Library & Information Network in India: An Appraisal

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LIBRARY AND INFORMATION NETWORKS IN INDIA
AN APPRAISAL

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Abstract
Highlights the role of networking in sharing and effective utilization of resources in libraries and information centres. Examines the scope and objectives of networking and traces the role played by the Government of India towards this direction. Describes the major networks within the country their origin, functions and services and discusses some of the practical problems that they face. Some solutions to overcome the problems are also offered.

1 Introduction
We are in an era of information technology. The accelerated thrust given to research and development activities coupled with the application of modern technology in printing, publishing and other methods for dissemination, has resulted in the phenomenon of exponential growth of information, which in turn has caused a lot of problems in the management of libraries and information centres. But librarianship has been able to effectively make use of the developments in information technology to solve these problems to a great extent. Techniques have been developed for the storage, organisation and dissemination of information and for performing the routine operations in a very efficient manner. The implementation of library and information networks has gone a long way in formulating an alternative to bridge the gap in the collection of individual libraries by sharing the resources among several libraries. The Government of India has been giving high priority to the development of networks of libraries and information centres in the country. This paper gives a description of the prominent networks in the country and the main problems that they face along with some suggestions.

2 Library and Information Network
A network implies computer and communication links that permit computers to communicate with each other and to share programs, facilities, data and knowledge bases. A network can be local, ie in one room, one office or in one institution or it can be national, regional or international. It is for the electronic transfer of information between two or more points irrespective of distance. Networks have been developed to link industrial plants, banks, schools, offices, railway/air lines reservations, libraries etc. These networks provide resources and information to their users in larger volumes at a greater speed than the earlier methods did.

Libraries whose central role is to organize and mediate access to information, are in position to both contribute to and benefit from information networks. Over the last three decades, libraries have become dependent upon computer and telecommunication technologies to carry out many of their functions (Kaul,1997). These functions include not only providing services such as information retrieval, inter-library loan and document delivery to end-users, but also those functions such as acquisition and cataloguing which support user services.

In the context of libraries, the term ‘network’ has been used to mean anything from the organizational resource sharing arrangements established among nearby libraries to automated networks such as those operated by bibliographic utilities. Special Libraries Association (USA) defines network as a formal arrangement whereby several libraries or other organizations engage in exchange of information materials, services etc.

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(Samuelson, 1997). It can also be considered as a set of inter-related information systems associated with communication facilities which adhere to more or less formal agreements and institutional agreements in order to implement information handling operations with a view to pooling the resources and serving the users better (Raghavan and Raghavan, 1996).

The main characteristics of library networks are that, they are developed specifically to support library technical processes such as shared cataloguing; they provide a particular set of services and are operated by single organization; and they are largely terminal to host networks. A library and information network aims at resource sharing which may include sharing documents, information, manpower and cost and; bibliographic control through shared-distributive acquisition, storage, retrieval and distribution of information sources or documents (Kaul,1995). The OCLC, Online Computer Library Centre, originally established in 1963 as Ohio College Library Centre can be considered as the first library network to be established. This has later led to the formation of many library networks in different parts of the world during the last two decades.

In general, the main objectives of library and information networks in India are: to strengthen bibliographic control of the country’s own technological output and to establish computer-based bibliographic databases in subject areas of interest to the region; to stimulate and promote the creation of non-bibliographic databases in science, technology and socio-economic areas; to develop and promote the technical and organizational structure and capabilities for exchange of data; to develop specialized networks in high priority areas; and to improve the national information infrastructure.

3 Role of Government in the development of networks in India

The growth and development in the areas of science and technology throughout the world has been instrumental to consider library and information networking an important agenda for a country like India. A look into the history of library and information systems and networks in the country during the last four decades, would reveal that Govt. of India has taken keen interest, rather slowly, for the development of computerized library networks.

The 1958 Scientific Policy Resolution adopted at the instance of Jawaharlal Nehru, the then Prime Minister of India, emphasized the fostering of scientific thinking in people of India. Since then, several committees and commissions were appointed in pursuance of this agenda to look into the issues/areas for library development which ultimately came up with necessary recommendations. Sinha Committee Report of 1959, Rangnathan’s Report to UGC in 1965, Peter Lazer report and V A Kamath report of 1972 are good examples.

The Planning Commission, Govt. of India has been taking considerable interest in library resource sharing and library networks. The efforts taken by the Planning Commission in this regard since the seventh five year plan need special mention. The Commission appointed a working group on modernization of library services and informatics in November 1983 and the 1983 Technology Policy Statement emphasized the need for a technology information base. In July 1984, the working group of the Planning Commission headed by Dr N Seshagiri recommended to the Government of India regarding the need for modernization of library services and informatics and also inter-linking of library systems through library networks during the seventh Five year plan, 1985-1990. The Commission appointed another working group on libraries, and informatics for the eighth five year plan. This Working Group submitted its report in May 1989 which again recommended among others, interlinking of library systems in the country.

The National Policy on Library and Information System submitted its report in 1988 and it recommended, among others the use of information technology on a national level. However, NISSAT had initiated the establishment of CALIBNET in 1988, PUNENET in 1992, ADINET in 1993, MALIBNET in 1994, BONE in 1992 and BALNET in 1995. UGC has initiated the

Planning Commission again appointed a working group on libraries and informatics for the ninth Five year plan for the period 1997-2002 and the report of the working group of Planning Commission was prepared under the chairmanship of Mr. B.P. Singh, Secretary, Dept. of Culture. This report also recommended for modernization of the libraries and information system to take up the challenges of 21st century in the areas of recent development of information technology, multimedia, networking and Internet. Besides these efforts taken by the Planning Commission, a core task group was also appointed to prepare an approach paper on technology and communication technology for library networks and library automation in the country.

4 Major Networks in India

A number of library and information networks have been established in India during the late 1980s and early 1990s. Description about the major ones is given below.

4.1 NICNET

The Planning Commission, Govt of India, formulated a plan to establish a country-wide computer network connecting all the district headquarters with a view to linking government departments for decision optimisation. The successful launching of the multi-purpose communication satellite INSAT-IIB enabled this and the data communication between the headquarters at Delhi and microcomputer-based RJE Station at Ahmedabad through Apple Satellite. The linking of computers in 16 major state capitals was initially started. Now the network connects all the district headquarters in the country and it is called NICNET, acronym of National Informatics Centre Network. This facilitates the development of interactive databases with query systems for the benefit of central and state governments.

Since its inception, NICNET has contributed a lot for data collection from remote areas and also for weather forecasting. It has also played an important role during parliamentary and assembly elections in our country, making possible teleconferencing between the relay centre/studio and constituencies to hold interviews and to get information on current party position during counting of votes and to flash results instantly to the media.

4.2 INDONET

The INDONET is a computer based network commissioned by the CMC, ie Computer Maintenance Corporation Ltd, in 1996. It comprises a network of computers located in many cities and connected by data communication links. The first phase connected five large computer systems located at Bombay, Calcutta, Delhi, Madras and Hyderabad. It is the first public data network in India which is available to public and private sectors including educational and research institutions. The user will have access to the network through terminals located at the CMC Computer Centre or through remote terminals connected to any local computer system through voice grade P & T lines at a speed of 300-1200 bps.

4.3 ERNET (Education and Research Network)

It is established by the Department of Electronics, Govt. of India. It connects a few academic institutions like the Indian Institute of Science, Bangalore; all the IITs; Department of Electronics, Delhi; and the National Centre for Software Technology (NCST), Bombay.

4.4 SIRNET (Scientific and Industrial Research Network)

The SIRNET connects the major National Research Laboratories under the CSIR throughout the country, to facilitate exchanging the latest developments in science and technology among the scientists of these laboratories. It is working under ERNET which is managed by INSDOC. It uses e-mail service for faster communication among the participating laboratories.

4.5 COALNET

COALNET was established in 1993 by the Coal India Ltd and it connects the offices, laboratories and libraries of Coal India throughout the country with a view of sharing the information/resources of R & D among the participating centres.

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4.6 INFLIBNET (Information and Library Network)

The INFLIBNET Programme was initiated by the University Grants Commission (UGC) in April 1988 by constituting a committee on 'Library Network' to advise it on preparing a blueprint for setting up a network for interlinking libraries (Pawar, 1988). It is a cooperative venture aimed at pooling, sharing and optimisation of library resources in the country. It is to function as a channel to exchange information between academicians and researchers within the country and abroad to support scholarship and academic work (Pramod Kumar and Arora, 1996). It is also a major step taken by the UGC towards modernization of university libraries and information centres in the country using computer and telecommunication technologies in order to provide speedy and efficient information service to end users. It is also aimed at organizing library service at macrolevel affordable cost and with maximum benefits.

INFLIBNET is envisaged to link colleges, universities, other institutions of higher learning, research and development centres, information centres, institutes of national importance, national/regional research laboratories of CSIR, ICAR, and Document Resource Centres (DRCs). Disciplines like science & technology, medicine, agriculture, social science, humanities, fine arts etc. are to be under the scope of INFLIBNET. The headquarters is at Ahmedabad.

The major activities of INFLIBNET are creating and maintaining databases, providing information services, promoting library automation and manpower development. INFLIBNET prescribes standards for database creation and interfaces for database development, and renders support for creation of union catalogues of serials, theses and dissertations, books, monographs and databases of experts and software packages. In addition to database services and catalogue-based services, INFLIBNET offers communication services, contents page service called COPSAT, ie Contents with Abstract of Periodicals in Science and Technology. It has also developed software packages to support various library applications and functions. In respect of human resource development, computer training has been given to professionals of about 101 universities / engineering colleges/research institutions and to executive level personnel such as librarians and deputy librarians of about 55 universities in the area of database creation (University Grants Commission, 1998).

4.7 DELNET (Delhi Library Network)

The idea of resource sharing among the various libraries such as research libraries, government department libraries, public libraries and libraries of universities, colleges and schools, in the Delhi metropolis gave birth to DELNET. The effort towards this end was actually initiated by the India International Centre as one of its projects sponsored by NISSAT in January 1988 and the network became operational in 1990, perhaps as the first library network in India. Subsequently, DELNET was officially registered as a society in June 1992 (Kaul, 1996).

The main objectives of DELNET are promoting resource sharing among the libraries by developing a network of libraries, storage and dissemination of information, offering computerised information services to users, and to coordinate collection development in libraries so as to reduce unnecessary duplication. At present DELNET has 57 libraries as its members, of which 50 are institutional members. Libraries having more than 10,000 books are treated as institutional members and others as associate institutional members. The membership has been progressively increasing and has crossed the geographical area of Delhi. Some institutions of Shimla and Bhopal also have joined DELNET as members.

Originally, NISSAT has provided grants for the project, supplied modems and software and paid for the ERNET e-mail connectivity. Later the National Informatics Centre provided hardware, software and financial assistance for recruiting staff and for Internet access. At present, NIC and Planning Commission, Govt. of India are providing financial support to DELNET. The India International Centre has allotted space and other facilities within its premises.
The main activities of DELNET are promoting database creation, resource sharing and electronic mail services. Online union catalogue of books in member libraries, union list of current serials, a database of Indian specialists and a database of multi-lingual books have already been created. In addition to online database services, DELNET organizes training programmes and conducts conferences. Retro-conversion of catalogues and inter-library loan / courier service are also undertaken by DELNET. It also acts as a referral centre and publishes the DELNET Newsletter.

4.8 CALIBNET (Calcutta Library Network)

The CALIBNET was installed by the CMC Ltd and its working station is located at the INSDOC Regional Centre, Calcutta. It can be considered as an outcome of initiative taken up by NISSAT since 1985 for the design and development of the metropolitan library networks with a view to provide broad based information services in the country. CALIBNET was inaugurated on 21 September 1993 by Prof S K Sen, the then Minister for Power, Science & Technology and NES, Government of West Bengal. NISSAT assigned the role of network coordination, to the CALIBNET Society, a society registered under West Bengal Societies Registration Act, 1961, following a Memorandum of Understanding (MOU) in June 1994. The management of Network Services Centre (NSC) was entrusted by NISSAT to CMC Ltd. till the society has become functional and CALIBNET Society formally took over the infrastructural facilities of NSC on 29 Nov. 1994 from CMC Ltd. (Mitra, 1996).

CALIBNET was established with the prime objective of inter-library cooperation and document delivery amongst the libraries of Calcutta, for optimum utilization of bibliographic resources by means of computer-based library automation and networking. To achieve these objectives, CALIBNET has adopted two routes: network route and e-mail route (Mitra, 1996).

CALIBNET comprehends total automation of member libraries and online access to international databases and facilities to search CD-ROM-based databases at NSC. In has a rich collection of international databases on CD-ROM: Bibliofile, British National Bibliography, and Inside Information, which provides access to contents of about 10,000 journals. The network is built on a technological platform of program-program communication using its own application software MAITRAYEE Version 3.0 in all participating institutions. It envisages automation of acquisition, budget control, cataloguing, circulation, serials control, and local user services of all member libraries. Users will be able to locate books and serials through online public access catalogue.

CALIBNET has introduced a closed-circuit e-mail network for its Member Institution Libraries (MILs) which enables them to have online access to various databases within the network; online access to databases of DIALOG/ Knight-Ridder, and CD-ROM resources through ERL; full text delivery through British Library Document Supply Centre, ASTINFO, UNCOVER and other agencies; centralized bibliographic support for name and subject authority control, e-mail facilities and training and consultancy. With the establishment of e-mail route among the member libraries, CALIBNET is now transforming itself from a library network to essentially an information network. It can now offer worldwide information contained in over 450 international databases. It is fast and cost effective way for one to obtain current, accurate and comprehensive information on any topic for research and higher learning.

The services of CALIBNET include global information search and retrieval, search and retrieval of information from databases on CD-ROMs, full text document delivery, document ordering over e-mail network from other national resources, support to member libraries, CALIBNET Info Services, human resources development and consultancy to libraries and information centres.

4.9 MALIBNET (Madras Library Network)

Madras Library Network, sponsored by Insdoc, was established in 1993. The need for interconnecting libraries in Madras was visualised by Insdoc in 1991. It undertook a feasibility study which was partially funded by NISSAT, and was
completed in March 1992. No major funds were available from the government, but the heads of some major academic and research institutions and universities extended their support, with the result that MALIBNET was registered as a society in February 1993 and the network became operational in June, 1993. (Raghavan and Raghavan 1996). There are ten institution members and five associate institutional members in MALIBNET. In addition to these, 19 founder members of the society are also treated as members. All the members are acting as resource centres for MALIBNET. Any user from these institutions can do online search of all the databases on the MALIBNET host system and also avail the services such as electronic-mail, Contents Abstract and Photocopying Services (CAPS), and document procurement service.

Insdoc is the main executing agency for the MALIBNET project. Through the Memorandum of Understanding (MOU), Insdoc has been assigned the responsibility of setting up the network, developing information products, and offering basic information services on MALIBNET.

The five databases viz Medicinal and Aromatic Plants Abstract (MAPA), Polymer Science Abstracts, NUCSSI for Madras and Bangalore Region which covers 61 libraries in Madras and 50 libraries in Bangalore, Indian Serials Contents on Multimedia (ISCOMM) and the Indian Patents Databases which have been created and updated by Insdoc have been ported on MALIBNET host system and are available for online access by members.

The information services of MALIBNET are open to all categories of professionals namely, academics, research scholars, practising professionals, consultants and industrialists. The services offered by MALIBNET include electronic mail services, MALIBNET Card, Express Document Procurement and Delivery and CAPS. CAPS is a monthly service offered for the benefit of the research scholars, scientists and faculty members. It comprises periodical supply of contents of 20 journals selected from about 500 important titles. Contents data is supplied through e-mail or on diskettes along with retrieval software or in hard copy form as required by the users. For one subscription, the user is entitled to get 12 despatches of the contents of the selected journals. Contents of up to 50/20 journals are offered free to institutional/associate members of MALIBNET through e-mail. Abstract and full text of articles from respective journals are supplied on demand. Photocopies of journal articles from member libraries are supplied on request. The services can be availed by members as well as non-members at a nominal cost. In addition to these, Insdoc services such as On-line search of information sources, Internet information services, Network connectivity -E-mail, CAPS, document copy supply, specialized database creation and training courses & consultancy.

As far as the network architecture of MALIBNET is concerned, it has a central Network Service Centre (NSC) installed at Insdoc Regional Centre, CSIR complex, Madras. All the member institutions are linked with the MALIBNET host system through telephone links. A library or information centre may be directly connected to NSC through telephone lines or may be clustered and connected through X.25 data communication interfaces within an institution. A library may be connected on local area network, to facilitate the LAN user to access MALIBNET.

4.10 BONET (Bombay Library Network)

Bombay Library Network was established in 1992 with the assistance from National Centre Software Technology and sponsored by the NISSAT (Bombay Library Network commissioned, 1993). It aims at promoting co-operation among libraries in Bombay. The main activities of BONET are: maintenance of online union catalogue of periodicals, online request system for inter library loan, e-mail, Internet access, online searching of foreign databases, CD-ROM database searching, database of contents of Indian periodicals and software for OPAC (Wing, 1993).

4.11 ADINET (Ahmedabad Library Network)

Ahmedabad Library Network was formally inaugurated in February, 1995 when a memorandum
of understanding was signed between the National Information System for Science and Technology and ADINET at Ahmedabad. It is the fifth library network sponsored by NISSAT in the country and aims to bring about a co-operative mode of working amongst more than 150 libraries and information centres in and around Ahmedabad. NISSAT has provided grants for the establishment and operation for the first two years. Afterwards it is run by funds received as annual subscription from members.

In addition to a centralised database of the holdings of participating libraries, it maintains a database called Institute Master which contains information regarding the 74 member libraries in Ahmedabad, kept up to date. The services offered by ADINET are: online information search, inter-library loan, photocopying service, current awareness service, information services, e-mail services, bulletin board service and promotion of library automation in Ahmedabad.

5 Problems of networking of libraries

In implementing the networking process, many a problem have been faced by the upcoming networks in India. The major problems encountered by the regional and national networks are discussed below.

5.1 Standards for data conversion

Even though standards are available for bibliographical records, libraries use different standards and formats for creation of databases and as such there is no uniformity among the databases created. It is difficult to enforce standards as libraries do this job independently. Even if some standard format and data entry procedures and cataloguing rules are followed, there would be significant variation in the depth of indexing, slant in indexing and keywords generated. A national committee was set up in the context of INFLIBNET, which has recommended a set of standard formats for data entry work relating to serials, doctoral theses, and books.

5.2 Apprehension of overuse of library

In a network, demand on the collections of larger libraries is likely to be more and therefore, such libraries would have some hesitation to become part of the system unless there are compensating incentives.

5.3 Manpower training

Participation in network requires special training on the part of professional staff of the libraries. Libraries in India face the shortage of professionals with adequate expertise in database development and in the use of network hardware and software. This requires organising/conducting training programmes frequently and also on the job training.

The training programmes organized by agencies like Insdoc, DRTC, ILA, Iaslic, NISSAT, INFLIBNET and other metropolitan networks are not adequate, as such programmes are of a limited scale. They charge exorbitantly, often unaffordable to individuals without the assistance of the employers. Universities and colleges have several sorts of limitations in sponsoring their employees. Research institutions have better facilities in this regard. This state of affairs should change and the authorities should take a liberal attitude in order to get their staff trained in library automation and networking. Computer training programmes of longer duration should be organized in order to give the practising librarians the necessary expertise and hands on training.

5.4 Financial constraints

Adequate financial support is not available to the emerging networks from their sponsoring or funding agencies for acquiring and constructing permanent site or building and basic infrastructure. Financial crunch is a major obstacle for acquiring the hardware, software installation, infrastructure and other facilities needed for joining the network, as far as academic libraries are concerned.

5.5 Library software issues

Many libraries and information centres do not have appropriate integrated library software which can work efficiently and effectively in a wide area network. At present many libraries have been using CDS/ISIS provided by Unesco and distributed in
India by NISSAT/ Insdoc. But they are trying to switch over to other user-friendly softwares which can work more efficiently with large collections, more users and in network environments. It is also a fact that such packages are costly and medium-sized libraries find it difficult to afford.

5.6 Problem of STD connection from Telecom Department

Getting STD connection from the Telecom Department is a hurdle as far as Indian libraries are concerned. The non-availability of telephone connection to all the participating libraries and information centres causes great problems in the initial stage of installing networking, e-mail and fax facilities.

5.7 Lack of Job security

Most of the metropolitan/city networks in India are functioning under a project or cooperative society. So the well trained library professionals having competence in computer application and communication network are not interested to continue in these projects at a low salary. Normally they leave the institution when they get a permanent position in some other organization.

5.8 Upgradation of hardware/software

The networks which have started functioning require the upgradation of hardware configuration and installation of new user-friendly and standardized software packages. The facilities in the member libraries also need maintenance and upgradation.

6 Suggested solutions

The problems of library networks can be solved through co-operative efforts of participating institutions themselves. They require support from the funding agencies to get appropriate grants to solve many other problems particularly those related to the standardization and quality control of data creation.

Trained computer personnel having some basic knowledge in library techniques should be engaged for database creation. Library personnel should be given regular training in computer-based library operations. Organizations like NISSAT, Insdoc and library schools and professional bodies such as ILA and Iaslic should take up this responsibility. Course fees should be made affordable to individuals.

University authorities, principals of the colleges and directors of the research institutions should encourage their staff to acquire training in library automation and networking, by sponsoring them to appropriate courses with full service benefits.

On the job training in library automation and networking process and training in handling new software packages such as the latest versions of Windows and MS-Office for handling routine operations should be given to newly recruited professionals.

It would be worth mentioning in this context some of the recommendations of S S Murthy (1996) to overcome the problems noted above.

(i) The library networks should formulate detailed rules and procedures which should be in accordance with the existing standards for database development as well as network operation and then ensure their proper implementation by the participating libraries.

(ii) Usually many common publications exist in the acquisition of different libraries. The individual participating libraries should check the format of data input sheet from the network office/database before filling input sheet for database creation. Duplication in database entry should be avoided which will save the time, money and energy, i.e., human efforts and expenditure.

(iii) The Government and the funding agencies should provide financial support for database creation in the libraries and library networks. The expenditure incurred in this will be back in terms of rationalisation of library acquisitions, resource sharing and increased use of information. The grant may be released annually or in the five year plan.
for the smooth implementation of library networks.

(iv) The network institutions/ society such as INFLIBNET, DELNET, CALIBNET, MALIBNET etc should organize appropriate/ practical-based effective training programmes at regular intervals to the library professionals and faculty members of library and information science, so that the trained faculty member can give computer-based training to the students on library management.

(v) The network management must provide on request, a common library software package on a cost recovery basis, for library automation and database creation in the library and information centres, and back-up technical support must be ensured either directly by the networks or through some contract arrangement.

(vi) Data conversion work should be faster. The database development contractors should be encouraged to participate in large numbers to create database on contract basis. This would speed up the time-consuming task of data conversion.

7 Conclusions

The development and management of library networks involve high commitment and dedicated efforts in the Indian environment where majority of libraries do not have even the basic infrastructure for computer installation, face financial crisis and do not have qualified and computer trained professionals to introduce automation and networking.

Co-operation not only among the libraries but also among the various library networks is essential for the success of networking of libraries and information centres in the country. In addition to rectifying the problems encountered at the initial stages, necessary steps should be taken by the authorities to plan and operate the system with a long term vision. For instance, engaging part-time workers or employees on contract basis will be against the interest of the networks, as it may affect the quality of databases, developmental activities, services etc and cause delay in the implementation of the networks.

The INFLIBNET which has been given the status of inter-university centre of University Grants Commission, is to link all the Indian universities, national institutions, research laboratories, colleges and various information centres of ministries, governmental departments and offices throughout the country. It has started giving initial training to the library professionals of the universities, research institutions/ laboratories on networking fundamentals and software package handling for database creation.

The future plan of INFLIBNET is to establish regional and sectoral information centres. During the 9th Five Year Plan about 35 resource libraries will be identified to act as Document Resource Centres. About ten Sectoral Information Centres will also be identified. They will be specialized libraries belonging to Universities or R & D institutes in different disciplines to supply information in specialized fields. By the end of Eighth Five Year Plan, about 70-75 libraries have been included under its training programme aimed at professionals of those Universities which have already set up the computerized infra-structure and are in the process of installation. By the end of 9th Plan, it is expected that all university libraries in the country will be computerized and networked and INFLIBNET will become fully operational and will be providing its services to the academic as well as research community of the country.

The efforts made by NISSAT, DSIR, Govt. of India, Insdoc, NICNET, CMC Ltd. and other societies for networking the libraries in India form an excellent beginning. We hope that in coming years these networks will grow by leaps and bound and will be able to achieve their aims and fulfil their objectives.

The future of the library profession seems to be bright. The responsibility of the profession would be to collect, repackage and make available the exact piece of information that the user is in need of. This would surely enhance the status of the profession in the society.
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