Facing Libraries in India**

Library and information services are fundamental to the goals of creating, disseminating, optimally utilizing and preserving knowledge. They are instrumental in transforming an unequal society into an egalitarian, progressive knowledge-based society. It is well known that in India most of the libraries function in the government sector. These are in academic and research institutions and under the public library system, which is again under the state and central governments. At present, education being a state subject and coming under the purview of different apex agencies, there is no common direction or coordination among them. It is imperative that all libraries (public, academic, research and special) change gear and develop at an accelerated pace. Developments in information communication technology (ICT) have enabled libraries to provide access to all, and also bridge the gap between the local, the national and the global. Yet the Library and Information Services (LIS) sector in India has not kept pace with the paradigmatic changes taking place in society. There are a few libraries which are using state of art technologies to disseminate knowledge to their respective user community. There is lack of cooperation among the libraries of different organizations and which cause the lack of union catalogues at national level. The national library failed even to do this immense task. One of the major problems faced by LIS sector in India is lack of bibliographic control at national level which causes duplication in research. A considerable number of libraries had not been developed bibliographic databases of their documents for putting them on network.

---

To summarize, the major constraints faced by the libraries which militate against effective dissemination and use of information are:

- ◆ A considerable percentage of the population is illiterate or functionally literate making libraries of minimal use to them.
- ◆ Poor resource allocation for infrastructure improvement and collection development for public libraries.
- ◆ Lack of sufficient sanctioned posts, forcing most services to be operated by voluntary non-professional staff, which damages information organization and services.
- ◆ Lack of national policies promoting ICT as a tool for development of library systems and services.
- ◆ Lack of adequate trained manpower in the use of IT.
- ◆ Lack of funds for acquiring necessary hardware and software facilities.
- ◆ Resistance on the part of library staff to change from their traditional practices to the use of IT.

Despite the above problems, Library and Information Services (LIS) sector in India has got remarkable achievements. Efforts had been made to set up networks at local, regional and national level to deploy information and communication technologies and to build electronic information sources. Besides INFLIBNET at the national level to support university and college libraries, a number of other national networks and various library networks have also been developed including NICNET (National Informatics Centers Network), ERNET (Education and Research Network), CALIBNET (Calcutta Library Network), DELNET (Developing Library Network), etc. A number of educational institutions are members of such networks. These networks, especially INFLIBNET and DELNET, are engaged in compiling union catalogs, creating various databases of experts, providing training to library staff, ILL, online facilities, reference service, assistance in retrospective conversion, etc.

To overcome the problem of financial crunch and the rising costs of journals, librarians have formed consortia to subscribe all the required journals and databases. Some special libraries and research organizations have established consortia known as FORSA (Forum for Resource Sharing in Astronomy) to share electronic access to journal literature. NISCAIR (National Institutes of Science Communication & Information Resources), one of CSIR labs, has formed a consortium for CSIR labs for accessing e-journals and databases. In order to solve the problem of universities and college libraries, UGC launched a major initiative called UGC-INFONET that provides high speed Internet connections so as to have electronic access to professional literature including research journals, abstracts, review publications, and databases from all areas in science and technology, as well as in social sciences and humanities. The Ministry of Human Resource Development (MHRD) has set up the "Indian National Digital Library in Science and Technology (INDEST) Consortium" for the subscription to electronic resources for 38 academic institutions, including the Indian Institute of Sciences, Indian Institute of Technology, Regional Engineering Colleges, Indian Institute of Managements, and about 60 centrally-funded/aided government institutions through the consortium.

For the improvement of quality of library and information services through the systematic acquisition, organization and dissemination of knowledge, various library associations have been set up at national and state level. They annually organized conferences, seminars and training programs to trained and update library professionals with latest development in LIS.

Recently libraries and research organizations realize the importance of digital libraries and they started the work of digitization of important documents. NISCAIR and the Department of Indian Systems of Medicine and Homoeopathy (ISM&H) have entered into an agreement for establishing a Traditional Knowledge Digital Library (TKDL) on Ayurveda. TKDL will be available in English, German, French, Spanish and Japanese since these languages account for more than 98% of the international patent applications. TKDL in the first phase targets Ayurveda. But as a whole it would encompass, in addition to Ayurveda, Siddha, Unani, Yoga, Naturopathy and Folklore medicine.

The Indian Institute of Science (IISc), Carnegie Mellon University (CMU), the International Institute of Information Technology, Hyderabad (IIITH) and many other academic, religious and government organizations, totaling about 21 "Content Creation Centers", have become partners in the Digital Library of India (DLI) initiative for the digitization and preservation of Indian heritage present in the form of books, manuscripts, art and music. Each centre brings its own unique collection of literature into the digital library. DLI has a vision to build a universal digital library of world knowledge. One million books have already been available through this project.

India perhaps has one of the oldest and largest collections of Manuscripts in the world. These manuscripts are in different languages and scripts; written on different materials such as birch bark, palm leaf, cloth, paper etc. They are in the custody of libraries, museums, monasteries, mutts and individuals. A significant proportion is not preserved scientifically. Experts estimate that almost all palm leaf manuscripts may perish due to wear and tear over next 50 to 100 years. In this regard the National Mission for Manuscripts has taken a step to save the most valuable, intellectual property of our cultural inheritance. The mission has started a pilot project for digitizing the manuscripts in five states across India covering five caches of manuscripts and for the same four digitizing agencies have been selected.

Importance of open access archives, institutional repositories and open access journals has been realized by the library and information professionals in India. This movement has been accelerated by the availability of open source software namely DSpace, EPrints, Greenstone, etc. Indian Institute of Science, Bangalore, INFLIBNET Centre, Ahmedabad and Documentation Research and Training Centre (DRTC), Bangalore are the leading institutions who made this movement a great success. Among the top 25 publishing countries, India ranks 12th for the overall number of journals, but drops to 18th for journals with online content (8). At present there are more than 150 open access journals in India. The open access journals in India are mainly initiated by six journal publishers,

---

namely, Indian Academy of Sciences, Indian National Science Academy, Indian Medlars Centre of National Informatics Centre, Medknow Publications, indianjournals.com and Kamla-Raj Enterprises (9). The Indian Institute of Science was the first in the country to set up and interoperable institutional archive (ePrints@IISc). The archive now has more than 7000 records, with over 90 percent having full text. Presently there are 25 institutional archives in India which are registered in the Registry of Open Access Repositories (ROAR) (10).

An open access statement is likely to be ready by this year. The CSIR also has a plan to setup a national digital repository of research literature. NISCAIR has already started to work on the project known as National Science Digital Library. National knowledge Commission is also formulating similar open access policies and guidelines for the higher education and R & D sectors to improve access to research literature and disseminate research literature to the global communities. The National Knowledge Commission has submitted its report to the government on how to redefine the information services sector. The report of Knowledge Commission on library sector suggests that "Every state should establish a registry and archives of knowledge based digital resources which should be made accessible to all" (11).

#### **4. Conclusion**

The acquisition of knowledge has therefore been the thrust area throughout the world. The economy of present times depends no longer on visible resources and capital goods but on invisible knowledge and information. Therefore, poor nations as well as poor individuals can create wealth through active contacts and use of knowledge and information. Libraries of the 21st century can help fight poverty and narrow the gap between rich and poor. For the first time in history poor are getting opportunity to enhance their wealth through the creation and use of knowledge. And libraries are taking a central role in this notable movement.

#### **References**

1. Feather, J. (2000), *The information Society: a study of continuity and change*, Library Association Publishing, London.
2. World Development Report (2003), *Sustainable development in dynamic world: transforming institutions, growth and quality of life*, The World bank, Washington.
3. Abell, A. and Oxbrow, N. (2001), *Competing with knowledge: the information professional in the knowledge management age*, Library Association Publishing, London.
4. Callaghan, M. (2002). "The impact of ICT on society". available <http://www.rdn.ac.uk/casestudies/eevl/ict/case3.html> (Last Accessed on 14.11.2007).

5. Kumar, K., Singh, S. P. (2000). "From information society to knowledge society". Journal of Library and Information Science, 25(2), 104-111.
6. Hargreaves, A.(2003), Teaching in the Knowledge Society: Education in the Age of Insecurity, Teachers College Press, New York.
7. Abdul Kalam, A. P. J. (2001, February 3-9). Knowledge society. Employment News, p. 1.
8. Haider, J. (2005) "The Geographic Distribution of Open Access Journals". Digital Library of Information and Technology. Available <http://dlist.sir.arizona.edu/939/> (Last accessed on 14.11.2007).
9. Arunachalam, S. (2006) "Open access: current development in India". Digital Library of Information and Technology. Available <http://dlist.sir.arizona.edu/1255/> (Last Accessed on 14.11.2007).
10. Registry of Open Access Repositories (ROAR). Available <http://roar.eprints.org/index.php?action=browse> (Last accessed on 12.11.2007).
11. National Knowledge Commission recommendations on Libraries. National Knowledge Commission. Available <http://knowledgecommission.gov.in/recommendations/libraries.asp> (Last accessed on 14.11.2007).

#### **About Authors**

**Mr. D K Singh**, Deputy Librarian, Central Library, Banaras Hindu University  
E-mail- dksingh5@yahoo.com

**Mr. Mohammad Nazim**, Professional Junior, Central Library, Banaras Hindu University  
E-mail-nazim76@gmail.com