CHAPTER-3
DEVELOPMENT OF RESOURCE SHARING AND NETWORKING OF LIBRARIES IN INDIA

3.0 Introduction

Information and communication technologies have brought about revolutionary changes in the academic libraries during the past few years. During the last decade there have been flurries of activities in every organization small or big, private or government, to use computer for information storage, processing and retrieval. During the last 10 years there have been considerable improvements in the telecommunication front.

The voluminous growth of published documents in the recent past, increasing cost of information sources, technological advancements that offer newer methods of information processing, retrieval and dissemination are some of the factors which have made resource sharing a necessity. The Library co-operation is a very old concept and a form of resource sharing. There are large instances of such co-operation among libraries in the library literature (Kaul, 1999).

Academic libraries are committed to providing and making accessible the best possible resources to serve the academic and research community. The libraries' most important technological goal is to give all citizens access to information regardless of format and provision of the information. The secondary goal is to make that access available from anywhere an authenticated user is situated. Resource sharing and Networking is an essential process in this exercise as it facilitates access to vast information services. Networks have potential to improve library services in several ways. The continuous improvement in the networking technology helps libraries to
reduce the cost of information provision, thus creating new opportunities for the libraries in providing information to its end users. In recent years libraries worldwide have been affected by an uncertain financial environment in which resource buying and licensing have been restricted, causing them to look at ways of extending their purchasing and access capabilities to compensate for reduced budgets. Cooperation and sharing of the resources is the need of the day in a digital environment.

3.1. Resource Sharing in Libraries

Library co-operation is age old practice and can be traced to 200BC when Alexandria Library shared its resources with Pergamum Library. According to Kraus, there existed library co-operation among monastery libraries in the 13th century. There were exchanges of agreements among the universities of Lund, Abo and Greifswald as early as 1740. The other examples of library co-operation include a projected union catalogue of the libraries of Weimar and Jean and a proposal for a coordinated acquisition scheme for Wolfenbuttel and Gottengen.

The first library co-operation activity in India is reported to be the 'Catalogue of Manuscripts” complied by Whitney Stokes in 1868. The first major union list entitled 'A Catalogue of Scientific and Technical Periodicals' was compiled by Henry C.Bolton in 1885. With the advent of the 20th century, the Library of Congress started co-operative cataloguing projects and began working on the National Union Catalogue. Thereafter, in the 20th century the compilation and publication of union catalogues of different types increased in number in most countries.

Encyclopaedia of Library and Information Science defines ‘resource’ as a person, thing or action to which one resorts to, when needed. To be more specific, we can say the resources in a library are staff, infrastructure, documents, and services. Sharing entails a
relationship of reciprocity where the two parties offer their resources to each other for mutual benefit.

*Jefferson (1977)* states that, “No more complicated field of study in librarianship exists than that of library cooperation. By its nature it implies an appreciation of the purposes and functions of libraries of all kinds, and of the needs of the readers who make use or are encouraged to make use of their services. The permutations possible between ‘library’ and the ‘reader’ give many opportunities for co-operative activity.”

*Maurice B. Line (1980)* finds that co-operation in modern times is helpful in the following main activities:

1. “Acquiring books – selection, ordering and purchase, etc.


3. “Making them available – their own books by consultation and lending books not held by them by borrowing from elsewhere.

4. “Storing books – for present and future use.”

*Sewell (1981)* presents the resource sharing may appear to be nothing more than a new term for the familiar concept of library cooperation, but there is a significant difference in the approach. He further observes that, the new term appears rather to assume a range of physical, intellectual and conceptual resources on the one hand and a body of people with library and information needs on the other, and covers the activities involved in a organizing the one into a set of optimum relationships to meet the needs of the other.
Essentially the activity of cooperation has been defined by Edmonds (1986) as “the reciprocally beneficial sharing of resources, developed or pre-existing, by two or more bodies”.

According to Cargil and Graves (1990), “no library can afford to acquire even half of all published material, both in terms of cost, and the investment in space and personnel time required to process and provides access to burgeoning quantity of Information”

By analyzing some of the above mentioned observations, it may be inferred that, information explosion, inter-disciplinary literary pursuits, lack of sufficient funds, space, human resources are some of the factors which call for a strong inter-library cooperation.

Brown (1991) describes that the library co-operation should move from an informal supporting role for individual services to that of a major strategic instrument in the organization of the available national resources to meet client’s needs. There are many factors that necessitate the library cooperation. Information explosion, inter-disciplinary literary pursuits, lack of sufficient funds, space, and human resources are some of the factors, which greatly influence inter-dependence on other libraries.

Kaul (1999) attributes most of these reasons as motivating factors prompting library cooperation. He also observes that, library co-operation in the 20th century began with the compilation of union catalogues without which identification of material and resource sharing would not have been possible.

Resources sharing in academic libraries are even more important because the financial condition in academic libraries in India is far from satisfactory. In spite of recommendations of Radha Krishnan Commission, 1948 and Kothari Commission 1964
that the academic libraries should be given at least 6.26% to 10% of the total budget of the institution. Most of the universities and colleges spent only 1.5 to 2.3% of their budgets on libraries.

3.1.1 Need for Resource Sharing

The stock in trade of libraries, i.e. documents is available in plenty. Their rate of increase is such that it is termed explosion. They are available in variety of formats, at times being duplicated also. The channels of availability of these documents are also varied adding to the complexity of their acquisition. Prices of documents are on the increase. As a majority of the publications are from USA, it implies increase in prices of documents. Rate of conversion of currency is also against libraries particularly for developing countries, e.g., India. It affects the capacity of libraries to buy. Increasing number of documents also demand physical space, this is a limitation for libraries.

Need of resource sharing was realised by libraries a long back. Besides entering into inter-library loan practice, libraries also thought seriously of resource sharing in many other areas, such as co-operative acquisition, co-operative cataloguing, co-operative classification, etc. Inter-library loan has been practised as one of the most popular resource sharing activity amongst libraries. Inter-library loan in a traditional library is severely affected by barriers of information communication, such as apathy of the lending library, distance, language, time etc. A computerized inter-library loan system overcomes these limitations. For resource sharing, the participating libraries need to come together and co-operate in two broad areas: (a) Developing the collection on shared basis, and (b) Developing services for exploiting such collection (Dhawan, 1999).

Libraries exist for users; any change in their demands and requirements requires libraries to adapt. Users are now more demanding, expecting to be satisfied as early as
possible. Libraries have to show their accountability; they have to satisfy the users in the best possible way. Customised services are the talk of the day. Staff has to be more interactive with the users knowing about their area of interest and their requirements to serve them in the best possible way. This requires that the professional staff does not have to attend to the routine chores, technical procedures. Resource sharing enables libraries to function effectively and efficiently in view of the above situation. Sharing of resources may solve the problem as under:

All libraries would not have to acquire all the documents that they require. They would share the documents thus overcoming the problem of increased prices and space for storing them. Libraries by sharing would have access to the large number of documents thus satisfying the increasing demand for documents. Sharing would also allow them to use documents in different formats.

It would also allow them to share the expertise of staff, thus saving costs as well as the time of the staff. They would now be freed from the routine technical procedures, as that would be done on a common basis between them.

3.1.2 Objectives of Resource Sharing

Libraries have joined hands to co-operate and co-ordinate at various levels to form networks. These are formed at local, national and regional level. These networks exist to:

i) **Maximize the resource base of libraries;**

The primary objective of resource sharing is to maximise the resource base, i.e., collection, staff, infrastructure, as well as services of the participating libraries. They would be benefited by the resources of other libraries adding to their own resources.
ii) Provide wider access to information;

We are living in the information age where information is a commodity needed by one and all. We are highly dependent on information. It is a resource as important as energy. Information is required for decision making at different levels. In view of this scenario, one should not be deprived of information needed. Libraries have different document collection. They are strong in some areas and poor in others. They lack resources to excel in all areas. If libraries share amongst each other, they can overcome this limitation of poor document collection.

iii) Rational acquisition;

Resource sharing results in a rational acquisition of documents. A library should only acquire those documents that are core to the area of its organisation.

iv) Save resources;

Libraries share their resources to save and use them optimally. Cooperative acquisition enables them to save on money spent on documents. Cooperative cataloguing and classification enables them to save on staff salaries, efforts, and time spent on technical processing.

v) Enable uniform practices in routines;

A central agency can be entrusted the task of cataloguing and classification, which can be followed by others which results in standardization. Uniform practices are helpful to users as well as staff. It is a result of sharing and a requirement too.
vi) **Acquisition:**

Rationalisation of acquisition is one the major functions of library networks. Libraries can come together to identify duplication of resources thereby avoiding wastage. Funds could be diverted for resources, which are found lacking in a particular geographical area. It would result in better allocation of funds and widespread availability of resources.

3.1.3 **Historical Overview of Resource Sharing**

Co-operation among libraries is not a new practice and has been in practice since ages. An earliest instance of inter-library cooperation indicates that the library of Alexandria loaned books to the library at Pergamum around 200 BC, as observed by Fetterman (1974).

Library co-operation in modern times can be traced back to the efforts of Library of Congress when it started cooperative cataloguing, thereby enabling participating libraries to know about each other’s resources. It also helped the libraries to save on their resources and resulted in standardisation in practices. It led to a chain reaction when libraries everywhere started preparing union catalogues. The system of sharing to satisfy personal needs existed in the society and it was no exception in libraries. Kaul (1999) quotes instances of library co-operation existing as early as 200 B.C. between Alexandria Library and Pergamum Library. He also cites Kraus mentioning co-operation between monastery libraries in the 13th century.

Starting with mutually satisfying each other’s needs as and when required, library co-operation became more systematic with time. Institutions took initiative in this regard. Mention may be made of FID, IFLA, and UNESCO. In 1895 Paul Otlet and Henri La
Fontaine from the forum of FID attempted to compile a world index to published information, and finally gave UDC as a tool for representing published information. FID had one of its objectives as improvements in the availability of information. IFLA has two programmes to its credit in this direction viz., Universal Bibliographic Control (UBC) and Universal Availability of Publications (UAP). UNISIST, the World Science Information System exists with the aim of providing processed information in science and technology to all.

The co-operation extended in other areas e.g., indexing and abstracting. Abstracting services started providing abstracts of literature international in scope. Chemical Abstracts, Biological Abstracts and Physical Abstracts are some examples, which are the result of co-operation among institutes. International coverage would not have been possible without co-operation. Further development in co-operation saw the establishment of Information Systems. INIS, AGRIS databases had inputs from national centers in different countries e.g., Baba Atomic Research Centre (BARC) and Indian Agricultural Research Institute (IARI) in India. Another example of co-operation that took place was the formation of ADONIS. It was a Document Delivery System consisting of publishers- John Wiley, Elsevier, Pergamon, Blackwell Scientific, Academic Press and Springer Verlag. They provided index to articles appearing in 219 bio-medical journals between 1987 and 1988 in CD-ROM.

3.1.4 Resource Sharing Operationalties

Putting these into practice are a bit difficult, reasons being that there are so many libraries involved. We have to formulate policies, procedures and routines for a library. These have to be objective and unbiased for the library to function effectively. It is the same for a number of libraries. It is more difficult to do so in case of a number of libraries
because of the number of libraries and users involved; and variety of libraries and users involved. The number and variety of libraries involved makes it difficult because policies have to be framed keeping in view the nature of documents for acquisition. The nature and variety of users make the framing and implementing the policy difficult. The participating libraries should objectively frame policies in regard to:

i) **Documents to be shared**

   It is neither required nor feasible to share all types of documents. Decision has to be taken in this regard taking in consideration the use and cost of the same. Libraries would like to share only costly and less used documents. Those documents that are in heavy demands in their libraries cannot be spared for other libraries. The requirements of their own users are primary.

ii) **Terms and conditions for loan and return**

   Documents are issued to users for a time period that enables them to use effectively. A period of loan is decided keeping this in view. It also depends on the type, cost, use and the number of copies of the document available. Similarly, these have to be formulated for sharing among a group of libraries. The period of loan in such a case cannot be the same for users of the library. The participating libraries can make duplicates of the same for use within copyright rules.

iii) **Union catalogue production and maintenance**

   The use of the combined collection of the participating libraries depends upon their knowing the collection. The resources of the libraries should be made known to all through union catalogues. The responsibility for designing and maintaining the same should be entrusted to one of the participating libraries. The data of each library should be
according to uniform standards and be in machine-readable form to enable users to search from their own libraries electronically.

iv) Co-operative cataloguing

Cooperative cataloguing is also expected in resource sharing. It needs to be decided as to who will be doing this work. It depends on the resources of the library. A library that has the staff expertise to do this work should be entrusted this responsibility.

v) Online Public Access Catalogue (OPAC)

The details of the documents along with their status should be made known to the users through OPAC. It is more important than for users of individual library because of the number of users involved as well as the distance between the participating libraries.

3.2 Resource Sharing and Networking of Libraries

Resource sharing is evolved from library co-operation. Since library co-operation was not effective due to the geographical distances between libraries and limitations of duplicating and transmitting documents between the cooperating libraries. Also that resource sharing could be made possible due to the developments in Information Technology. The result is library networks. Libraries cannot stand in isolation today. This was a well-accepted fact and thus there were concerted efforts on their part to co-operate. Their efforts were made productive by developments in computer and telecommunication technologies. Libraries could be connected locally as well as globally into library networks.

Computers made possible electronic documents, and telecommunications made possible their transfer and transmittance electronically thus, overcoming the barriers of
geographical distance and time. Library network has a “group of individuals or organizations that are inter-connected to form a system to accomplish some specified goal. The linkage must include a communication mechanism, and many networks exist for the express purpose of facilitating certain types of communication among members.” Definition of a network describes it in terms of its characteristics, viz. A network’s function is to marshal resources from its environment to accomplish results beyond the ability of any one of its members.

A network develops an organizational design and structure that allows it to establish an identifiable domain and exercise appropriate influence over its members. It is based on communications technology. There is a stress on ‘collaboration’ in the above definitions. Networks are Information Technology (IT) driven, with a well defined administrative structure, and get goals.

The developments in information technology have made it possible for libraries to network. But today library networks are must because of increasing amount of information is in electronic form, bibliographic access to information is also in electronic form, Internet, timely access to information. It is difficult for an individual to lay hands on his specific information in the large mass of information available. Computer helps to process and easily access to the required information. Networking is essential to access when the information is available at a distance. Networking of libraries has increased the feasibility of resource sharing by overcoming the barriers of distance and time involved in accessing information.

3.3 Development of Resource Sharing and Networks in Developed Countries

The Centre for Research Libraries was built in Chicago USA in 1960s. This centre was to co-ordinate co-operation among 162 institutions to acquire; store and preserve less
frequently used but very expensive research materials for the institutions need. In the 1970s costs of library materials began to go up while library budgets remained almost stagnant. As a result, in 1974 the Columbia, Harvard, and Yale research libraries and those of the New York public library founded the Research Libraries Group (RLG). This was born out of the belief that no library can be self-sufficient to satisfy the information needs of all its patrons materially and service-wise. RLG provided databases of library holding created cooperatively by member libraries (Martey 2002).

Resource sharing and library networks have grown mostly during the last thirty years in different geographical environment in order to cater to the specific needs of the users. In the United States there has been a proliferation of them. Library networks in other countries are also growing. Several models have emerged that provided specific services. Not all networks conform to the essential functions of library networks. However, the essential functions should include the promotion of Resource Sharing, creation of resource sharing tools like Union Catalogues, rationalization of acquisition and maintenance of International standards for creation of records uniformly. Libraries should be able to join different types of networks depending upon the need and select a model, which conforms to its requirements. (Kaul, 1999)

In the developed countries resource-sharing and networking was started long back. For instance the growth of networks in the United States can be traced from the mid of 1960. USA is the birthplace of library networking and by now libraries in each state is networked to local, regional and national network. It is important to note that the United States Department of Education has been advocating a vigorous policy of promoting library networking. It offers networking grants, supports inter-library loan projects,
automation and retro conversion projects, resource sharing schemes, etc. besides providing regular federal grants annually to the public and academic libraries.

**Andrea Dickson, Robert P. Holley, (2010)** examines the use of the major social networking tools in academic libraries in the USA. Social networking can be an effective method of student outreach in academic libraries if libraries take care to respect student privacy and to provide equal coverage for all subject areas. Most information about social networking is anecdotal with very little statistical analysis of its effectiveness. The popularity of the various social networking sites can change quickly. Academic libraries should consider using social networking as an outreach effort but take care to avoid the potential negative consequences. The author provides a snapshot on the use of social networking in academic libraries through a thorough review of the available literature and an examination of the libraries' presence on the most popular social networking sites. It also provides help for academic libraries wishing to implement social networking.

Resource Sharing works in United Kingdom is also well established. The best example is Birmingham Library Co-operative Maintenance Project (BLCMP) in Birmingham, has 13 million bibliographic records of books, serials, music etc. in its database and its catalogues get a hit rate of above 90 per cent with more than 60 libraries comprising public libraries, college libraries, university libraries, national and special libraries. BLCMP has introduced EDI clearing house service in about 25 libraries.

Networking is one of the most important issues currently facing the library and information community. The convergence of computing and communications technology is affecting the creation, management and use of information in ways not witnessed since the introduction of printing with movable type (UK Office for Library Networking, 1993)
In Australia the resource sharing tools have grown from catalogue cards to national databases with the contributions of many older and larger libraries. In Australian Bibliographical Network, the national and central bibliographic databases are maintained and co-ordinate and maintained by a national agency.

**Fialbrant (1982)** states that implementation of the Washington Library Network software by the National Library of Australia for use in the Australian Bibliographic Network (ABN). The author briefly traces the development of ABN. The services and products offered by ABN together with the pricing strategy are described. Publications on ABN available from the National Library of Australia are listed and future plans discussed.

**Roxanne Missingham, (2007)** describes the developments in Australian libraries and the national inter library loan and document delivery systems, in particular the outcomes of the Local Inter-lending and Document Delivery Administration Systems (LIDDAS) project. Australian libraries have had a highly cooperative approach to resource sharing for many years. Inter Library Loan (ILL) has become increasingly automated since the introduction of the online union catalogue in 1981 and the national inter-lending system in 1989. In 2004 interoperability was introduced, with 2006 developments in directories completing the national connected system. Analysis is undertaken of the factors leading to a national approach, use of the automated solution by libraries and trends in use by end users. Rapid and easy access to interlibrary lending has increased significantly through automation of local and national systems. While the overall number of loans and copies has not increased the speed of delivery and efficiency of ILL has increased significantly. By understanding the environment that led to a coordinated approach to automation by libraries in a variety of sectors, and evaluating the
outcomes of the technological developments, this paper gives a basis for considering opportunities for future cooperative arrangements. LIDDAS has stood the test of time as a highly original approach to providing access to the resources of the nation's libraries. This paper provides a study of the outcomes of the project, the impact of interlibrary lending in Australia and a cooperative approach between university, state, national and public libraries.

The Swedish Model for resource sharing is called the Consortium Model. This model is developed only for six major science and technology libraries in Sweden.

Canada has the Information Network for Ontario (INFO). Nearly 300 public libraries are connected between South Ontario library service and Ontario library service, using a choice of access by Internet, standalone PC. or CD-ROM. In 1996 the University of Pittsburgh Library System and the University of China exchanged digital full text journal articles over the Internet (Edwards, 1999).

Library co-operative programmes in Japan have not advanced much, unlike in the USA or European countries. As stated above, this is partly because Japan is a vertical society. But the academic libraries, in spite of such disadvantages of Japanese society, have made great efforts in co-operative programmes, producing some fruitful results. Among national university libraries, for instance, a “Lending and Borrowing Agreement” was made in 1989 (Zensei Oshiro 2000).

Resource Sharing networks in the developing countries face problems of financial resources. In developed countries there is no such problem. In developed countries, Government is taking active interest in promoting such networks. However, in developing countries, Government is not showing much interest. In India, there is a problem of
financial resources. However, there is no dearth of skilled human resources to manage such networks.

3.4 Development of Resource Sharing and Networks in India

History of library networks in India can be traced back to the year 1958 Scientific Policy Resolution was adopted emphasising the development of scientific temper among people. As a result, several committees and commissions were setup who came up with various recommendations. Some of the reports submitted by these committees and commissions included: Sinha Committee Report (1959), Ranganathan Report to UGC (1965), Peter Larzer Committee Report (1972), V.A. Kamath Report (1972). All these reports recommended co-operation among libraries at local, regional and national level. The main purpose of setting library networks was to strengthen the resource sharing, to avoid duplication of resources and also to minimise the cost of acquiring resources. Keeping in mind the above mentioned objectives the Metropolitan City Library Networks, namely, Calcutta Library Network (CALIBNET) in 1986, Delhi Library Network (DELNET) in 1988, (now Developing Library Network), Pune Library Network (PUNENET) in 1992, Bombay Library Network (BONET) in 1994, Ahmedabad Library Network (ADINET) in 1993, Mysore Library Network (MYLIBNET) in 1995, etc. were established and funded by the NISSAT. It was expected from these networks to promote resource sharing, prepare union catalogue of books and periodicals and create centralised databases. The NISSAT has ceased operation since 2004.

The developing countries like India are lagging behind in library co-operation. The reasons for the same are poor funding and the non-existence of the spirit of give and take or exchange is delaying the prospects of resource sharing programmes. In the 1970’s
work on the creation of bibliographic tools such as union catalogues and union lists of serials had begun but in the 1990s networking was considered to be the main tools for resource sharing.

Despite many drawbacks, the Department of Telecommunication (DOT) is heading the telecommunication in India. In general, networks can be grouped into two categories (Haravu, 1993).

1. Communication and Infrastructural networks which provide the hardware, software, protocols and freeways for the flow of information. Networks like ERNET, I-NET, INDONET, and NICNET, fall under this category.

2. Application networks which are set up by or for a specific community or for serving a well defined end-users. INFLIBNET, metropolitan/city library networks such as DELNET, CALIBNET, etc.

3.4.1 Communication Networks

Telecommunication networks form an integral part of accessing, communicating and transmitting information. In India, the Department of Telecommunications (DOT), Videsh Sanchar Nigam Limited (VSNL), and the Government of India are responsible for providing and maintaining national and international telecommunication facilities.

The existing communication networks in India are: the first Indian commercial computer communication network (INDONET), Education and Research Network (ERNET), National Informatics Network (NICNET), Gateway Packet Switching System (GPSS), Remote Area Business Message Network (RABMN) and National Packet Switched Data Network (INET).
3.4.1.1 Indian Commercial Computer Communication Network (INDONET)

INDONET was the first Indian commercial computer communication network promoted by the Computer Maintenance Corporation Limited (CMC), Hyderabad, and has been in operation since 1986. It is an integrated information management and distributed data processing facility spanning the entire country. INDONET’s objectives are: distribution of data processing, computer service bureau consultancy, promotion of advanced networking technologies, providing nationwide computer power, public database services and software exports (Juneja, 1987).

In its first phase, the network had three IBM 4361 computers at Calcutta, Mumbai and Chennai, a PDP 11/44 at New Delhi and a ROB 1055 at Hyderabad as its backbone, with access points at Bangalore, Ahmedabad and Pune. INDONET has adopted IBM’s Systems Network Architecture and uses dedicated lines of 2400/4800 bps. The intra-city communications between CMC customers and INDONET nodes are through leased lines, dial-up access using telephone lines, and digital packet radio techniques. In the second phase, there are plans to expand the number of INDONET centres to 100. It would operate as a STAR network with a control point at New Delhi, using rooftop 3m earth stations and packet switching technology for routing data from this central station to other INDONET centres. The Mumbai node has been connected to the international Gateway Packet Switching System (GPSS) of VSNL, thereby facilitating connection with Public Data Networks from abroad.

The facilities offered by INDONET are: ACME (message storage and forwarding techniques), file transfer, distributed data processing expertise, special purpose software (e.g. FOCUS – a fourth generation hierarchical database package, MPSX – to handle linear programming problems, CICS – for developing teleprocessing applications), an
international gateway for international trade/business information and scientific/technical databases, and access to its own databases. INDONET has undergone a major technological upgrade by moving from the proprietary SNA architecture to an open system based on X.25 packet switching, and by introducing an e-mail service (cmcMail) based on the X.400 Consultative Committee on International Telegraphy and Telephony (CCITT). It also provides consultancy and training on the Internet and Intranets. These value-added services have been extended to over 13 major cities across the country (CMC Limited, 1996).

3.4.1.2 National Packet Switched Data Network (I-Net)

INET is India’s X.25-based packet-switched public data network; it was commissioned by DOT during 1991 and paved the way for highly reliable, cost effective and flexible ways of national data transfer and information access. Packet switching enables error free transmission with dynamic rerouting of calls and provides interconnection between computers/terminals at different speeds and protocols. In its first phase, INET comprised ten nodes at New Delhi, Mumbai, Calcutta, Chennai, Bangalore, Hyderabad, Pune, Kanpur and Ahmedabad; and connected through 9.6 and 64 kbps links. In subsequent phases, this facility was extended to 88 other cities throughout the country. It supports CCITT interfaces/protocols X.25, X.28, X.29, X.3 and X.75. Access is through dedicated leased lines for asynchronous (X.28) or synchronous (X.25) and dial-up mode (X.28). The facilities offered by INET include: reverse charging, closed user groups, fast selects, charge information indication, call redirection, call deflection, abbreviated address calling, hunt groups, multiple packet sizes and network user identification. The typical applications are e-mail services, corporate communications,
information retrieval, database services, remote job applications, credit card verifications, travel reservations and electronic fund transfers (DOT, 1999).

3.4.1.3 Education and Research Network (ERNET)

ERNET has made a significant contribution to the emergence of networking in the country and to bringing the Internet to India. ERNET was initiated in 1986 by the Department of Electronics (DOE), New Delhi, with funding support from the Government of India and the United Nations Development Programme. It consists of eight premier institutions as participating agencies: the National Centre for Software Technology (NCST), Mumbai, the Indian Institute of Science, Bangalore, five Indian Institutes of Technology at New Delhi, Mumbai, Kanpur, Kharagpur and Chennai and the DOE. The objectives of ERNET include:

- Setting up a nationwide computer network for the academic and research community;
- Undertaking the design and development of, and advanced research in, networking and related technologies; and
- Carrying out continuing education, training and consultancy for human resources development.

The connectivity options offered by ERNET are dial-up UUCP, dial-up IP, leased lines (analog or digital), very small aperture terminal (VSAT), and radio link. At present, over 80,000 users from 700 organizations including academic institutions and research
and development labs use ERNET for a variety of applications and services including e-mail, file transfer, remote login, database access, gopher, WWW and access to about 120 networks in other countries. The ERNET backbone is a mix of terrestrial and satellite-based wide area networks. The satellite WAN, using VSAT technology, has facilitated reliable and quick access from remote areas. International connectivity is achieved through gateways at New Delhi, Mumbai, Bangalore and Calcutta, with a total capacity of 6.64MB. The daily traffic over ERNET exceeds 10GB. ERNET’s current projects are high-speed networking, network management, ATM, digital libraries, electronic publishing and multimedia (ERNET India, 1998a).

3.4.1.4 Videsh Sanchar Nigam Limited (GPPS/VSNL)

In 1988 VSNL introduced GPSS (Gateway Packet Switching System) at its Mumbai gateway for data communication between computers and data terminals all over the world. It uses error detection, retransmission techniques, and optimization of system resources to achieve high network efficiency, conforms to international standards, and supports the X.25, X.28, X.29, X.3, X.75 and X.121 recommendations of the CCITT.

The main components of GPSS are the Packet Switching Exchange (main switching centre), the Packet Assembler/Disassembler (translation facility) and the Network Control Centre (supervision, control and management of the network). GPSS supports synchronous and asynchronous data terminal equipment, and all types of data transactions: short duration (credit card verification, travel and hotel reservations), medium duration interactive database access applications, and long duration batch mode applications. Access to GPSS is through voice grade circuits, dial-up access over the PSTN, and telex access. The access tariff consists of a connection charge and a traffic charge (VSNL, 1999).
3.4.1.5 National Informatics Centre Network (NICNET)

NICNET is a nationwide network dependent upon the satellite-based data communication of the National Informatics Centre (NIC), Planning Commission, Government of India, and has been in operation exclusively for Government organizations since 1988. Its primary objective is to provide a computing and communication infrastructure to aid in planning and monitoring schemes, and decision-making activities in the government. It consists of a master earth station connected to a host computer at New Delhi. Around 700 micro earth stations are located at all regional, state, and district centres and at selected commercial centres, that in turn communicate with the master earth station, hence providing the widest reach in the country. NICNET maintains a leading edge with the incorporation of a powerful Ku-band based national info highway as an overlay network on the existing SSMA/CDMA architecture (comprising VSAT links operating at 1,200 to 9,600 bps). This overlay network was established in 14 cities and is being extended to 70 cities with the central hub at New Delhi. This info highway supports high-speed communications up to 2 Mbps. It is being connected to over 200 international networks in 160 countries (NIC, 1999a).

The services offered by NICNET are: e-mail based on UUCP, SMTP, and X.400 protocols; Electronic Data Interchange; databases of medical information using MEDLARS, the district information system (DISNIC), village directories, patient information from INPADOC, information on pending cases in the Supreme Court of India (COURTNIC), an online case library (JUDIS), and traditional sciences and technologies of India (GISTNIC); Internet access; and the Research and Education Network of the NIC (RENNIC) that shares information globally, broadcasts using Ku band, and serves the nation’s academic and research community (NIC, 1999b).
3.5 Resource Sharing and Networking of Libraries in India

Due to information explosion and accelerating prices of information services and products, present day libraries are unable to meet the information needs of the users. Earlier, resource sharing methods like Inter-Library Loan (ILL) were used to meet the demands of users. With the advent of information technology, libraries work in a networked environment where data and information resources are accessible in electronic format and are shared electronically. The main advantage of the library network is that data and other information resources can be shared between a numbers of users. Library network ensures that data and other resources can be shared quickly, reliably and accurately.

The growth of Indian library networks may be traced to the efforts made during the last four decades. The 1958 Scientific Policy resolution enabled the appointment of several committees and commissions that looked into specific issues and produced recommendations in the Sinha Committee’s Report (1959), the Ranganathan Report to the University Grants Commission (1965), the Peter Lazar Report and the Kamath Report (1972). In 1984 the Working Group of the Planning Commission recommended to the Government the need for modernization of library services and informatics during the Seventh Five Year Plan (1985-1990) (Seshagiri, 1984). The Ninth Five Year Plan (1997-2002) Working Group on libraries and informatics highlighted the challenges to be faced by the Indian libraries of the twenty-first century due to unprecedented developments in IT, networking and the Internet (Government of India, 1996).

The National Knowledge Commission (NKC) has been set up by the Prime Minister with the challenging mandate to transform India of the 21st century into a knowledge society. The NKC (2007) states that “A library is not a building stacked with
books – it is a repository and source of information and ideas, a place for learning and enquiry, and for the generation of thought and the creation of new knowledge.”

In India during the late 1980s and 1990s there was a movement to establish city and regional-based library networks by NISSAT (National Information System for Science and Technology), a body under Dept of Scientific and Industrial Research (DSIR), Government of India. It provided some financial assistance for the setting up of these library networks. The University Grants Commission has also developed Information and Library Network (INFLIBNET) in 1991 to network the University Libraries in the country. This has lead to the mushrooming of various city library networks in India including Bombay Library Network (BONET), Calcutta Library Network (CALIBNET), Delhi Library Network (DELNET) which later became Developing Library Network in 2000), and Pune Library Network (PUNENET) . Only a few networks were able to work on the self sustainable model and continued to exist after the initial phases of implementation and functioning. DELNET, started as a project in 1988 became a national library network in India by the year 2000. UGC continued funding INFLIBNET to provide the support to the University Libraries in the country. The remaining city library networks due to the lack of planning for developing the networked resources and its functions soon perished from the networking scene of the country.

3.5.1 Information and Library Network (INFLIBNET)

The INFLIBNET main aim is at linking all universities, colleges, R&D laboratories, institutes of national importance, etc., in the country through their libraries by computer networks. The objective is to make all the available bibliographic and non-bibliographic information resources in the country accessible and usable to any user from
any place in the country. The INFLIBNET is a cooperative venture where all its participants join hands to derive mutual benefit of resource sharing. It tries to avoid unnecessary duplication of costly journals, indexing and abstracting periodicals and other documents. The objectives can be achieved by the use of computer, communication and modern network technologies. INFLIBNET emphasises the use of modern technologies, and suggests where and how these can be used with its specifications and guidelines. It would be a major national programme towards modernisation of libraries in the country especially college and university libraries. It aims to establish a mechanism for information transfer and access to scholarship and academic world. It would be an endeavour in resource development and its utilisation with a view to organize library services at macro level as well as affordable costs for maximum benefit.

At present INFLIBNET is basically engaged in modernising university libraries in India. Its main endeavour is to connect university libraries and information centres through high-speed data network for the maximum utilisation of information resources.

INFLIBNET is designed to improve library resource sharing by avoiding duplication in acquisition of library materials to the extent possible. Resource sharing is the backbone activity of INFLIBNET. The functions and services of INFLIBNET are focused on ‘Resource Sharing’ and promotion of scholarly communication among the academics and researchers in India. Hence, INFLIBNET promotes creation of conductive environment for library resource sharing through activities such as identifying existing information sources, creating bibliographic databases, updating and maintaining the databases, making them accessible by providing interconnection and communication facilities, etc. The implementation of library resource sharing is possible only when two or more libraries are willing to share their resources for mutual benefit.
3.5.1.1 The major objectives of INFLIBNET

- To evolve a national network;
- To interconnect various LICs in universities, deemed-universities, colleges, UGC information centres, institutions of national importance and research institutions for efficient sharing of information;
- To provide reliable access to document collections in libraries by creating online union catalogues;
- To provide better access to worldwide bibliographic information sources with citations and abstracts through indigenously created databases and by establishing gateways for online accessing of international databases;
- To provide document delivery service by establishing resource centres;
- To implement computerization of operations and services in LICs by following a uniform standard;
- To train and develop human resources in the field of computerized library operations and networking to be implemented and sustained nationwide; and
- To evolve standards and uniform guidelines in techniques, methods, procedures, hardware and software services in order to optimize pooling, sharing and exchange of resources and facilities.

3.5.1.2 Functions of INFLIBNET

Main functions of INFLIBNET is to set a uniform standard, the implementation of the computerisation of Libraries in the country and interlinking the university libraries through a national network. This network will evolve uniform guidelines for
computerisation and put it in actual practice by all the libraries for better sharing and exchange of information and utilisation of resources.

3.5.1.3 Resources and Services of INFLIBNET

- INFLIBNET will create online union catalogues of information resources of various libraries in India to provide access to document collections to the users of all the libraries.
- It will also provide access to bibliographical information sources with citations and abstracts through databases created by Sectoral Information Centres of NISSAT and Information Centers of UGC.
- It will develop methods for archiving of valuable information sources in Indian languages.
- It will promote shared cataloguing, ILL, catalogue production, etc. to avoid duplication of efforts and also to enhance co-operation among libraries/information centers, documentation centers in the country.
- It will also create databases of projects, specialists and institutions for giving effective information services.
- It will facilitate e-mail, ftp, and computer and A/V conferencing for academic communication among the scientists in the country.
- It will give training to professionals in the field of computerization.
- INFLIBNET Center will collaborate with other national and international organisations in the area relevant to its objectives and promote research and development.
- It will provide consultancy and information services to generate revenue.
3.5.1.4 Activities of INFLIBNET

INFLIBET as it is called a gateway to India’s academic and research community is working towards modernising university libraries in India and also interlinking the libraries as well as information centres with state of art technologies for the maximum utilization of information resources. One of the major objectives of INFLIBNET is to promote communication among academics and researchers in India. To fulfill the objectives the INFLIBNET has carried out certain activities. Some of the activities have been categorised in the following sub sections.

a) Software Development

INFLIBNET has developed SOUL (SOftware for University Libraries) software to facilitate automation of housekeeping operations of participating libraries. This software works on the client server mode in the windows environment using MS SQL server as back end tool to store and retrieve data. It supports international standards such as MARC-21, CCF, AACR-2R, ISO-2709, etc.

b) Networking of University Libraries

University libraries which are receiving funds under this programme can subscribe to networks like: ERNET, VSNL, NICNET and other ISPs. The centre has planned to set up WAN named ‘UGCNET’. Under this, more than 170 Universities and academic institutions may be linked. The centre has advised all the funded universities to set up LAN in their Campuses in which all the departments will be connected and later LAN will be linked to WAN.

c) Development of Databases

d) Automation of Libraries

For the purpose of enhancing resource sharing through networking, all the participating libraries should be computerized / automated. INFLIBNET Centre is providing support to university libraries for automation.

e) Human Resources Development (HRD) Training

For the proper implementation of INFLIBNET programmes the skills of the university libraries staff are to be enhanced. To fulfil this purpose INFLIBNET Centre undertakes various training programmes. One month training programme is meant for operational library staff. Basically it is training for application of computers to library and information services. Under ‘on the site’ training programme the staff of INFLIBNET give training for initiating automation process.

3.5.1.5 INFLIBNET Services

The benefits that can accrue from a library network get maximised as the number of services on the network increases. From cost-benefit point of view, a multiple function/service network is more justified than a single function/service network. Further, the cost will decline progressively as the number of participants in the network increases. INFLIBNET is a multiple function/service network. It provides the following services:

a) Document Delivery Service

Document Delivery Service (DDS) is initiated by INFLIBINET to overcome the problem of resource crunch due to ever-increasing costs of information resources and shrinking budgets of libraries.

b) Bibliographic Information Service (Database Service)

INFLIBNET is providing bibliographical information service through online and offline databases, CD-ROM databases, COPSAT and OCLC’s First Search.

c) Catalogue-based Services
This service includes: shared cataloguing of monographs, serials and non-book materials; union catalogue of books, serials and non-book materials; online catalogue (OPAC) access for shared cataloguing and location identification; catalogue production in card, book, magnetic tape/floppy, optical (CD-ROM), and COM form; and book processing and preparation.

So far more than 75 percent of the libraries have become operational to utilize the recurring grant (provided for the first five years to maintain the computer system, support data entry for retro-conversion, and cover the costs of consumables including the telephone charges to sustain and develop these automation activities.

3.5.1.6 Consortia initiatives at INFLIBNET

Universities in India are finding it hard to maintain the subscriptions even to core journals, due to increasing costs shrinking library budgets and price escalation against major currencies. On average, an Indian university library subscribes to even less than 500 journals and at many universities there are no subscriptions. In comparison, in major university libraries in more developed countries the average number of journal titles subscribed to can exceed 10,000. Interestingly, the collective titles subscribed to by the Indian university libraries seem to be more than 5,000 scholarly journals. This suggests that there is a workable model for resource sharing to bridge the collections gap. Second, there is a need for increasing the access to scholarly journals, not being subscribed to by any of these libraries due to budget restrictions.

Resource sharing as a concept has evolved into the concept of library consortia. The concept has come out of the increasing costs of publications, particularly periodicals and the reducing capacity of libraries to acquire. Another factor is the availability of electronic publications and databases. Publishers have also realized this fact and
subsequent loss to their business. They have come into agreement with libraries to form consortia. Libraries come together and identify a coordinating agency that coordinates the planning and implementation of the consortia including the negotiations with the publishers. The negotiations include the identification of the databases to be acquired, access facilities depending upon the number of libraries and users accessing the databases, including the back-up of the databases.

According to Biswas and Dasgupta (2001), the term ‘consortium’ can be defined as follows: A consortium refers to a “temporary cooperation of a number of powers, companies etc, for a common purpose. It is an association of similar types of Organization / institution who are engaged for producing and servicing the common things/or providing services for a specific purpose of its users.” A library consortium is a “community (a cooperative) of two or more information agencies which have formally agreed to coordinate, cooperate or consolidate certain functions to achieve mutual objectives and benefits. Consortia may be formed on a local, regional, national, or international basis; on a functional or format basis; or on a subject basis.”

It is clear that the consortium is a cooperative association of different types of libraries. Its main purpose is to share human and information resources for facilitating the research and learning of the member’s constituents by collective strengths of the institutions. It supports resource sharing and provides services to users through cooperative acquisition, access to electronic resources, access to physical collections, enhanced inter library loan and document delivery.

INFLIBNET will play a major role in enhancing access to the collection of one library to the group of libraries. This approach will address both expanded access to resources among the libraries and also the possibility for greater resources available on
consortia purchase or license from publishers, aggregators, and non-profit organizations. Several proposals and pricing modules were discussed and six libraries willing to come together with assistance from INFLIBNET established a consortium on an experimental basis, which will improve overall resource sharing among members.

UGC has taken initiative to provide the electronic access to major journals for all the university libraries. The UGC NET, which is in the process of being established, will play a major role in providing electronic access to this e-journals collection, reflecting disciplines in the Life Sciences, Physics, Chemistry and Mathematical Sciences.

3.5.1.7 UGC -Info net E-Journals Consortium

As stated on its website (www.inflibnet.ac.in) the Information and Library Network (INFLIBNET) centre is being achieved via the UGC- Info Net network, which aims to provide high speed internet connectivity to 150 institutions in its first phase. INFLIBNET functions as a resource centre with an aim to cater for the needs of its members for resources not accessible to them either in electronic media or in print media (Koneru, 2004).

UGC -Info net E-Journals Consortium is an ambitious programme initiated by University Grants Commission to facilitate free access to scholarly electronic journals and databases in view of limited resources subscribed by majority of universities. More than 4000 scholarly journals and databases from around 23 major publishers/vendors made available to around 100 universities and the remaining universities will be provided access in stages. From the users point of view it is a great bonanza for them in the absence of such access.
The electronic subscription initiative under UGC-Infonet is expected to trigger a remarkable increase in sharing of both print and electronic resources among university libraries through one of the gateway portals being identified. The gateway portals provide customised solutions not only to access the resources online but also access to resources of other libraries participating in the consortium. With subscribed resources accessible online in electronic format, the member libraries would have less pressure on space requirements for storing and managing print-based library resources. Moreover, all problems associated with print media such as their wear and tear, location, shelving, binding, organising, etc. would not be an issue for electronic resources.

UGC is also exploring the possibilities of alliances with publishers for adapting a consortia-based approach to e-subscriptions for journals. These journals will be available over UGC-Infonet to all the universities. Much of the new research publications are also available on the net as freeware, thereby, making quality information accessible to a wider academic scholar base spread across the country, at an affordable price. (Chand and Arora 2008) provide details of the use made of e-journals between 2004-2007 by members of the INFLIBNET consortium.

3.5.1.8 INDEST Consortium

The Ministry of Human Resource Development (MHRD) has set up the Indian National Digital Library in Science and Technology (INDEST) Consortium. Under this, the ministry provides funds required for the subscription to electronic resources for 38 core institutions including the Indian Institutes of Science (IIScs), the Indian Institutes of Technology (IITs), the National Institutes of Technology (NITs), Regional Engineering Colleges (RECs), Indian Institutes of Management (IIMs) and a few other centrally funded government institutions through the consortium. Besides that, 60 government or
government-aided engineering colleges and technical departments in universities have also joined the consortium with the financial support from the All India Council for Technical Education. In addition, a total of 26 other engineering colleges and institutions have also joined the consortium on a payment basis (Saibaba and Guha, 2004).

3.5.1.9 CSIR Consortium

The Council of Scientific and Industrial Research (CSIR) in India has 40 scientific laboratories involved in basic and applied research in various disciplines. Many of the laboratories have well equipped libraries, and some of them act as the main information centres for different subjects, functioning as consultant libraries at the national level. Access to e-journals through the use of state-of-the art technology is possible in many of the libraries belonging to these laboratories. Each of the laboratories has a well-established library or documentation centre that is also backed up with strategic information support from the National Institute of Science Communication and Information Resource (NISCAIR), a constituent establishment of CSIR. To augment CSIR research and development activities, NISCAIR implemented an agency for providing access to globally available e-journals to the entire scientific and technical staff of CSIR and its constituent units through a consortia approach. As a first step, NISCAIR, on behalf of CSIR, has entered into an agreement with Elsevier Science to access its 1,500 e-journals and further intends to strengthen its information resource base by subscribing e-access of more and more journals published globally. The CSIR consortium extended its access by creating appropriate agreements on a consortium basis with the other providers of e-journals. The major focus is on emerging sectors such as, biotechnology, pharmaceuticals, information/ communications/entertainment (ICE) and financial services.
3.5.1.10 FORSA Consortium

The Indian Astrophysics Consortium called “Forum for Resource Sharing in Astronomy” (FORSA) is a typical example of a homogeneous group of members wherein the libraries have a common area of interest and establishing the consortium is slightly easier than in a heterogeneous type of members. The FORSA consortium consists of five members who joined together for negotiating licensing for astronomy journals and identified a subscription agent as a supplier of journals. Subscriptions for both print and electronic format are paid through their supplier. The agreement was originally meant for only astronomy journals, published by a particular publisher. However, consortium members also now share the licence fee to enable e-access to the journal Nature (Kumbar, 2004).

There are many advantages for libraries if they buy their materials, especially electronic resources, through consortia, although there is some disadvantages too. Consortia, in general, are tailored to meet the unique needs of their membership. Consortia purchasing projects have become a basic tool that expand collections and support co-operative technological development for libraries.

3.5.2 Developing Library Network (DELNET)

Developing Library Network is a major operational resource sharing library network in India connecting 1674 libraries in 32 States in India and seven other countries. DELNET was conceived as a city based library network in Delhi in 1988 and was known as Delhi Library Network, networking the libraries of the Delhi region and was registered as a society in 1992. With the availability of DELNET services on the World Wide Web, its accessibility was soon transformed from the local dial up connectivity for the Delhi
region institutions to global access through the web. This gave a great boost to DELNET and it soon crossed geographical boundaries within the country and also became accessible internationally. In 2000 the name of DELNET was changed to DELNET – Developing Library Network. The main objectives of DELNET are to promote resource sharing among the member libraries by collecting, storing and disseminating information and provide networked services to researchers and scholars to supplement their research activity.

There are five factors which are essential for an operational library network and which govern its functionality. These can be described as the connectivity, cost, computers, client and content. These five parameters will be discussed in relation to DELNET and its member libraries and how they have contributed to the growth and success of DELNET.

Connectivity is a life line for the smooth functioning of a library network and is facilitated by leased-line, wireless, broadband, VSAT and Wifi in the libraries. DELNET services are accessible through the world wide web by registered member libraries. The DELNET databases are hosted on a basis web – open text server and are connected with an 11 mbps RF link offered by The National Informatics Centre of the Ministry of Communications and Information Technology. The network remains functional on a 24/7 basis. The web tracking software installed at DELNET servers gives a day to day picture of the usage of the DELNET services by the member libraries. It is heartening to note that access to the servers hosting the databases are being made by researchers and scholars of the member libraries at different times starting from midnight to early morning besides the usual peak hour network access.
The cost of membership of the library network and the resources provided through the network are important factors for determining the network's sustainability. DELNET membership charges are quite nominal at Rs 7,500 (US$150) per annum for libraries in India and South Asian Association for Regional Cooperation (SAARC) nations, non-SAARC members pay US$500 per annum. The membership fee is the same for all institutional members whether it is a University, an institution, an R&D organisation, a specialized library or a school library. This democratic and unbiased approach helps to promote resource sharing and also implies an equal participatory role in a network for resource sharing.

In order to facilitate the optimum use of the library network resources and services, the researchers, scholars and faculty of the member institutions should have adequate access to computers.

The wider the library network, the more effective are the resources available. In DELNET, the participating libraries are from various disciplines and they pool their resources, sharing them across the network.

Content is a major resource of a library network and the greatest concern is to consolidate resources distributed across the member libraries. Since inception, DELNET has been actively engaged in developing union catalogues and union lists together with location data; these are major benefits of the library network and are growing rapidly. The database is built by electronic transfer of the exported records through the online facility, email, ftp protocols; in addition data is physically sent on CDs by the member libraries. In a country like India, cooperative cataloguing and cooperative collection building is still not in existence and thus there is much duplicate cataloguing. Libraries are using various software packages which range from the commercial software packages (Libsys, Alice for
Windows, Virtua, etc.) which may be adhering to international standards, to the in house software packages developed with a backend on SQL, Access, Excel, Oracle, Sybase, etc. DELNET collects the records from the member libraries in the default exported format and conversion programs are being developed to convert the base records into the standard ISO 2709 format before they are finally merged with the Union Catalogues. Information is also collected from the prominent libraries of the country who although they may be non members can be approached for obtaining the desired references. There is an online facility for uploading the machine readable records to DELNET by the member libraries. The bibliographical databases do not strictly adhere to the international bibliographic formats and the library professionals are not very familiar with MARC 21 cataloguing.

3.5.2.1 DELNET Databases and their significance

i) Union catalogue of books

DELNET provides access to more than eight million bibliographic records of books in English available from member libraries both in and outside the country. The databases can be accessed by any desired field including Title, Author, Subject, Date of Publication etc. The Boolean operators can also be used for refining the search queries. Sorting can be carried out on the searched results. Searching is by phrase or, any words can be used. The records can also be retrieved using the specific indexes including Title, Author, Subject, etc. DELNET has developed its own modules on Basisplus software, a relational database management system.

ii) Union list of current journals and e-journals consortium in India

Journals are a vital source of current information for scientific research. Information on availability of current journals is of great help for document delivery
services. DELNET maintains an online union list of current journals available in the fields of Science and Technology, Social Sciences and Humanities. This database has more than 25,000 unique titles of current journals and is available to all libraries whether members or non members.

iii) Union catalogue of journals

DELNET has also created a database containing the holdings data of the journals available in the member libraries as well as other bibliographical information. At present the database contains 19,289 records of the journals. It is a good resource for tracking down articles from rare and/or old issues of journals dating back to the late nineteenth and early twentieth century and DELNET receives a number of requests for these.

iv) Database of journal articles

There are a number of libraries, though not many on the network, who are involved with article indexing in machine readable form. A large portion of the library budget is spent annually on subscribing to journals, either in print or online but libraries lack access to databases containing bibliographic details of these journal articles themselves.

v) Databases of non-print materials

DELNET maintains databases of CD-ROM, video recordings and sound recordings available in the member libraries. Generally speaking the non-print materials cannot be loaned from the libraries, however video recordings and sound recordings are being loaned in special cases although for a shorter period. The CD-ROMs are used for keyword searching and the concerned bibliography containing the abstracts is provided to the requesting libraries.
vi) Database of theses and dissertations

This database contains around 45,000 records of theses and dissertations submitted to Universities and Institutions. This database contains bibliographic information and researchers use this database to identify works being carried out in their fields. There have been projects in India concerning the digitization of the Thesis and Dissertations by INFLIBNET and the University of Mysore (Vidyavahini project), but these have not taken off due to the copyright restrictions.

vii) Usefulness of DELNET union catalogues

The access to union catalogues created and developed by the library networks remains the most highly used service by member libraries. The locations data available in the union catalogues helps users to find the availability of documents in their own regions, state and country as well as internationally. It is a very effective resource discovery tool and is a great boon to the scholars and researchers of the country.

3.5.2.2 DELNET services and their Utilisation

i) Inter Library Loan (ILL) and Document Delivery Services (DDS)

DELNET's inter library loan and document delivery services are one of the most popular services with member libraries. Requests for the supply of books on Interlibrary Loan or requests for journal articles are received by DELNET through various modes including DELNET Online System (options are available through the online databases), e-mail (one of the most prevalent methods used by member libraries), also through fax and at times through post. DELNET promotes electronic communication since it is faster and interactive and facilitates the process of quick and safe delivery of the ILL/DDS items. The DELNET ILL/DDS services are at the core of DELNET. There is a great sense of satisfaction among member libraries using the services where speed is essential.
ii) Reference services

DELNET receives a large number of reference queries every day and it maintains a referral centre which provides reference services to researchers from and outside India. DELNET is planning to start a national referral centre where the reference queries will be saved and accessed by the users on an anytime, anywhere basis. It will be based on question answering technology.

3.5.3 Calcutta Library Network (CALIBNET)

CALIBNET (Calcutta Library Network) project funded by NISSAT, DSIR and managed by the Calcutta Society was established in the year 1986 under the West Bengal Government’s Societies Registration Act, 1961. CALIBNET, in the first phase, undertook the task of linking 38 computerised libraries in the field of science and technology located within the Calcutta metropolitan area and would then proceed to connect to other Metropolitan Area Networks namely, Developing Library Network, Bombay Library Network, Madras Library Network, Mysore Library Network, Ahmedabad Library Network, etc. The CALIBNET (http://www.calibnet.org) activities are centered around providing access to materials available in the eastern region and creation of databases particularly with respect to intellectual assets of West Bengal. CALIBNET offers the following services to fulfill its objectives:

i. Centralized Database (CDB) Service, which contains bibliographic records of participating libraries.

ii. ConFile Service provides contents of journals of users choice.

iii. CalibOrder Service offers the requisite backup service by providing full text.
iv. ConAlert Service gives user the customised service by providing current and tailored bibliographic information.

v. RetroFile Service provides trend of research on any given specific topic.

vi. CalibLink gives e-mail connectivity to member libraries.

The CALIBNET website (http://www.calibnet.org) provides access to bibliographic information resources available through its centralised databases. The CALIBNET website also provides the following active links for the benefit of member libraries: CALIBNET has developed inhouse “SANJUKTA” – a multi user storage and retrieval software to support its centralised database and to provide online access from remote areas. The other Software “PARAPAR” which is a conversion software package has also been developed to support interchange of bibliographic data.

**3.5.4 Ahmadabad Library Network (ADINET)**

ADINET is the abbreviation used for Ahmedabad Library Network (http://www.alibnet.org). It is a network of libraries located in and around Ahmedabad. In the year 1993 it was registered as a society. ADINET sponsored by the NISSAT. Its membership is open to all institution libraries, information centers, library professionals and students.

The services from ADINET include the following:

i. Database of current periodicals received by over 100 libraries of Ahmadabad,

ii. Inter-Library Loan,

iii. Content Pages of LIS Journals,
iv. Supply of photocopies from journals received by libraries in and around Ahmadabad,

v. Internet surfing facility,

vi. Database of databases available in LIS Centres in and around Ahmedabad,

vii. JOLI (Job Opportunities for Librarians) Database,

viii. Special Internet training to fresh qualified librarians,

ix. Computer training programmes to library professionals.

In order to meet the objective of cooperative mode of working among the libraries, ADINET is now offering the following services by special expert team at a reasonable charge:

i. Computerisation of libraries,

ii. Cataloguing and classification of documents,

iii. Labelling and shelving of books,

iv. Stock verification of documents,

v. Manpower development programmes,

vi. Planning for library development,

vii. Completion of any backlog work in the library

viii. Some selected cyber café to give 20% discount to ADINET members.
3.5.5 Mysore Library Network (MYLIBNET)

MYLIBNET (Mysore Library Network) was set up by NISSAT, DSIR in the year 1995 and is located in the Central Food Technological Research Institute (CFTR) Campus, Mysore. The MYLIBNET (http://www.mylibnet.org) organises various training programme for LIS professionals. Some of the services provided by MYLIBNET are as follows: Providing technical assistance in the area of LIS. Web access to the Union Catalogue of Periodicals subscribed by member libraries for updating their records in the union catalogue database online. It subscribes to e mail service of ERNET.

3.5.6 Pune Library Network (PUNENET)

Pune Library Network PuneNet is a joint Endeavour of University of Pune, Centre for Development of Advanced Computing (C-DAC) and National Chemical Laboratory (NCL). This project, funded by NISSAT was started in the year 1992. PuneNet (http://www.punenet.com) is housed in Bio Informatics Centre, Pune. Services PuneNet Database Services PuneNet hosts many databases namely, Union Catalogue of Periodicals, Databases of Booksellers and LIS Professionals, PuneNet Libraries Database. These databases are updated yearly. Through its website, the users can access PuneNet databases on the Internet. This network acts like a gateway to Internet. Other Services Apart from the database services some of the other services includes E-mail and Internet Connectivity, CD-ROM database services, online search facility, Current Awareness Service (CAS), photocopy services, etc. The participating libraries are provided with login and password, which is issued for short period of time. For the sharing and exchange of bibliographic data from the participating libraries PuneNet follows the international standard for information exchange – ISO 2709. PuneNet is planning to include Indian language databases, which contain old and rare valuable manuscripts, for
the benefit of the users. For periodicals database Pune Network may add Ulrich’s database so that more information regarding periodicals may be given to its users. There is also a proposal for online updating of records and databases. At present there are more than 20 participating libraries who deposit their data on regular basis.

3.5.7 Madras Library Network (MALIBNET)

The MALIBNET started in the year 1991 in order to provide effective information services to the users in and around Madras. MALIBNET was registered as a society in 1993. INSDOC, (now NISCAIR) was the executing agency for the MALIBNET project.

The membership of MALIBNET (http://www.angelfire.com/in/malibnet) is open to universities, colleges, R&D institutions, industries and individuals. MALIBNET offers the following services to its members:

i. E-mail service.

ii. Photocopy service.

iii. Document delivery service.

iv. Specialised databases which gives abstracts of articles.

v. Current serials acquired from the libraries.

vi. Databases from INSDOC (now NISCAIR) and other participating institutions are also available on MALIBNET host.

vii. Directory Database of Current Serials in Madras (Gives journal holdings of member libraries and it is available online).
viii. Contents Database of Journals in Madras (Gives contents information of important journals which is also available online).

3.5.8 Bombay Library Network (BONET)

The Bombay Library Network (BONET) was setup at the National Centre for Software Technology (NCST), Bombay, on 6 November 1992. The Network is sponsored by NISSAT. The aim of BONET is to build a low cost library information system which can possibly be used as a model for future expansion of this service even outside Bombay.

BONET also benefits significantly from the experience gained, and facilities created, by the Education and Research Networking (ERNET) project of the Department of Electronics, Govt. of India, assisted by the United Nations Development Programme (UNDP). BONET is aimed at promoting cooperation between libraries in Bombay. The focus is on inter-library activities, rather than on computerizing individual libraries, which will no doubt computerize their own operations and are likely to share their experiences with each other. BONET offers training related to library computerization and networking, and speed up computerization of Bombay libraries. BONET membership provides for access to its centralised catalogues and for E-mail among BONET members. However, access to library related services outside Bombay in India and abroad would require use of ERNET.

The services offered through BONET include the following:

i. Consultation on standards

ii. Organized training for selected staff of participating libraries
iii. On-line catalogue of periodicals for the region.

iv. On-line catalogue of books for the region.

v. On-line catalogue of preprints/reprints.

vi. Inter-library lending of books and periodicals.

vii. Inter-library request for photocopying.


ix. Dissemination of information, on new books etc, using E–mail, Bulletin boards, and SDI techniques.

Under BONET the following databases were created:

i. 25,000 items in a bibliographic database on computers and software technology

ii. Union catalogue of journals and other periodicals in libraries in the region

iii. Tables of contents of 250 Indian periodicals created by the national centre for information

iv. A number of CDROM databases have been mounted on a Novell Server for use to members.

3.6 Major Core Areas for Resource Sharing and Networking of Libraries

Keeping in view the need and emerging thrust areas for colleges, the following core areas for resource sharing are identified; Union Catalogue, Collection Building Strategy, Exchange of Publications, Training of Staff, Exchange of Experience and Expertise, Document Delivery Service, Consortium Approach, Impact
The above discussions make it clear that resource sharing philosophy is very much useful to all educational institutions. The implementation of resource sharing will eliminate the feeling among the users that our institute is not having the required resource. Resource sharing arrangement will help the librarians to provide the document and information which is not available at the institution. We can visualize the following impact of resource sharing on the college libraries; Users Satisfaction, Coverage of Collections, Time Saving, Space Saving, Library Image, Efficiency.

3.7 Levels of Resource Sharing and Networking of Libraries:

University and college libraries can work out a suitable and sustainable strategy to implement resource sharing plan at different levels in phased manner so that the activity is properly coordinated and implemented to achieve set objectives. It is suggested that the resource sharing can be implemented at Local, Regional, National and International levels.

3.8 Role of University and College Libraries in Resource Sharing and Networking

It is necessary that university and college libraries need to focus on the creation of professional services to meet the potential information needs keeping in view the following major objectives; Providing Web based Library and Information Services, Bridging the Knowledge Gap, Achieving Excellence in Services, Ensuring Users Satisfaction, and Formulation of Consortia based E-Collections Building Strategy, Providing Dynamic links to Information Resources, Globalised Reach, Distance Education Application, Digital Library Initiatives, Networking of College Libraries.

There is an urgent need to have networking of colleges which will also translate the concept of resource sharing into reality for libraries. The following factors can be
taken into consideration to implement networking among colleges: Creation of environment for networking in Colleges, Identification of priorities areas, Creation of IT infrastructure for libraries with Internet access, Providing training to library staff, Creating awareness among users about resources and services, Integrated and comprehensive website for the libraries, Formulation of working group, Study of resource sharing efforts at other institutions, Formulation of Consortia, Consultation Cards, Inter-library loan, Library software, Preparation of union catalogue of journals, books, conference proceedings, Database creation of project reports and Faculty publication.

It is a fact that the concept of resource sharing undoubtedly is very useful in recent environment in the area of arts, management, science & technology. The implementation of this concept needs careful, constant and concerted efforts on the part of educational institutions.

**3.9. Conclusion**

Information and Communication technology today has made resource sharing a reality. Therefore, it is necessary to build a Resource sharing and Networking for college libraries in India. India has basic infrastructure for creating of a resource sharing network. Today Internet making the whole world as a global village, this internet also has the capability to integrate all the libraries of world to a single global library with the development of resource sharing network.

In view of the above discussions, it can be concluded that Resource Sharing is a great boon which needs to be implemented progressively and professionally in university and colleges libraries in India. This initiative will generate optimum satisfaction among users and also save considerable national resources.
REFERENCES:

1. AARNet: Australia’s Academic and Research Network. (http://www.aarnet.edu.au)


29. OCLC and WorldCat. (http://www.oclc.org/worldcat).


31. Pune Library Network. (PUNENET). (http://punenet.ernet.in)


**Websites**
ADINET : www.alibnet.org

CALIBNET : www.calibnet.org

DELNET : http://delnet.nic.in

INFLIBNET : http://www.inflibnet.ac.in

MALIBNET : http://www.angelfire.com/in/malibnet

MYLIBNET : http://www.mylibnet.org