Chapter II

Review of Related Literature
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2.1 INTRODUCTION

The review literature is an essential component of any research investigation, which gives necessary input to the investigator to frame the research study on the chosen topic. Review of related studies further avoids the duplication work that has already been done in that area. It also helps the researcher to study the different aspects of the problem. It enables the researcher to identify the unexplored areas, in order to create new grounds for research. It sets an investigation in the right direction, which would keep abreast of the latest developments of the subject. The review of related literature has been collected from various forms such as books, journals articles, thesis, reports, websites and so on. The literature pertinent to the following areas has been reviewed here:

- ICT Infrastructure in libraries
- ICT skills among library and information science professionals
- ICT based services in libraries
- Library networking
- Resource sharing

2.2 ICT INFRASTRUCTURE IN LIBRARIES

A lot of work has been published in the field of library ICT infrastructure. Nyamboga (2002)\(^1\) revealed the status of ICT such as availability of computers and network facilities in six Karnataka state university libraries. They concluded that the university libraries in Karnataka that they studied were lagging behind in the application of ICT. Venkatramana (2003)\(^2\) conducted a survey to evaluate the hardware, software, network facilities and status of library automation in central university libraries of India. The study concluded that IT has been deeply embedded in these libraries and the trend will continue in future.
Thapa (2004)\(^3\) have studied the status of automation in special libraries of Jabalpur District in Madhya Pradesh. It aimed at understanding and analyzing the various problems faced by the authorities and the staff during the process of automation and suggested ways and means to overcome these problems. Mahapatra (2004)\(^4\) studied the problem of IT application in Orissa Libraries and proposed the suggestion and solution for effective implementation of IT application in the surveyed libraries.

Frances (2004)\(^5\) indicated the People's Network (PN) aims to ensure the provision of free and open access to Information Communication Technologies (ICTs) through public libraries. It was found that a wide range of people from different age groups and backgrounds use the ICT facilities. The results also indicated that both libraries had been successful in providing access to ICTs for people. Bilawar (2004)\(^6\) revealed the nature of communication technology and modes of mass communication that have had an impact on library services.

Wijayasundara (2005)\(^7\) reported in a research study that finding technological, managerial, infrastructure, human, political, social barriers to automation in Srilanka. Igun (2005)\(^8\) identified the challenges faced by the libraries and information centres in Africa in the establishment of electronic publishing, finding that apart from information sources that can be downloaded online, acquisition of electronic books is not possible. Krishnamurthy (2005)\(^9\) studied the digital library services at the Indian Statistical Institute and shares the experience of designing a digital library in the ICT environment to meet the user requirements.

Ani (2005)\(^10\) investigated the adoption of ICT in university libraries in Nigeria. The major obstacles that influence effective adoption of ICT were found to be inadequate funds and the limited electric infrastructure in Nigeria. Lohar (2005)\(^11\) presented the situations of college libraries in Shimoga District (Karnataka) have concluded that the situation does not meet the prescribed norms. Chakraborty (2005)\(^12\) found library automation and networking do not depend only on the capacity of the
computer or the networking server or even the software used since they are only tools. Much depends on the quality of manpower of the libraries and the perfection of the work they do.

Walmiki (2009)\textsuperscript{13} surveyed the status of ICT infrastructure in six selected university libraries of Karnataka the findings of the study revealed that the libraries greatly vary from one to another as far as the ICT infrastructure is concerned. Most of the libraries lack of sufficient hardware and software facilities and do not have adequate internet nodes and bandwidth. The campus LANSs of the universities are not fully extended to exploit the benefits of digital information environment. Banerjee (2005)\textsuperscript{14} studied the networking of Government College libraries of West Bengal. The findings reveal that the networking of Government College libraries are in a conceptual stage and the idea comes to only one or two librarian.

Haneefa (2006)\textsuperscript{15} studied the special libraries in Kerala have fairly well developed ICT infrastructure but library staff need proper training for making optimal use of the resources. Klang (2008)\textsuperscript{16} describes ICT has provided the infrastructure to enable easy access to scientific information. Despite this, libraries are suffering from the rising of journal subscriptions. Dhanavandan (2008)\textsuperscript{17} studied the use of ICT tools by a population of library professionals in the Indian state of Tamil Nadu, exploring the use of various tools, cross-tabulated by gender and age, and compiling a list of uses for these tools in professional settings.

Sampath (2010)\textsuperscript{18} examined the use of information communication technology (ICT) in 31 college libraries in Karnataka, India by investigating the ICT infrastructure, current status of library automation, barriers to implementation of library automation and also librarians' attitudes towards the use of ICT. The study found that application of ICT in Indian college libraries has not reached a very high level. Lack of budget, lack of manpower, lack of skilled staff and lack of training are the main constraints for not automating library activities. Even though library professionals have shown a positive
attitude towards the use of ICT applications and library automation, they need extensive and appropriate training to make use of ICT tools. Arup (2010)\textsuperscript{19} examined the application of information and communication technologies in academic institutions in West Bengal. The study found that the college libraries are still in the state of infancy with regard to ICT applications in libraries due to inadequate funds, insufficient funds, lack of IT skills among the library professionals etc.

2.3 **ICT SKILLS AMONG LIBRARY AND INFORMATION SCIENCE PROFESSIONALS**

Abu (2003)\textsuperscript{20} identified the current level of ICT skills and knowledge among the information professionals who are working in the academic and public libraries of Malaysia. The findings will indicate the extent of the gap of digital divide among the information professionals in Malaysia. Amarnath (2007)\textsuperscript{21} investigated the ICT knowledge and skills of librarians at the Chandigarh City. The study surveyed 21 librarians of Chandigarh city by a questionnaire to establish in what ways librarians were using ICTs, what were the level of ICT knowledge and skills amongst the librarians, what problems the librarians faced in the use of ICTs and what their ICT training needs were. The findings of the study revealed a low level of ICT knowledge and skill amongst librarians and a general lack of formal training for ICTs amongst the academic librarians.

Watane (2005)\textsuperscript{22} studied the computer literacy and use of IT in college libraries of Amravati city covering IT awareness of the library professionals and IT application in libraries. Adeyoyin (2005)\textsuperscript{23} examined the levels of ICT literacy among library staff in a range of Nigerian libraries. A survey was conducted among the professionals, paraprofessionals and "other" members of staff of 18 Nigerian university libraries. Analysis of the data showed that, on a self-assessment basis, out of about 268 professional librarians, only 87 (approximately 32 per cent) were ICT-literate, implying that the remaining 181 (approximately 68 per cent) of professional librarians were ICT-illiterate.
Adeyoyin (2006)\textsuperscript{24} reported the information and communication technology (ICT) literacy level among the staff of Anglophone (English-speaking) university library staff and their counterparts in francophone (French-speaking) university libraries in West Africa. The result of the findings showed that out of about 370 professional librarians; only 179 of them were ICT literate while the remaining 191 professional librarians were ICT non-literate. The study concludes that of all the 28 university libraries surveyed; only the 40 Senegal university professional librarians have an ICT literacy level of 100 percent. Thus other West African university libraries should encourage all their professional librarians, as well as other staff, to become ICT literate.

Babu (2007)\textsuperscript{25} examined the ICT skills among the librarians in engineering educational institutions in Tamil Nadu. The study suggested that the library and information science professionals to acquire knowledge and skills in information and communication technology to provide new services to the user community. Eve (2007)\textsuperscript{26} have presented the findings from the project public libraries in the learning society. The study suggested that there is a significant role for libraries to play in supporting both ICT skills and wider information literacy learning.

Ugwuanyi (2009)\textsuperscript{27} examined the state of ICT literacy among 55 academic librarians in tertiary institutions in Enugu State. The study revealed that the level of ICT literacy skill among academic librarians in Enugu state is low due to very poor ICT infrastructural facilities, financial problems, lack of library management interest and lack of training opportunity in the libraries studied. Omekwu (2009)\textsuperscript{28} highlighted the critical challenge for information professionals from developing countries is to harness technological systems to globalize their information resources and services. Thomas (2010)\textsuperscript{29} found that the modern academic librarian, besides the common attributes, should be technology-savvy and eager to learn and adopt any technology development for the benefit of users.
Buczynski (2010)\textsuperscript{30} highlighted that the library staff includes a talent in Information and Communication Technologies (ICT)/WEB 2.0 technical expertise and experience. In terms of content sourcing and procurement, library technical services and selection staff have broad knowledge of the marketplace for online information and content as well as experience in licensing access. Library staffs are supporting faculty new technology use as well as faculty teaching materials content sourcing and procurement. Adeleke (2010)\textsuperscript{31} expressed libraries' awareness on the use of online methods for processing library resources, their efficiency and attitude of librarians to such tools. The study shows that libraries in developing countries like Nigeria should intensify efforts to close the gap between them and those in the developed countries in terms of ICT literacy.

Hajar (2010)\textsuperscript{32} identified the level of computer literacy skills of librarians in the University of Isfahan, Iran and revealed that the majority of the librarians do not yet possess a good level of computer skills and even their long duration experience of computer use has not necessarily improved their level of computer literacy. This shows the urgent need for the librarians to be adequately equipped with the computer skills to take advantage of all computerized library facilities. Davenport (2007)\textsuperscript{33} highlighted on the changes in library collections and library information technology organizations, the resulting advancements in scholarly research, and will discuss the attributes, attitudes, and ICT skills needed by the librarians of tomorrow to develop the strong connections between the academic disciplines and research libraries that are essential for library development in the 21st century.

2.4 ICT BASED SERVICES IN LIBRARIES

Halub (1999)\textsuperscript{34} describes the librarians have found the provision of Web-based services to be a very worthwhile endeavor. Library users value the services that they access from their desktops because the services save time. They also appreciate being able to access services at their convenience, without restriction by the library's hours of operation. Dee (2003)\textsuperscript{35} highlights the school libraries offer chat service to provide
immediate, high quality information at the time and point of need to students, faculty, staff, and health care professionals.

Naik (2003)\textsuperscript{36} assessed the application of information technology components for library and information services in the selected university libraries of Karnataka during a period IT was making its inroads to the university libraries particularly with the support of INFLIBNET center. Moyo (2004)\textsuperscript{37} explored new services and delivery modes incorporating: electronic collections, such as e-books, e-journals and databases; virtual reference services, and other online services. Innovation of new services that are peculiar to the online/Web environment is the trend in modern electronic libraries. Libraries continue to harness new technologies to offer services in innovative ways to meet the changing needs of their patrons.

Silva (2005)\textsuperscript{38} discussed the impact of Internet services and resources on medical research and teaching at McGill University Libraries. Dee (2005)\textsuperscript{39} reported that 36 (21%) of the academic health science libraries examined provide digital chat reference services; this was an approximately 6% increase over the 25 libraries (21%) located in 2002. Trends in digital reference services in academic health science libraries were derived from the exploration of academic health science library Web sites and from digital correspondence with academic health science library personnel using e-mail and chat.

Tung (2007)\textsuperscript{40} describes that the libraries always rely on Information Technology (IT) to systematically manage their huge books and journals (e.g. Digital Library (DL) and Web-Based Online Public Access Catalogue (Web-OPAC)). In order to enhance the library's mobile-related advance services, Mobile-Library (M-Lib) provides a real-time searching tool for library's Web-OPAC online systems via Mobile Devices. Odero-Musakali (2007)\textsuperscript{41} discussed the internet adoption and assimilation among university libraries in Kenya. The ubiquitous presence of ICTs in academic libraries, especially the internet and its potential impact on learning, teaching, and
research, implies that any effort that would shed light on this technology is laudable. This underscores the need to understand the underlying factors that impede or promote individuals' response to the internet-based technology in university libraries not only in Kenya but elsewhere.

Borang (2008)\(^42\) reported the status of ICT based services in libraries of academic institutions in Arunachal Pradshesh. The libraries under the study were providing access to Internet, e-resources and consortium activities and OPAC of their own libraries. Thibodeau (2009)\(^43\) describes the greatest change in library services between 1989 and 2005/06 was in the area of access to information, with 40% more of the respondents providing access to commercial online services, 100% more providing access to Internet resources, and 28% more providing training in database searching and use of information resources.

Maitrayee (2009)\(^44\) surveyed forty-nine libraries to get an idea about the current status and explored the possibilities of forming regional consortia with a mission to enhance access to information and knowledge through cooperation for benefit of the engineering communities. The focus is on librarians' perceptions/opinion on the formation of state level consortia; ICT infrastructure; users' needs; collection development policies and the services provided by engineering libraries to the community. Wang (2009)\(^45\) describes the impact of IT in university libraries and the findings revealed that most of the library users were satisfied with their library information services on the IT impact; they still need professional assistance in their using IT for information search in the increase of e-resources.

Srinivasa (2010)\(^46\) explained the provision of providing networked services (NSs) among National Institute of Technology (NIT) libraries in India. The survey findings indicate that the majority of libraries prefer to provide communication network services (telephone, Internet, e-mail, facsimile etc), online journals (90%), automated catalog system (85%), multimedia databases (85%) and support (70%) services rather
than the other services. Xia (2010)\textsuperscript{47} illustrated the Living Human Digital Library (LHDL) project presented web services to build a biomedical digital library infrastructure that allows clinicians and researchers not only to preserve, trace and share data resources, but also to collaborate at the data-processing level.

Chun (2010)\textsuperscript{48} describes the cloud computing services focuses on users and affords powerful data storage and web service functions in the resource construction and service of libraries. Based on the recent research achievements and practice abroad, the construction and service of libraries should be deeply studied about the information resource sharing, librarian ranks, and information facilities. Vila (2010)\textsuperscript{49} explained the mobile services developed by the Rector Gabriel Ferraté Library (BRGF) of the Technical University of Catalonia (UPC), in Barcelona, Spain. Offering mobile services has amplified the use of the library in different ways and has improved the image of the library as a technological reference for users and librarians.

Xu (2010)\textsuperscript{50} describes the wider utilization of information technology; the requirement for ICT services becomes more diverse and differentiated. In order to manage ICT services and meet requirements of users effectively, an ICT service catalogue model is structured, which can make service providers and users obtain accurate and consistent service information. Malcolm (2008)\textsuperscript{51} indicated the evolving presence of institutional repositories in UK higher education and argues for the inclusion in institutional repositories of all information that an institution wishes to make publicly accessible, including open educational content; recognition of the skills that librarians have to bring to the creation and management of repositories; and continuing national and international collaboration to make repositories more easily accessible and useful to researchers and others.
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2.5 LIBRARY NETWORKS

Liu (2000)\textsuperscript{52} describes the Tsinghua University increase their interlibrary sharing of resources by means of construction of networked libraries. Nowrouzi (2000)\textsuperscript{53} examined the status of the libraries, including the staff, collection development, organization of materials, equipment, budgets, and special issues of each library and proposes the establishment of an information network among the surveyed libraries for optimizing their state-of-the-art and their active relationships. Mishra (2001)\textsuperscript{54} revealed that the library networks should try to raise the levels of awareness among participating libraries to develop the local library networks successfully.

Banieghbal (2001)\textsuperscript{55} investigated the situation of 34 libraries affiliated with Tehran University in terms of their organizational structure, information and human resources, and facilities and services. Also examines the feasibility of establishing an information network, and discusses the grounds for cooperation among libraries and its impact on resource sharing in order to offer information services more effectively and quickly. Finally established an information network among libraries affiliated with Tehran University could considerably improve the status of information and technical services.

Sinha (2003)\textsuperscript{56} highlighted the automation and networking of many universities, national institutions and other institutions of higher learning has been initiated by the national agencies dealing with information and library networks like NICNET, INFLIBNET, DELNET, CALIBNET and other metropolitan and city networks which been initiated and couple of them have started functioning and providing various on-line services through these networks. Idrus (2003)\textsuperscript{57} describes the Penang Library Network (PLN) is a network of private and public higher education libraries formed with the aim of bringing Penang’s citizens to the forefront of uniform access to a knowledge warehouse through the use of information and communication technologies.
Chandrakar (2005)\textsuperscript{58} highlighted the information and library network (INFLIBNET) established towards modernization of libraries and information centres to develop the communication facilities to improve capability in information transfer and access; provide support to scholarship, learning, research and academic pursuits through the co-operation and involvement of the concerned agencies; linking libraries and information centres in universities, colleges, institutions of national importance and research and development institutions; etc. Khan (2005)\textsuperscript{59} reported the resource sharing and networking activities among universities in Pakistan in 2005. The Pakistan Education and Research Network connect all the public and private universities in the nation through a high-speed network. It allows real time transfer of audio and video, multimedia-enabled lectures and remote research partnership.

Okon (2005)\textsuperscript{60} investigated the adoption of information and communication technology (ICT) in university libraries in Nigeria. The study proposes that computer networking of university libraries is feasible and recommends the development of the Nigerian university libraries network and academic libraries network. Singh (2006)\textsuperscript{61} investigated a feasibility study for establishing the Library Network. There is a general consensus and a favorable environment for establishing a network of Libraries at local, regional and national levels. The Library Network could provide a solution for the problems of accessing library materials. Once the feasibility study is carried out, the establishment of the Library Network will not be difficult.

Sivaraj (2008)\textsuperscript{62} explained the establishment of a library network among all engineering college libraries in Tamil Nadu for maximum use of resources for the benefit of the students, faculty, and research scholars, and to improve the quality of education. Zhang (2009)\textsuperscript{63} describes the construction of resource library-based network teaching platform of English extensive reading course is the actual manifestation of the rapid development of network communication technology and multimedia technology. The network-teaching platform mainly is composed by curriculum-teaching platform, the management system and auxiliary teaching resource library
Vasanth (2009)\textsuperscript{64} highlighted the regional and national level networking, libraries in India should corporately establish library consortia for offering and shared electronic resources. These networks can be expanded to enhance the access to the information resources through collaborative partnerships in the form consortia. This study also discusses about the library networking and INDEST-AICTE consortium.

2.6 RESOURCE SHARING IN LIBRARIES

Charlotte (2001)\textsuperscript{65} examined the background and general principles of resource sharing in engineering and science libraries and provides an understanding of the collections, electronic access, user expectations, and resource sharing necessary to meet the information needs of library clients. Robert (2003)\textsuperscript{66} revealed the use of global interlibrary lending to meet the needs of today’s scholar and student through library networking and resource sharing programme.

Volmer (2005)\textsuperscript{67} describes the library consortia are efficient tools to information resource sharing and can contribute to increase the quality of academic education. Peter (2006)\textsuperscript{68} explained the collaborative, user-initiated, unmediated, interlibrary loan service for returnable’s between initially three and then all eight universities in Hong Kong and explained detail the introduction of a service that will be of interest and relevance to many other libraries facing declining budgets and the need to share resources in an efficient and effective way.

Gail (2007)\textsuperscript{69} highlighted the innovations in resource sharing in the US library community with an international perspective. Tom (2007)\textsuperscript{70} revealed that OhioLINK contributes to its users' educational activities through access to and use of the documents and information resources which it supplies. It provides a set of priorities and initiatives for consideration. Roxanne (2007)\textsuperscript{71} describes the developments in Australian libraries and the national interlibrary loan and document delivery systems, in particular the outcomes of the Local Inter-lending and Document Delivery Administration Systems (LIDDAS) project.
Sirous (2008)\textsuperscript{72} presented the success factors of resource sharing (RS) and cooperation in Iranian Academic Libraries (IAL). Anne (2008)\textsuperscript{73} describes the need for rethinking resource sharing to offer both library users and non-library users options to obtain the material they seek from both libraries and commercial sources. Kingsley (2010)\textsuperscript{74} examined the challenges facing Nigerian University Libraries with respect to information and communication technology application and utilization for resource sharing, as well as to areas of library operations to which information and communication technology can be applied and utilized for resource sharing. It concludes by proffering solutions for viable information and communication technologies-based cooperation among university libraries in Nigeria.

Sangeeta (2010)\textsuperscript{75} highlighted that DELNET fulfils a vital role in facilitating resource sharing in India and is expanding its role rapidly. Rekha (2011)\textsuperscript{76} reported the development of the Indian National Union Catalogue for Scientific Serials (NUCSSI). It was found that NUCSSI database is enhanced with the online access and enables easy and improved access to locate a particular journal and its availability in various libraries free of cost.

2.7 INFERENCES

An evaluation of the literature on various aspects of the study provides an understanding of the following:

1. Total of 76 studies on the broad area of ICT, library networks and resource sharing have been covered in this chapter.
2. The studies on library networks have been grouped and presented under the following headings like ICT infrastructure in libraries; ICT skills among librarians, ICT based services in libraries, library networks and resource sharing in libraries.
3. The pioneering authors in the field of library networks and information and communication technology in the review literature are Haneefa, K M, Liu Zhenghuai, Dee, C.R., and Adeyoyin, S.O
4. The developed countries are in a better position because of their very set-up of libraries to adopt new ways and means, i.e., the technology to accomplish their goals successfully, whereas the developing countries are in a disadvantageous position in the absence of a similar setup and the existence of many drawbacks. However, efforts are underway to improve the situation.

5. India being a developing country has similar problem. Nevertheless there has been considerable progress in library automation and networking, but still lack of co-ordination and the spirit of co-operation among the libraries. The research on library networks in India is on growing stage and it needs to be further strengthen the research in the area by library and information science researchers.

6. It is also noticed that most of the study has been empirical study in the concept of library networks and resource sharing.

7. There is no comprehensive study report on library networks of university level in the state of Tamil Nadu in particular.

Therefore the present study bridges gap and proposed to conduct the comprehensive study on networking of college libraries affiliated to Bharathidasan University.

In the next chapter the-state-of-the-art of study units has been presented.
2.8 REFERENCES


