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Samavedam Padmashree  
paree18@gmail.com

Sasikala Cahgari Professor  
*Andhra University*

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# **A Selective Review of Scholarly Communication on Library Networks and Networking of Libraries**

**S.Padmashree<sup>1</sup> & C. Sasikala<sup>2</sup>**

1. Research Scholar, Andhra University, Visakhapatnam  
1. Prof & HOD (Retd.), Department of Library & Information Science, Andhra University,  
Visakhapatnam

## **Abstract:**

The number of literature published is dwindling every year by leaps and bounds both in print and digital media with the increase in cost coupled with budget crunch, the institutions are forced to look for alternative sources for acquiring the costly publications mainly to serve their patrons to help them in their research and development activity and other academic needs. These factors are driving the Libraries in similar field into consortium arrangements and establishing networks to share the resource among participating libraries.

## **Keywords:**

Library Networks, Benefits of Networks, Networked Environment, International Network, Networked Digital Library, Networked Electronic Services

## **Type of Article:**

Literature Review

## **Introduction:**

The Networking efforts in various countries got a boost with the tremendous and fast developments in computer and communication technologies, which led to the implementation and successful operation of national and international computer communication networks. These networks were commonly used for business and commercial applications, but the libraries were quick to start efforts to make use of these networks for linking libraries for resource sharing among them. The success stories of library networks in advanced countries like OCLC (Online Computer Library Center) and Washington Library network, the Research library information network in USA and the British Library Automated information service (BLAISSE) in UK etc. are example of such cases (Murthy, 1996)

**Structure of the Paper:** This paper covers the Journal Articles, Papers published in Conference Proceedings, Book Chapters covering a period from 1985 to 2015. The literature reviewed is organized under five themes based on the thought content directly drawn from the literature and presented thematically as well as chronologically within each theme.

The themes are as under:

1. **Library Networks –Need, Importance & Challenges**
2. **Design, Development & Management Of Library Networks**
3. **Networking of Different Libraries**
4. **Library Networks – Global**
5. **Library Networks – India**

## 1. LIBRARY NETWORKS –NEED, IMPORTANCE & CHALLENGES

Maheswarappa & Tadasad (1997) critically examines the issues in collection development for libraries in the context of electronic publication and networking with special reference to formulation of policies, users, formats, storage and mode of access, selection, acquisition, bibliographical control, finance, evaluation and manpower. It concludes that developing a need-based, relevant and cost-effective collection, consisting of electronic and other publications in document form, requires systematic planning, and effective implementation. According to Oyinloye (1999) libraries have a major role in the development of an African Information Society by providing access through library networks to the tremendous potential for sharing knowledge via the Internet. Gorman & Cullen (2000) argues for a new approach to the modeling of networks in which libraries enter at one point and then move along a continuum, ideally ending in an advanced integrated knowledge environmental model. There is limited evidence that some library consortia in Asia are moving in this direction, but for the most part Asian consortia & networks are of the traditional, static variety.

The Internet has been of tremendous use to library services but there should be evaluation in quality assurance, issues and strategies **Bertot 2004**. There is the necessity of linking libraries because published information is ever increasing **Bachalapur 1994**.

Due to the rising prices of the books & periodicals, networking of the libraries is becoming the need of the day. In order that the benefits of networking are availed by the organisations and also by the nation as whole, the importance of a well organized computerized library will have to be impressed upon the decision makers in the organisations as well as in the government. But this job can not be done by the individual librarians. Professional bodies like IASLIC, ILA, AGLIS etc., should chalk out programmes for this purpose. So that necessary infrastructure & the funds are provided to implement the projects of computerization and networking (Misra, 1994). Sharing is a means to solve problems regarding technical literature **Koganuramath & Moolya 1994**. Selvi (1994) describes some important features of RECTLAN a campus wide local area Network developed in the Regional Engineering College, Tiruchirappalli.

Datta (1994) feels that there are government sponsored as well as private networks functioning in our country, like ERNET, SIRNET, INET, CCNET, INDONET etc., and there are many more in the pipeline, which are ready to join. However there are nationwide library networks as such, though some smaller restricted networks have started functioning, like MALIBNET, DELNET, BOMNET etc., Is it really necessary to have a separate network for libraries or can we utilize one of the existing networks for this purpose? Today it is a pertinent question, particularly, if we consider the present financial situation in India and non-activity in the library networking front. Subba Rao (2001) identifies the changes that libraries and information centres (LICs) need to undergo for networking, and lists the existing communication networks (INDONET, ERNET, NICNET, GPSS, RABMN, INET) and libraries and information networks (INFLIBNET, DELNET, BTIS, SIRNET, TIFACLINE, CALIBNET, MALIBNET, BONET, MYLIBNET, PUNENET, etc.) in India. It mentions the paradigm changes that LICs undergo, challenges to their networking, and also highlights the role of IT in transforming traditional LICs into a digital mode. It discusses the various Governmental policies that led to the development of national information infrastructure, the

inadequacies of the infrastructure, the status of IT application in Government, and the challenges in converting library contents into computer readable form.

## **II DESIGN, DEVELOPMENT & MANAGEMENT OF LIBRARY NETWORKS**

Kilgour (1989) discusses various aspects to be taken into consideration while designing an Information network. He has provided some Suggestions and technology design for information network. Donald (1991) focuses on a set of techniques based in part on the field of discrete mathematics. These techniques, known collectively as graph theory, can be used to model library file structures, to help schedule library operations, and to model library networks, especially in terms of resource allocation decisions.

There are many techniques for producing visualizations of networks and many programs available to apply the techniques, including some excellent free ones. This could be a group of web pages, or a group of websites with multiple links between sites ignored. This kind of small network can be visualized through a simple network diagram explains Thelwall (2004). According to Woodsworth (1991) Mechanisms have to be defined in case of interdependency by libraries.

Gopinath (1994) Identifies the constraints of library networking with need for development in developing countries. He also presented a curriculum package for the orientation programme for library & information professional in developing countries. According to Phadke (1994) there are several factors such as preparations, management and finances need to be considered while planning network. He also discusses issues like status of library networks in India. The ERNET project has made considerable progress for cataloging and hooking up to international networks (Katna, 1994).

Gupta (1994) presents a design concept to start Roorkee Engineering Library Network, with proposed services, options for various mechanical, electronics gadgets, managerial & financial aspects. Kanti (1994) explores the possibilities and limitation of setting up an information network system in the district of North 24 Paraganas of West Bengal. Steele (1995) overviews the forces imparting on the traditional library environment with particular reference to network developments and the consequent need for intellectual & structural readjustment within and between relevant information providers.

Ciurlizza, (1996) feels that there is a need to improve the access to the end-user by Networks project in Latin America. Martey (2002) discusses the management issues involved in library networking, using GILLDDNET, the DANIDA/ IFLA sponsored Ghana interlibrary lending and document delivery trial project as a reference point in the discussion.

According to Blowers (2012) it is important to use good bandwidth management to optimize library functionality. There are 5 key factors that will impact your networks performance Infrastructure, Network load, workstation performance, prioritization of services, network management. Sinha (2014) describes about the proposal of design and development of a Regional Library and Information Network of Bihar and Jharkhand States (BIJLIBNET) with various facets for resources sharing in the remote areas of Bihar and Jharkhand in real sense for the over all development of the society.

Konwar & Sinha (2014) gives a brief outline about the importance of ICT infrastructure and development of Library networks at the nine college libraries of Barak Valley. He identifies the problems and measures to be taken for development of the library system. Connectivity among each other is very much essential in this present era. ICT and Networking tools with different library networks/Communication networks provide the library services more effective in different ways e.g. resource sharing, inter-library loan system and digital library concept. The main objective of Ongus (2015) was to analyze the effect of network risk management process on service delivery using Broadband systems Corporation Company as a case. Recommendations for Rwanda ISPs with findings were suggested to enhance network risk mitigation.

The primary requirement for success of any library network is the bibliographical database in a machine-readable form. However, the major bottleneck in large libraries is the conversion of the existing manual catalogue into machine readable form. To overcome this bottleneck a conversion software called 'RECON' has been developed for BNB & Book find outputs into ISO 2709 format by assigning standard tags like CCF or UNIMARC tags which is compatible with CDS/ISIS ISO 2709 format so that the users can import the pre-requisite for the application of the software is presented by Raveendra & Seetharama (1994). Jalloh, (2000) Reports on the preliminary investigations & formulations carried out to assess the feasibility or viability of library network at Swaziland. Evaluates the existing resources & facilities, affirms & confirms the perceived need for Resource sharing & library networking, establishes present obstacles for library cooperation & proposes a scheme or frame work within which the network can be achieved for optimum use.

Breeding (1997) focuses on designing a library network to maximize security options abound in network designs. He explores some options that will allow the library's network to operate in a reasonably secure way with the least impact on functionality. Gupta, Vaibhav et al (2004) has put effort to understand risk analysis concerning security threats and growing network needs. Kush & Kumar (2005) has carried out a study for the threats on wireless networks and security goals to be achieved. Ghosh (1994) discusses need for Bibliographic interoperability, data recording, ordering, exchange standards: MARC's, CCF3,BSO, highlights computer networking architecture based on ISO/ OSI reference model (OSI-RM). Application layer management standards are mentioned. Among the specific 'application' services, Inter-library loan (ILL) service & networked information search & retrieves (SR) service definitions & protocol specifications (ISO, ANSI) are elaborated. Current status on International IT standardisations, In conclusion hints on need for ISDN based services standardization.

Kashhyap (1994) is of the opinion that for initiating computer networking for resource sharing, it is essential that the co-operating libraries must lay down certain norms, standards or protocols for common application by mutual agreement to provide reliable & meaningful communication among libraries & their computer systems. Grosch (1995) explains on Internet, History and Evolution, TCP/IP protocol, LAN architecture, Data networking: Routing, Bridging and future network directions. Standardization efforts affecting library information technologies. Recently emerged Software as a Service (SaaS)-based services show that it is possible to curtail cost on operation and maintenance and also to reduce additional expenses required for system upgrades (Cho, 2011). It also allows creating new values by consolidating resources of individual users

on a provider's platform, which is effectively applicable to library networks for resource sharing. In this study a model of a SaaS-based system, which can apply library network, is presented. The SaaS-based system will enhance the economic efficiency of local library operations and make available new functionalities on an on-demand basis. Also, its feature, such as sharing a single platform among several libraries, facilitates resource sharing and knowledge-based services.

### **III NETWORKING OF DIFFERENT LIBRARIES**

Deb & Das (1994) illustrates about the organizational structure & process segments of ONGC. Networking of petroleum information is realized for its optimum use by the geoscientists and planners of the industry. Network modalities based on available infrastructures & technology inputs are formulated for greater exchange & shared use of bibliographic data within the R&D libraries & project work constraints & challenges with suggestions.

There is an envisaged principle by the Indian Petroleum industry to incorporate all facets of operations within Srivastava & Tyagi (1994).

Phadke, (1994) describes that there are several factors such as preparations, management and finances need to be considered while planning network. In the absence of these, networks are likely to face some constraints right from their take-off stage. Their success entirely depends on how librarians & technologists are able to solve these problems.

Owen (1996) describes the Utah Library Network project, established in 1992 to create statewide access for public libraries to the Internet. Points out that the project not only involves technology but also requires the development of new human networks to reach its full potential. Reviews network expenditure according to six categories: connectivity, training, database licenses, state library expenditure and local library expenditure. Concludes that the network has significantly improved the timeliness, quality and extensiveness of library services. Gallimore (1999) provides an overview of the main challenges which face public library managers in the near future as electronic networking of library services becomes more widespread. External influences on libraries deriving from the Information Society and the government's agenda are considered. The problems public libraries are facing in traditional services such as falling issues of lending books are compounded by a growing skills gap, specifically related to IT. As well as new demands on libraries, there are new opportunities, such as digitisation of important collections and funding for technology infrastructure which managers must respond to. Change within the profession is the most important challenge facing managers who need to understand the differences between the old and new cultures. The major issues facing managers are explored: strategic, budgetary, cooperation, structure, technical, staff and service issues. A short, concise checklist is provided for the fully networked manager as a guide for action.

Barman (1994) underlines the special need for networking of University libraries in N.E Region because of geographic Isolation; non availability of important books in the local markets, poor budget etc., Highlights difficulties in forming the network – lack of computer facilities, coordinating agency, apathy of parent institution dearth of qualified manpower poor telecom & postal services & poor leadership role of library professional etc., stresses the need for computerization of libraries, preparation of databases of

individual libraries to facilitate the networking & resource sharing-suggests setting up INFLIBNET's regional office either at Shillong or Guwahati to act as coordinating agency to monitor various programmes. Shukla (2009) discusses academic networked environment, going on strategies & options in Ch. Charan Singh University Meerut. Projects the status of networking, its components & technical details of networking. Reasons why investment in information technology has been made & key underlying factors affecting use of technology are highlighted. He has attempted to give an overview of networked information services in CH. Charan Singh University, Meerut, India. Recommendations for change are highlighted. Konnur & Gaddagimath (2010) proposes to develop a network of university libraries in the state of Karnataka. This will include networking of all university libraries in the 1<sup>st</sup> stage and all affiliated colleges of different universities in the second stage. In addition to automation & networking of libraries, it is also necessary to develop the capability for students and teachers to access carefully identified full text resources, learning objects, courseware & other objects that are available on the web.

#### **IV LIBRARY NETWORKS – GLOBAL**

WLN network, an agency of the State of Washington, began in 1977, with ten libraries. Since that time it has grown to more than 250 libraries. WLN provides its member libraries with sophisticated database searching capabilities, shared cataloging and catalog maintenance, automated acquisitions, interlibrary loan and retrospective conversion Wasser, (1985). The vision for automating and networking Delaware libraries includes ensuring a basic level of information equity for all Delawareans; providing timely and accurate information where and when it is needed and sharing library resources across local, state, national and global networks Sloan (1996). Sarah Long's Sister Library Program began as an initiative of her American Library Association Presidency and continues as a project of the American Library Association's International Relations Round Table. Sarah Long, (2001) describes components of the ALA Presidential project and activities of model Sister Library relationships. It summarizes the results of a program at the IFLA Conference in Jerusalem in August 2000 that presented perspectives from various programs for global library pairings and reviewed what has been learned over the past few years about global partnerships. According to Siddamalliah & Butdisuwan (2009) HELLIS network is a global network functioning through its 'network of networks' at various levels, viz., intra-national, international, intra-regional, and inter-regional. Philosophically and functionally, the HELLIS network is flexible and integrated to academic, research and publication process including healthcare delivery system in respective member countries of the network. The HELLIS network is both a social and technological network, linked horizontally and vertically at various levels, viz., national, regional and global, where sharing process is made practical, viable, and affordable. The HELLIS network is more of a culture than just a consortium of purchasing commercial resources thereby it has created an environment to share resource, responsibilities, expertise, and service including the consolidation of information assets in their respective country. In recent practices, consortia are perceived just as a purchase club and a technology based resources networking not a library network. As libraries are developing a larger web presence, issues regarding the utility, accessibility and impact of the usage of their networked resources and services are gaining critical importance. The need to assess systematically the networked electronic services and resources is great as increasing amounts of financial resources

are dedicated to the web presence of libraries. Plum & Franklin (2010) addresses this issue.

Over the past eight years, the MELVYL catalog has become one of the largest public access catalogs in the world, and now plays a central role in providing access to the library resources of the University of California. Currently, under heavy load, the MELVYL catalog supports many hundreds of simultaneous terminal connections, servicing over a quarter of a million queries a week and displaying more than two million records a week to its user community. Lynch, (1989) discusses the history of the network that has supported the MELVYL catalog from the early days of its prototype to the present. It also describes both the current technical and policy issues that must be addressed as the network moves into the 1990s, and the roles that the network is coming to play in integrating local automation, the union catalog, access to resource databases, and other initiatives. According to Heijne (1992) SURFnet BV is responsible for providing networked information and communication services in higher education and scientific and industrial research in The Netherlands. SURFnet links the local area networks of the connected institutions with each other and thus connects individual users. SURFnet allows communication with other users & provides access to a vast array of information and communication services throughout the world. SURFnet BV is striving, at home and abroad, for the introduction of standardized services. Dowling (1997) explains how the Ohio Library and information Network (OhioLINK), a consortium of libraries from higher education institutions, grew from a 1987 recommendation by the Ohio Board of Regents' library committee that "the state of Ohio implement as expeditiously as possible a statewide electronic catalog system". This statewide system came into being in 1992 with six universities mounting catalogs and contributing records to a central union catalog. By that time, the OhioLINK charge had expanded to include providing centralized access to bibliographic databases, the first two of which also came online in 1992. The complete set of OhioLINK services now includes the Central Catalog, whose database contains more than 6.3 million bibliographic records, 59 research and full text databases running under several different search engines, and the library catalogs of 54 participating institutions. From November 1995 through February 1996, OhioLINK undertook the initial design for a World Wide Web site that would organize access to these services; that design process has continued incrementally ever since. Minetto,(1997) Genoa University Library system has three components. The council, the president and the Manager. The System includes 14 library service centres linked to branches cultural fields, spread throughout the large urban area of Genoa. GENUAnet a metropolitan area network that uses the TCP/ IP protocol and reaches CSITA by digital channels with an average speed from 64 kbit/sec to 2m bit/sec connects them all. Each centre owns specialist material and organizes its own user services respecting the uniform criteria established by the university library system. Interlibrary loan, document delivery, Internet and email facilities and free access to online databases. The final task of the library system relates to database networking. A selection of databases was made and at the moment current contents, Medline, MathSci, Single Index to legal periodicals and PCI are freely accessible to all university users: they can consult the different databases from their library centre or ask for a password and connect from home. According to Chutima (1998) with the establishment of open universities all over the world, a large segment of the population is pursuing academic studies through the distance education system. Distance education institutions need library and information services as much as their counterparts, the conventional universities. Libraries must focus on fulfilling the needs

and requirements of independent learners by exploring modern information technologies and developing library networks. It is only through cooperation that efficient and effective information services can be realised. Library networks are a form of cooperation aimed at providing better services for the benefit of users. Most of the distance teaching universities operates through a three-tier system consisting of the main university, regional centres and study centres. STOU has joined and formed various national and international library networks to promote distance education. Okon (2005) aims to investigate the extent of adoption of information and communication technology (ICT) in university libraries in Nigeria. He proposes that computer networking of university libraries is feasible and recommends the development of the Nigerian university libraries network and academic libraries network. According to Taha (2010) Library and Information Web Access (LIWA) is the first systematic interlibrary cooperative activity among three universities under the umbrella of the United Arab Emirates Ministry of Higher Education and Scientific Research. LIWA was born in 2007 after the shift of the partner libraries to Web-based information services. Interlibrary book lending is the current achievement of Library and Information Web Access with the aim to expand resource sharing and incorporate more e-services soon. Taha (2010) also discusses some key issues, such as metadata standards, acquisitions, licensing, access security and governance.

According to Oshiro (2000) The Ministry of Education, Science, Sports and Culture of Japan envisioned a scholarly information system in 1978. In order to realize the system, the Ministry established Foreign Periodical Centres and the National Center for Science Information System (NACSIS). They have been playing vital roles in most of the recent cooperative programmes and networking in Japanese academic libraries. Foreign Periodical Centres and NACSIS' several systems - NACSIS-CAT, NACSIS-ILL, NACSIS-IR and NACSIS-ELS are introduced. NACSIS-CAT, which is a system of online shared cataloguing, is one of the most successful networks. But NACSIS-ILL, which is an online interlibrary loan (ILL) system, is not fully functioning as an ILL system because lending and borrowing of the library material is not a normal service among Japanese academic libraries. The importance of electronic theses and dissertations and the Networked Digital Library of Theses and Dissertations has been widely realized by Chinese academic libraries in recent years. YiJin (2004) introduces the China Networked Digital Library of Theses and Dissertations project initiated by the China Academic Library and Information System and current research into related technologies, including metadata standards, OAI metadata harvesting protocol, standard document format and intellectual property protection. Research work on multilingual and cross lingual searching, personalization and knowledge organization is also described. The goals of the China Networked Digital Library of Theses and Dissertations are to establish electronic theses and dissertations collections for Chinese academic universities, to provide services to access them efficiently, and to ensure the seamless organization of distributed electronic theses and dissertations collections. Taha (2012) aims to present a conceptual model for networked academic library services in a research-intensive university. It also seeks to focus on the potential challenges that the networked library faces in responding to massive needs of the researchers for digital content in different forms and formats. The proposed conceptual model demonstrates the virtual reference service, processing of research queries, online information search and retrieval, and data delivery to the researchers within a virtual research environment (VRE) in the UAEU. The study argues that the UAEU library should employ new strategies to meet the arising challenges of digital content and

ongoing advances in information and communication technology (ICT), as well as considering how to embed itself within a research-intensive university.

Franklin & Terry (2002) examines the methodology & results from patron use surveys of networked electronic services at four geographically disparate academic health science libraries in the USA between 1999 and 2002. The principal fields of inquiry include demographic differences between in-house library users as compared to remote library users by status of user, user's purposes of accessing electronic resources based upon the location of users. The result of this study should help guide service decisions in academic health sciences libraries. White & Twomey (2006) identifies the issues associated with the introduction of desk top document supply to workers in the UK National Health Service (NHS). According to his findings – Complementary collections are necessary for the widest, most cost-effective access to information. Access to electronic resources does not alleviate the need for remote document supply. Automation of library systems should improve the user experience, but does not necessarily replace the need for the involvement of library services and staff. Using software that conforms to the ISO ILL protocol and other industry standards such as Z39.50 allows for coordination of and improved efficiency of remote document supply (RDS) processes. Centralization of RDS does not guarantee an efficient service for users. Provides insights into current thinking in the NHS for delivering material electronically directly to endusers. By thinking creatively about what is possible, health care libraries are forming strong partnerships, says Kathryn Oxborrow (2010). Here she describes partnerships highlighted at the CILIP HLG conference. Drake (2010) recommends that the National Network of Libraries of Medicine increase their efforts at recruiting network members among nonmedical academic libraries. This case study evaluates the contributions and benefits of a southwestern Louisiana University non-medical academic library after its first year of Network membership, especially DOCLINE, the medical interlibrary loan system and prime component of the Network. The lending activity of similar NN/LM non-medical academic library members was also surveyed to discern possible contribution patterns. Kammer, (2011) focuses on four aspects of successful local area medical library networks, their benefits, their creation, legal issues and keeping your focus. It is based on the proposition that local medical library networks, are an essential link in the delivery of information services within the medical profession and the local community. As such they are valuable enough to command the attention of their participants, and deserving enough to command the support of the profession.

According to Wilkins (1996) The Florida Division of Library and Information Services, Department of State (also known as the State Library) has assumed a leadership and coordinating role for many years, facilitating the growth of networking through advice, counsel, and funding. In 1985-86, the State Library commissioned an extensive study of libraries of all types with an eye toward coordinated networking and resource sharing. The resulting Florida Long-Range Plan for Interlibrary Cooperation served as a blueprint for network development. That plan was revised annually through 1990-91 and was completely reworked in 1994 as the Florida Plan for Interlibrary Cooperation, Resource Sharing, and Network Development, with extensive input from a wide range of stakeholders in the library and information community. According to Kay (1999) the Bertelsmann International Network of Public Libraries was created by the Bertelsmann Foundation of Germany to think flexibly about the public library of tomorrow and to develop model solutions to address the issues faced by public libraries across the world.

From the first meeting, topics of relevance to public libraries were discussed and then the first group of participants had to choose a topic to research and create a model which could be implemented in other public libraries. Summaries of all research papers are available on the Internet at [www.stiftung.bertelsmann.de](http://www.stiftung.bertelsmann.de). Some models are currently being implemented in libraries of the participants and the new members of the Network are currently working on their research. The city of Onkaparinga library network in South Australia consists of six libraries, three of which are joint use. The largest of the joint use libraries is Noarlunga (a Tafe/ public library), followed by The Hub (a secondary school/public library) and Seaford (a 6-12 school/public library). Each of the joint use Libraries represents a unique model of partnership with characteristics that have shaped and defined them, their operational success and their ability to achieve their goals. Involvement with these libraries (and other joint use library ventures outside this network) has given the opportunity to observe and assess the factors that have contributed to their success, or otherwise, and to identify those critical to them. The primary factor is the joint use agreement, complemented by the adeptness with which a library manager uses it (Bergoc, 2012). In the summer of 2009, library representatives from three churches in Fort Collins, Colorado—one Roman Catholic, One Methodist, and one Evangelical Lutheran Church in America met to explore the possibility of forming a network of faith libraries. Two years later, the network, known as the faith libraries of Northern Colorado (FLNC) is firmly established with five partner libraries offering a variety of services (Ubico, 2011). In the following account, the FLNC network coordinator describes how the network and its ministry took shape and the lessons learned along the way.

Missingham (2007) sets out to describe developments in Australian libraries and the national interlibrary loan and document delivery systems, in particular the outcomes of the Local Interlending and Document Delivery Administration Systems (LIDDAS) project. Australian libraries have had a highly cooperative approach to resource sharing for many years. ILL (Inter Library Loan) has become increasingly automated since the introduction of the online union catalogue in 1981 and the national interlending system in 1989. In 2004 interoperability was introduced, with 2006 developments in directories completing the national connected system. 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. Gillet (2008) aims to outline how the Institute for Scientific and Technical Information (INIST-CNRS), the French leader in the document delivery market, works with a broad national and international network of some 200 libraries and STI centres. It also seeks to provide an overview of recent developments in the French academic ILL network and of French copyright legislation, as well as information on negotiations with publishers on secure electronic delivery. It is descriptive and based on INIST data and experience. Resource sharing and networking in document delivery on a national and international level have become essential to maintain good quality services.

Lankes (2007) discusses the key concepts & technologies in participatory networks drawn primarily from web 2.0 & library 2.0. A merging of the conceptual framework with the technological discussion to present a roadmap for library systems development and a set of recommendations to foster greater discussion & action on the topic of participatory networks & more broadly participatory librarianship. Plum (2010)

proposes to measure the impact of networked electronic services, building on MINES for Libraries, in a scalable way across libraries and consortia to enhance digital library service quality and impact on learning by enabling the future allocation of resources to areas of user-identified need. Short, standardized web surveys are placed at the point-of-use of networked electronic resources and services through a network assessment infrastructure that uses contemporary mechanisms of authentication and access, such as EZproxy, open URL, Shibboleth, federated searching and others as modules to interface with ARL's StatsQUALw. A valid and reliable sampling method is proposed. After decades of successful, if not always smooth, working relationships with regional library networks in the United States, Online Computer Library Center (OCLC), Inc., with approval of amended articles of incorporation in 2008, it implemented significant changes in how it would price its products and services and how it would govern itself. These changes proved to have profound impact on the networks, precipitating the merger of many and the dissolution of some. Scepanski & Wells (2013) describes the results of many interviews with past and present leaders of OCLC and the regional networks, both existing and defunct, and other knowledgeable individuals. The contrasting opinions on how the changes came about and their consequences offer a perspective on the evolution and then decline of some of the powerful consortial relationships of the last four decades.

## **V LIBRARY NETWORKS – INDIA**

Krishnamurthy (1987) states briefly on types of Networks, formation of networks, Global networks, regional networks, National Information Networks & activity oriented networks. Lahiri & Sunder Singh (1989) dwells on the present status of bibliographic database and network development activities in India and the contemplated in the immediate future; futuristic projections are beyond its purview. Mitra (1996) approaches the twin objectives of library automation and networking through the network route and e-mail route. The author has dealt on software development, database development, and network development in detail. The network also features a number of special services. Murthy (1996) gives an overview of the development of library networks in India. It also mentions the efforts made by the Planning Commission, Government of India, to promote resource sharing among libraries in the country. The present scenario of library networking is also briefly presented. The main problems in early operationalising the library networks include retro-conversion of holdings data, non-availability of suitable software for operating large databases and online searching in a wide-area-network mode at prices affordable by all the libraries, lack of adequate standardization and non-availability of adequate training facilities to cover all the library staff participating in the network programmes. Some possible solutions to these problems are suggested. Jebaraj & Devadoss, (2004) describes the Types of Networks, categories of networks and details of some important library networks in India & its services. National Knowledge Network (NKN) is a project of Government of India, which will connect Educational Institutes, R & D institutions, Health service facilities, Agricultural institutions, libraries of India and a future plan of collaboration with the International research organisations. Singh, (2013) details the proposed network infrastructure and application framework set up that an institute need to have for the best use of NKN. It also describes the services and other features of the NKN. Critical security issues have been identified and a model is proposed which can be implemented by the Institutes for securing such high speed networks.

During the last one decade a number of important networking systems have emerged in the country. Some of the major ones are. Viz., NICNET (National Informatics Centre, 1977), ERNET (Education and Research Networks), ERNET for library services, INET, SIRNET (Scientific & Industrial Research Network) of INSDOC, SIRNET for library services. INDONET, 1986 the India's first commercial computer communication network. INDONET for library services. Foreign Networks-NSFNET (National Science Foundation) ESNET (Dept. of Energy's Energy Science Network. NASA's NSI (NASA Science Internet). Internet for library service. Libraries may use resources through these services or hook up its own database to facilitate resource sharing (Roy, 1994). Salgar & Gayatri (1994) feels automation of library operation and networking them to each other & to information databases is the only solution which will enable them to optimally share available resources, INFLIBNET programme is following to meet the above goals. Kumar & Arora (1996) describes the objectives, services, infrastructure and problems faced by INFLIBNET.

Konnur & Ragavan (2007) proposes a network model 'BALNET' with constituent and affiliated colleges with their individual libraries prospect on resource sharing through online union catalogue that will help students and faculty at the Bangalore University and the colleges under the network. Raghavan & Raghavan (1996) gives a detailed account of the objectives, structure, products, services of MALIBNET, which became operational in a short span of four months after it is registered as a society. Ramani (1996) explains about BONET has been able to contribute to the activities concerned with the absorption of new technology by practitioners in the library and information science. Mishra (2001) reveals that organizational factors such as planning, governance, funding, communication, delivery and administration are related to each other. Moreover, many factors are highly dependent on each other. Therefore, the library networks should try to raise the levels of awareness among participating libraries to develop the local library networks successfully.

Kaul (2010) describes the work of DELNET, the successful resource sharing and information provider in India. DELNET fulfils a vital role in facilitating resource sharing in India and is expanding its role rapidly. Rajeev (2010) highlights Health Science Libraries Network (HSLIBNET), the initiative taken by the Baba Farid University of health sciences, Faridkot.

National Informatics Centre Network based on Satellite Technology has a bibliographic application on this Network (Vijayaditya & Chinnappa, 1989). ISRO has developed a community network 'Spacenet' a Closed User Group (CUG) based communication network catering to a variety of space community needs. Prasada Rao & Ashalatha (2009) explains how the resources of various ISRO information centres are shared/utilised, digital libraries (DL) built, accessed, and institutional repositories (IRs) organised among the libraries using Spacenet. This paper discusses about community network infrastructure & Configuration of department of Space. The Library portal is a way to disseminate & publish the products & services of the library to the users on their desktop. Ashalatha (2010) illustrates how to set up a web portal on community network.

Networking of libraries through computer communication links is an urgent necessity in the research oriented universities. Kumar & Mallaiiah (1994) points out the probable

benefits of setting up a LAN in Mangalore University Library and discusses all issues relating to the implementation of the proposed LAN. Sudhier (2010) discusses the development of a Fiber optics Campus wide Local Area Network (Campus LAN) established by the University of Kerala, connecting the campus central library and the department libraries at its Kariavattom Campus, Thiruvananthapuram. The study covers various aspects of the Campus LAN such as the infrastructure, information services provided, hardware aspects etc. Anil Singh (2002) suggests the need for networking of Himalayan Institutes' Libraries and Information Centres in the country for optimum resource sharing.. The proposed network ensures effective bibliographic control, document delivery, co-operative acquisition of serials and other literature in the field and dissemination of relevant information to the needy persons. Many Technical libraries have their own network existing within their own location. These networks can be expanded to enhance the access to the information resources through collaborative partnerships in the form of consortia. Vasanth & Mudhol (2009) discusses about the library networking & INDEST AICTE Consortium.

### **Conclusion:**

Resource Sharing and Networking in libraries are the powerful tools, both for increasing productivity and enhancing services to meet the changing needs of library users. In the digital age, it becomes both challenging issue & opportunity for libraries to provide electronic resources in networked environment. With networking technology and Internet it is possible to form any number of logical networks, using the NET as the backbone.

### **References:**

- 1 Bachalapur, M. M. (1994). Engineering and Technology College libraries Network in Karnataka (ETNET): A proposed study. *XVI National Seminar of IASLIC: Networking of Libraries: Problems & Prospects* (pp. 49-52). Bombay: IASLIC.
- 2 Barman, R. K. (1994). Networking of University libraries in N.E. Region: Problems & Prospects. *XVI National Seminar of IASLIC: Networking of Libraries: Problems and prospects. 19-22 Dec, 1994* , 39-40.
- 3 Bergoc, A. (2012). Challenges and Change: Three decades of joint use libraries in the city of Onka Paringa, South Australia. *Australasian Public Libraries and Information Services* , 25 (3), 116-120.
- 4 Bertot, J. C. (2004). Libraries and networked information services: Issues and consideration in Measurement. . *Performance Measurement and Metrics* , 5 (1), 11-19.
- 5 Blowers, H. (2012, Oct). Bandwidth, Broadband, and Planning for Public Access. *Computers in Libraries* , 24-26.
- 6 Breeding, M. (1997). Designing secure Library Networks. *Library Hi tech* , 15 (1/2), 11-20.
- 7 Cho, J. (2011). Study on a SaaS based library Management system for the Korean Library Network. *The Electronic Library* , 29 (3), 379-393.
- 8 Chutima, S. (1998). Library networks for distance education . *Asian Libraries* , 7 (10), 274-279.
- 9 Ciurlizza, A. (1996). The Network of Networks Project: electronic communications and CDROM data storage: some challenges for information delivery. *New Library World* .

- 10 Dahl, K. (2002). Lund University Libraries and the move to Virtua in a networked environment. *Program* , 36 (2), 110-116.
- 11 Datta, S. (1994). Library Networking with existing Networks. *XVI National Seminar on IASLIC: Networking of Libraries: Problems & Prospects* (pp. 19-22). Bombay: IASLIC.
- 12 Deb, M., & Das, B. (1994). Planning & designing petroleum information network in ONGC: Challenges & Prospects. *XVI National Seminar on IASLIC: Networking of Libraries: Problems & Prospects* (pp. 9-16). Bombay: IASLIC.
- 13 Donald H. Kraft, B. R. (1991). Graph Theory and Library Networks. *Operations Research for Libraries and Information Agencies: Techniques for the Evaluation of Management Decision Alternatives* , 72-84.
- 14 Dowling, T. (1997). OhioLINK - The Ohio Library and Information Network. *Library Hi Tech* , 15 (3/4), 136-139.
- 15 Drake, P. B. (2010). The value of Non Medical Academic Libraries to Medical Libraries : A Case in point. *Journal of Access Services* , 7 (4), 244-261.
- 16 Franklin, B., & Terry, P. (2002). Networked electronic services usage patterns at four academic health sciences libraries. . *Performance Measurement and Metrics* , 3 (3), 123-133.
- 17 Gallimore, A. (1999). Managing the networked public library. *Library Management* , 20 (7), 384-392.
- 18 Ghosh, D. (1994). Bibliographic Networks . *Global information ordering, interoperability & Standardisation* .
- 19 Gillet, J. (2008). Sharing resources, networking and document delivery: the INIST experience. *Interlending & Document Supply* , 36 (4), 196-202.
- 20 Gopinath, M. A. (1994). Information professionals for library and information networks in India. *XVI National Seminar of IASLIC: Networking of Libraries: Problems & Prospects* (pp. 185-190). Bombay: IASLIC.
- 21 Gorman, G. E., & Cullen, R. (2000). The knowledge model applied to library networks in Asia . *Library Consortium Management: An International Journal* , 2 (7), 135-145.
- 22 Grosch, A. N. (1995). *Networks, Internetworking and Standards. Library Information Technology and Networks*. NewYork: Marcel Dekker Ince. .
- 23 Gupta, R. C. (1994). Roorkee Engineering Library Network: A Proposal . *XVI National Seminar of IASLIC: Networking of Libraries: Problems & Prospects* (pp. 19-22). Bombay: IASLIC.
- 24 Gupta, V. e. (2004). Networking and Security Measures . *DESIDOC Bulletin of Information Technology* , 24 (2), 9-16.
- 25 Heijne, M. (1992). Networked Services, user support and libraries: Mutual benefits?, . *The Electronic Library* , 10 (1), 47-51.
- 26 Jalloh, B. (2000). A plan for the establishment of a library network or consortium for Swaziland: Preliminary investigations and formulations. *Library Consortium Management: An International Journal* , 2 (8), 165-176.
- 27 Jebaraj, F., & Devadoss, F. (2004). Library and Information Networks in India. 6 (2).
- 28 Kammer, R. E. (2011). Local Library Network. *Journal of Hospital Librarianship* , 11 (3), 209-227.
- 29 kanti, G. s. (1994). Library Networking at District level: A proposal for North 24 paraganas district of west bengal. *XVI National Seminar of IASLIC: Networking of Libraries: Problems & Prospects* (pp. 99-100). Bombay: IASLIC.

- 30 Kashhyap, M. M. (1994). Online library catalogues and standards for common application in a network Environment. *XVI National Seminar of IASLIC: Networking of Libraries: Problems & Prospects. 19-22 Dec 1994, Bombay* , 141-157.
- 31 Katna, A. e. (1994). Computerized Networks: Information sharing at Indian Institute of Technology, Kharagpur library. *XVI National Seminar of IASLIC: Networking of Libraries: Problems & Prospects* (pp. 53-56). Bombay: IASLIC.
- 32 Kaul, S. DELNET – the functional resource sharing library network: a success story from India. *Interlending & Document Supply* , 38 (2), 93-101.
- 33 Kay, P. (1999). The Bertelsmann International Network of Public Libraries";: A model of public library cooperation on an international scale. *Asian Libraries* , 8 (11), 422-430.
- 34 Kilgour, F. G. (1989). Planning and design of Information Network. *Bibliographic databases and networks : proceedings of International Conference* (pp. 3.7-29). New Delhi: Tata McGraw-Hill Publishing Company Limited.
- 35 Koganuramath, M. M., & Moolya, S. M. (1994). Networking & Resource Sharing of Regional Engineering College Libraries in India. *XVI National Seminar of IASLIC: Networking of Libraries: Problems & Prospects* (pp. 57-60). Bombay: IASLIC.
- 36 Konnur, P. V., & Ragavan, S. S. (2007). Bangalore University Academic Library Network (BALNET). *5th International CALIBER 2007, Punjab University, Chandigarh, 8-10 Feb, 2007*, (pp. 365-377). Chandigarh.
- 37 Konnur, P., & Gaddagimath. (2010). Karnataka State University Library Network: Linking academic libraries in the state of Karnataka. Assam. *7th Convension Planner. 2010 Tezpur University, Feb 18-20*. Assam: Tezpur University.
- 38 Konwar, U. K., & Sinha, M. K. (2014). Status of ICT infrastructure and Development of college library network among the major colleges of Barak Valley, Southern Assam: A case Study. *9th Convention Planner-2014, Dibrugarh University, Assam. Sept 25-27, 2014*. Assam.
- 39 Krishnamurthy, P. (1987). Information Networks. *DESIDOC Bulletin of Library & Information Technology* , 7 (1), 3-7.
- 40 Kumar, P., & Arora, O. P. (1996). Information and Library Network (INFLIBNET) Programme. *DESIDOC Bulletin of Information Technology* , 16 (2), 11-22.
- 41 Kumar, S., & Mallaiah, T. (1994). Proposed plan for setting up a plan at Mangalore University Li. *XVI National Seminar of IASLIC: Networking of Libraries: Problems & Prospects* (pp. 35-37). Bombay: IASLIC.
- 42 Kush, A., & Kumar, R. (2005). Wireless Network Security Issues . *DESIDOC Bulletin of Information Technology* , 25 (1), 13-18.
- 43 Lahiri, A., & Sunder Singh, B. G. (1989). *Bibliographic Databases and Networks: Proceedings of Inter International Conference* (pp. 1.41-66). New Delhi: Tata McGraw-Hill Publishing Company Limited.
- 44 Lankes, D. R. (2007, Dec). Participatory Networks: The Library Vs Conversation. *Information Technology and Libraries* , 17-33.
- 45 Laxminarsaiah, A. (2010). Community Network SPACENET: A New Dimention for Library services. . *SRELS Journal of Information Management* , 47 (1), 23-30.
- 46 Long, S. (2001). Library to library: Global Pairing for mutual benefit. *New Library World* , 102 (3), 79-85.

- 47 Lynch, C. A. (1989). From Telecommunications to Networking: The MELVYL Online Union Catalog and the Development of Intercampus Networks at the University of California", . *Library Hi Tech* , 7 (2), 61-83.
- 48 Maheswarappa, B., & Tadasad, P. (1997). Collection development in the context of electronic publications and networking: Problems and Prospects. *DESIDOC Bulletin of Information Technology* , 17 (1), 25-31.
- 49 Mahnke, C. (2006). WSIS, IFLA, UNESCO and GATS: Networking for libraries on an international level. *Library Hi Tech* , 24 (4), 540-546.
- 50 Martey, A. K. (2002). Management issues in library networking: focus on a pilot library networking project in Ghana, Vol. 23 Iss 4/5 pp. 239 - 252 . *Library Management* , 23 (4/5), 239-252.
- 51 Minetto, S. (1997). Genoa University Library Network. *The Electronic Library* , 15 (4), 295-296.
- 52 Mishra, S. (2001). Organisation factors in local library network development in India. *The Electronic Library* , 19 (1), 31-37.
- 53 Misra, K. N. (1994). Library networking: Some practical Problems & suggested solutions. *XVI National Seminar of IASLIC: Networking of Libraries: Problems & Prospects*. IASLIC.
- 54 Missingham, R. (2007). Networking a Nation: ILL developments in Australia. *Library Hi Tech* , 25 (2), 188-196.
- 55 Mitra, A. (1996). CALIBNET on Stream. . *DESIDOC Bulletin of Information Technology* , 16 (2), 35-40.
- 56 Murthy, S. S. (1996). Library Networks in India - An Overview . *DESIDOC Bulletin of Information Technology* , 16 (2), 3-9.
- 57 Nwachukwu, V. e. (2014). Sharing knowledge through Networking for the attainment of Nigeria Vision 20:2020. *Indian Journal of Applied Research* , 4 (3), 112-116.
- 58 Okon, E. A. (2005). Adoption of information and communication technology (ICT) in academic libraries. *The Electronic Library* , 23 (6), 701-708.
- 59 Ongus, R. W. (2015). Effect of Network risk management process on service delivery in Rwand's internet service providers: A case study of broadband systems corporation. *Information Studies* , 21 (1), 33-44.
- 60 Oshiro, Z. (2000). Cooperative programmes and networking in Japanese academic libraries . *Library Review* , 49 (8), 370-379.
- 61 Owen, A. (1996). The Utah Library Network: a brief overview. *The Bottom Line* , 9 (1), 10-15.
- 62 Oxborrow, K. (2010, Oct 24). Boost Networks for impact. . *Library + Library Update* .
- 63 Oyinloye, A. M. (1999). Electronic Networking of Libraries and the Development of an Information Society in Africa. *Information Development* , 5 (4), 217-221.
- 64 Phadke, D. N. (1994). Networking of Libraries in India: Future Perspective. *XVI National Seminar of IASLIC: Networking of Libraries: Problems & Prospects* (pp. 175-179). Bombay: IASLIC.
- 65 Plum, T. e. (2010). Measuring the impact of networked electronic resources: Developing an assessment infrastructure for libraries, state and other types of consortia. . *Performance Measurement and Metrics* , 11 (2), 184-198.
- 66 Plum, T., & Franklin, B. (2010). Measuring the impact of networking electronic resources: Developing an assessment infrastructure for libraries, State and

- other types of Consortia. *Performance Measurement and Metrics* , 2 (2), 184-198.
- 67 Prasada Rao, A., & Laxminarsaiah, A. (2009). Role of Spacenet in Sharing Digital Resources among ISRO Libraries. *DESIDOC Journal of Library & Information Technology, Vol. 29, No. 5, September 2009, pp. 3-6* , 29 (5), 3-6.
  - 68 Raghavan, R., & Raghavan, J. (1996). Notable Features of MALIBNET. *DESIOOC Bulletin of Information Technology* , 16 (2), 47-56.
  - 69 Rajeev, M. (2010). Bridging information divide among health science libraries in Punjab: A Health Science Library Network System. *IASLIC Bulletin* , 55 (1), 29-34.
  - 70 Ramani. (1996). Report from the Bombay Library Network. *DESIDOC Bulletin of Information Technology* , 16 (2), 41-46.
  - 71 Raveendra, R., & Seetharama, S. (1994). Retrospective conversion in a Network Environment. *XVI National Seminar of IASLIC: Networking of Libraries: Problems & Prospects, 19-22 Dec.* Bombay: IASLIC.
  - 72 Roy, P. (1994, Dec). Indian and International Computer data Networks : Relevance to Indian Library & Information Service. *XVI National Seminar of IASLIC: Networking of libraries: Problems \* Prospects. 19-22 Dec,1994.*
  - 73 Salgar, S., & Gayatri. (1994). Networking of University Libraries. *XVI National Seminar of IASLIC: Networking of Libraries: Problems & Prospects. Dec 19-22* (pp. 31-33). IASLIC.
  - 74 Scepanski, J. M., & Wells, H. (2013). Regional Library Networks and OCLC: From Collaboration and Interdependence to Conflict and Divorce. *Mergers and Alliances: The Wider View* , 85-106.
  - 75 Selvi, G. (1994). Library and Intra Library networking with special reference to regional engineering college, Tiruchirappalli. *XVI National Seminar of IASLIC: Networking of Libraries: Problems & Prospects.* Bombay: IASLIC.
  - 76 Siddamallaiah, H., & Butdisuwan, S. (2009). HELLIS Network–Not Just a Consortium of e-Resources. *DESIDOC Journal of Library & Information Technology* , 29 (5), 12-17.
  - 77 Singh, P. K. (2013). Towards a best use of National Knowledge Network for the knowledge sharing. *International Journal of Computer Applications* , 83 (3).
  - 78 Sinha, M. K. (2014). Design and Development of Bihar and Jharkhand Library and Information Network (BIJLIBNET) : A proposed model. *Asia Pacific Journal of Research* , 1 (14), 123-134.
  - 79 Sloan, T. (1996). Delaware: Library Automation and Networking. *Library Hi Tech* , 14 (2/3), 81-83.
  - 80 Srivastava, A., & Tyagi, S. (1994). Information policy and Networking Strategy: A model for petroleum Libraries and Information Network. *XVI National Seminar of IASLIC: Networking of Libraries: Problems & Prospects* (pp. 1-8). Bombay: IASLIC.
  - 81 Stambaugh, E. (2010). Heading west: Circling the Wagons to Ensure Preservation and Access. *Against the Grain* , 22 (5), 18.
  - 82 Steele, C. (1995). Netscope: The future for libraries in a networking environment. In L. e. Dempsey (Ed.), *Networking and the future of Libraries: Managing the intellectual record* (pp. 136-159). Lodon, UK: Library Association Publishing.
  - 83 Subba Rao, S. (2001). Networking of libraries and information centres: challenges in India. *Library Hi Tech* , 19 (2), 167-179.

- 84 Sukula, S. K. (2009). Networked Information Environment: Strategies and options in CH. Charan Singh University, Meerut, India. . *SRELS Journal of Information Mangement* , 46 (4), 371-382.
- 85 Taha, A. (2007). Networked e-information services to support the e-learning process at UAE University. *The Electronic Library* , 25 (3), 349-362.
- 86 Taha, A. (2010). A New Paradigm for Networked Resource Sharing in the United Arab Emirates Universities. *Journal of Interlibrary Loan, Document Delivery & Electronic Reserve* , 20 (5), 293-301.
- 87 Taha, A. (2012). Networked library services in a research-intensive University. *The Electronic Library* , 30 (6), 844-856.
- 88 Thelwall, M. (2004). Network Visualizations. *Link Analysis: An Information Science Approach.* , 219-226.
- 89 Ubico, R. (2011). An Ecumenical Network for Resource Sharing and Cooperation. *Catholic Library World* , 82 (1).
- 90 Vasanth, N., & Mudhol, M. (2009). Plan for the establishment of Networking in Technical Libraries. *SRELS Journal of Information Management* , 46 (4), 383-390.
- 91 Vijayaditya, N., & Chinnappa, S. (1989). NICNET. Bibliographic databases and networks : Proceedings of International Conference. (pp. 3.1-6). New Delhi: DESIDOC.
- 92 Wasser, D. (1985). Western Library Network. *The Electronic Library. Vol 3, No.5, 1985, P 310-312.* , 3 (5), 310-312.
- 93 White, P., & Twomey, C. (2006). Informing interlibrary networking and document supply in the English National Health Service: a comparison of models from five countries and a Caribbean network. *Interlending & Document Supply* , 34 (2), 78-83.
- 94 Wilkins, B. (1996). Florida: Library Networking and Technology Development . *Library Hi Tech* , 14 (2/3), 85-209.
- 95 Woodsworth, A. (1991). Governance of Library Networks: Structures and Issues. *Advances in Librarianship* , 155-174.
- 96 YiJin. (2004). Development of the China Networked Digital Library of Theses and Dissertations'. Online Information Review. *Online Information Review* , 28 (5), 367-370.