CHAPTER-2

Review of Literature
2.0 Introduction

Review of related literature is an essential part of any research study. It enables the researcher to get a clear understanding about the specific field of study and helps in understanding the dimensions of related area. Review of related studies further avoids the duplication work that has already been done in that area and 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 backgrounds for research. It sets an investigation in the right direction, which would keep abreast of the latest developments of the subject. Considerable amount of literature is available regarding application of Information Communication Technology (ICT) in libraries, professional development, impact of ICT on library services.

An attempt has been made in this chapter to present a survey of the literature available in India and abroad. The review of related literature has been collected from various forms such as theses, books, monographs journals articles, reports, and websites and so on. The literature pertinent to the following areas has been reviewed here and arranged in a chronological sequence.

1. General studies on ICT in libraries
2. ICT Infrastructure in libraries
3. ICT Implementation in Libraries
4. ICT and Library and Information Services
5. ICT skills among library and information science professionals

2.1 General Studies on ICT in Libraries

Malinconico (1991) has focused in his research paper that the libraries and librarianship is rapidly influenced by modern and electronic technologies. The new technologies and services in libraries and information centers is organized and managed, by librarians as information managers. The changes appeared in information infrastructure such as computer, telecommunication networks,
increased use of mainframe computers for local library systems, access to additional information, databases through online public catalogues etc. have significant influence on library and information professionals and their attitudes to set, along with changes in the environment. The latest technologies empowered the library professionals to do things qualitatively and quantitatively. Malinconico has mentioned that the developments in information technology that are influencing access to information and its management etc., were mentioned and suitable training programmes have been suggested for the professionals. The creation of global village and the role of librarians in information handling have been predicted

Vespry and Kitiyadisai (1992) made a survey on the application of information technology (IT) among academic libraries in Thailand. The related study shows that librarians are generally aware of the role of IT in libraries and keen to automate their library services. It also shows that the speed of IT implementation in academic libraries depend to a large extent on administrator support.

In a research paper ‘Changing Trends in Library and Information Science’ Tanija, S.K. (1997) focused that the Information Technology revolutions are greatly influencing the library profession. The information which is available in various databases cannot be achieved and maintained by the users, so the libraries should act as intermediaries to transfer the information from the various types of databases to users. The emerging Information Communication Technology have also influencing the library services and have an influence on library services and profession.

Mannan and Bose (1998) investigated the level of 100 users’ satisfaction of 24 libraries of Bangladesh and their networking and resource sharing services at the national and international levels. This study included: the existing status of infrastructures and facilities, collections, mode of subscription of journals, user’s visit to the libraries, availability of services and use of databases. The
concluded results suggest that the existing library and information services are below the expectation level of users despite quite a good number of rich academic and specialized libraries in the country. The problems identified were the lack of qualified staff, lack of resources, a lack of basic legislative support and the main problem is data authenticity. It was found important to take necessary measures to establish an efficient net-working and resource sharing system among the libraries for providing effective and efficient services to the users of the nation.

Barlow and Graham, (1999) conducted a survey that the use of information and communication technologies in a sample of 120 industrial and commercial libraries. The study represents that 96% institutions use computers for some aspect of their library and information services. ICT was used for a range of office and other applications including, in rank order, electronic-mail service, word processing, spreadsheets, presentation packages and database management systems. Ninety-one per cent of the sample used various Internet facilities including e-mail, WWW, FTP and TELNET. The author mentions the results of the study, reporting on the current state of the art of ICT use and future plans for automation.

Kasi Rao and others (2001) conducted a study on the application of IT among academic and special library and information centers in and around Chennai. In this study it has been found that massive of the library and information centers have adopted IT applications. Application of IT is more facilitated and prominent in special libraries and information centers. The study also expressed that there is a need for the provision of sufficient funds and training programmes for IT applications.

Jeevan and Saji (2004) present the results of a survey conducted among the premier libraries in Thiruvananthapuram, to assess the information technology adoption in these libraries. A total of eighteen scientific, technical and research libraries both under Central and State Governments based in Thiruvananthapuram participated in
the survey. The sample were of the opinion that IT had a positive impact on the everyday work and Information Technology has played a positive role in encouraging the services, user satisfaction, and library image. Problems faced in IT adoption included insufficient of funds, lack of skilled manpower, frequent change and advancement of technology difficulties in frequently up-gradation of infrastructural facilities, high infrastructure costs, insufficient training programme.

Singh, Sharma and Negi (2009) report a study of the current state-of-the-art use and applications of ICT in LICs in Noida. The study is based on twenty five library and information centres of public, government, corporate, public, and private enterprises in Noida. The study tries to find the opinion of the librarians about the barriers in application of ICT in LICs and their attitudes towards adopting the technology. The results show that, lack of interest, awareness and initiation of library professionals towards ICT application, though the librarians have positive attitude towards ICT implementation. The majority of LICs in Noida has good ICT infrastructure facilities to some extent but ICT based services, and products are not transferring to the users due to inadequate finance, compatible infrastructure, and lack of skilled professionals.

Krubu and Osawaru (2011) According to the authors the primary purpose of the study is to ascertain the impact of ICT on Nigerian academic libraries. The research work investigates the advantages associated with ICT on academic libraries in Nigeria. The conclusion is that ICT has fulfilled its promise in academic libraries; there is remarkable rise in the use of ICT, it has led to the library operations too fast and smoothly. ICT has solved the information explosion problem in this modern information age and academic libraries are organized and managed in a modern way.

2.2 ICT Infrastructure in Libraries

Siddiqui (1997) has been reported the result of a study based on survey of the availability and use of IT in seven University libraries in Saudi Arabia. He described
the diversity of computerized library systems, services, databases and utility in the libraries and listed the most widely used systems (DOBIS and MINISIS) and the numbers of online and CD-ROM databases acquired by some specific libraries.

**Adam (1999)** conducted a study on information and communication technologies (ICTs) applications in Africa and reported that the ICTs costs, increased computing power and globalization has fostered the use of ICTs for scientific and technical development in the region. However, access to ICTs and their use in an effective and efficient manner still lags very much behind and effort required building human resources capacity and investment in infrastructure to reduce costs of the research community. The author has discussed the changes in ICTs for the science and technology area especially the role of ICTs in promoting scientific communication and publishing in Africa.

**Manjunatha and Shivalingaiah (2003)** stated in his research article that in the time of digital evolution and escalating price of electronic information, resource sharing was critical for effective and efficient functioning of libraries. Technical advancements provided a platform for digital resource sharing and offer many opportunities for librarians to become more technical and professional. This paper attempts to identify the needs and factors influencing the electronic resource in academic libraries.

**Krishnamurthy (2005)** studied the digital library services at the Indian Statistical Institute (ISI) and shares the experience of designing a digital library in the ICT environment to meet the user expectations and requirements. This study describes the need of digital library in modern age of ICT and encountered problems and barriers in designing the digital library.

**Chakraborty (2005)** in his study used the case study method and concluded that the library automation and networking is not depend only on the either computer and networking server capacity or even the software used, since they are only tools. These
are much depends on the quality of manpower of the libraries and the perfection of the work they do. This study has focused on the requirement of skilled and trained library professionals.

Banerjee (2005) 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 very few of librarians. This study reveals the situation of ICT implementation in academic libraries at contemporary period.

Haneefa (2006) studied the special libraries in Kerala and found that libraries have fairly well developed ICT infrastructure but library staff need proper training for making optimal use of the resources. Due to lack of budget, skilled manpower and infrastructure the libraries are not able to optimum use of services and resources to their users.

Dhanavandan (2008) examined the use of ICT tools by library professionals in the Tamil Nadu state, exploring the utility of various tools, cross-tabulated by gender and age, and compiling a list of uses for these tools in professional settings.

Hanchinal and Hanchinal (2008) studied the effect of IT on resources and services of eighty three academic college libraries of Mumbai and its suburban area. The study point out that the implementation of IT infrastructure mainly depends on interest of management, student response, librarian’s attitude and budget provision to adopt the IT.

Walmiki and Ramakrishnegowda (2009) in a survey study of university libraries in Karnataka, explained the outline status of ICT infrastructure of selected six University libraries. The data collected include details of hardware infrastructure like availability of servers, Laptops, PC’s, scanners, printers, etc. Software facilities for automation of house-keeping operations, digital library activities are included in the study. Availability of LAN and internet facilities to provide access to information sources are discussed in the study. The survey reveals that most of the libraries lack sufficient infrastructure like as hardware and software, and internet facilities.
University libraries have to plan, implement and develop ICT infrastructure to optimum benefits.

Maitrayee (2009) has surveyed forty-nine libraries to conceptualize about the current status and explored the possibilities of forming regional consortia for recourse sharing for benefit of the engineering communities. The focus is on librarians' perceptions/opinion on the formation of state level consortia, ICT infrastructure, user’s needs, collection development policies and the services provided by engineering libraries to the users.

Arup (2010) explored the application of ICT in academic institutions in West Bengal. The study reveals that the college libraries are still in the stage of infancy with regard to ICT applications in libraries due to insufficient infrastructure, inadequate funds and lack of IT skills among the library professionals.

2.3 ICT Implementation in Libraries

Venkata Ramana and Vinod Kumar (1996) studied the impact of technology on libraries. Many changes and barriers are appearing in libraries due to the reasons like increasing cost, changing needs of users. They emphasized on library cooperation through resource sharing, so that the financial problems can be solved. At this situation, the use of IT has become necessary among libraries.

Dhiman (1997) studied the computers application in libraries. The author listed in-house operations and services that can be automated in libraries. The study reveals that the limited professionals having the technical knowledge to provide services. The research paper suggested that provision for sufficient funds should be made available for all library automation including training for library professionals.

Venkatramana (2003) conducted a survey to evaluate the software, hardware, network facilities and status of library automation in Indian central university libraries. The study concluded that IT has been deeply embedded in these libraries and it should be continuous trend.
Frances (2004) explores that the People's Network aims to ensure the provision of free and open access to Information Communication Technologies (ICTs) through public libraries. In this study it is 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. This study also supports to the Open Access Movement.

Cholin (2005) provides an overview of information technology implementation in different university libraries in India that provides effective access to resources available within universities and elsewhere. The factors studied include manpower in the universities, user strength, ICT infrastructure-hardware, software, network tools, database development, and budget, etc. The study reveals that the university libraries in India are in stages of development in the application of information technology. The author predicts that the universities across the country can overcome distance and time with the use of ICT tools.

Ani (2005) investigated the adoption of ICT in university libraries in Nigeria. The study reveals that the major barriers that influence effective adoption of ICT were found to be insufficient funds and the limited electric infrastructure in Nigeria. This study concludes that insufficient budget factor is a large obstacle as well as infrastructure for adopting ICT in libraries.

2.4 ICT and Library and Information Services

Ladner (1990) explored in his study that the impact on the small special library through standards for cataloguing and machine readable data files, networking opportunity for special libraries generated by the rising of state – based system. The author took the Tampa Bay Library consortia and the Miami Health Sciences library consortium, Florida- based recourse sharing network with active library co-operation.

Ambia (1991) in his study he described the physics journals used pattern in Delhi University science library, NPL and IIT Delhi library. The findings are based upon
the analysis of actual used data recorded from all volumes and issues consulted and left on the study tables from 18 oct.-17nov.1986. It was reported that IIT Delhi 58, NPL was getting 66, and science library DU 95 physics journals respectively and out that only and 43.15% at DU, 53.03% at NPL, 82.75% at IIT were used even once during the one month interval.

Kumbar (1999) indicates the developments of the internet and WWW especially in India. The author focused on NICNET, ERNET, Satyam online and MTNL. He describes the impact on Indian academic libraries: acquisition, collection development, technical services, circulation, preservation, conservation and storage, cooperation, user training, marketing of library and information services and inter library loans. The author concluded by recognizing the important work of the INFLIBNET in coordinating and implementing the internet connectivity between the Indian academic libraries.

Sonwane (1999) studied the retrieval aspect of OPACs. The author indicates that OPACs are the gateways to access information in libraries and provides facilities to locating, browsing and searching of information. OPACs have replaced the traditional catalogues and web OPACs put the online collections of geographically separated libraries.

Selvi (1999) examined the impact of internet use on academic library services and presented an overview of important web resources for users and staff. These include book texts, subject gateway, research papers, databases, e-journals, and library catalogues, reference materials, teaching and learning materials. The internet has enabled broader to academic libraries in their services with comparison to traditional collections.

Rao (2001) indicates the changes of libraries and information centre need to undergo for networking and lists the existing communication networks like as INDONET, ERNET NICNET, GPSS, RABMN, I-NET and libraries and information networks as
INFLIBNET, DELNET, BTIS SIRNET, MALIBNET etc in India. It mentions the paradigm shifts that library and information centers undergo challenge to their networking, and also highlights the role of information technology in transforming traditional Library and Information centers into a digital way.

Harish Chandra (2002) focused upon the electronic collection in libraries, their advantages and disadvantages and the role of librarian in e-collection, development. There is a current need to build up collection on electronic mode to meet the rising information needs of the users. Therefore, a policy for e-collection development is needed to evolve. In this situation the traditional librarianship may have little significance and the professionals need to be trained with the latest developments taking place in information handling from time to time. This study focus on ICT implementation in libraries in taking account into current information need and demand.

Wagner (2003) examined the development of e-resources over the past three decades and elaborated key features, disadvantages and benefits of traditional and online databases, CD-Rom and ON-LINE resources. This analysis of advantages and disadvantages reveals that information resources have shifted to the internet provides a basic for identifying key issues in the decision to shift traditional from digital.

Adika (2003) studied the internet use among faculty members of universities in Ghana and found that internet had made it possible for users to access massive information irrespective of their geographical scattered position. It is found in study that in spite of the benefits, internet use among faculties was very low due to unawareness.

Dominic and Nirmala (2004): Information Technologies are most relevant for application in modern library and information system can be grouped into three major areas 1- computer technology 2- communication technologies 3- reprographics, micrographics and printing technology. The advantages of web OPAC are access to
E-resources through a common user interface like web hypertext browser. OPAC is designed as an information retrieval system but as a module of an integrated library management system. Catalogues of many numbers of libraries are now available for online searching. These are known as online public access catalogues (OPACs). Distant search of a library catalogue makes a significant development in the use of library catalogues.

Gulati (2004) studied the status of ICT usage in Indian libraries with special reference to special libraries and the efforts made by various institutions to propagate e-information product and services. The consortia efforts like J-CCC, INDEST, CSIR e-journal and UGC-INFONET have been included under study. It further discussed about the digitization effort at NISCAIR, IIITM, Kerala, C-DAC Pune and Digital Library of India. In addition, it incorporated detail on major information systems in India (Such as INFLIBNET, DELNET, and CALIBNET etc.). The paper concluded with challenges for professionals and an overview of initiatives taken by Government of India.

Moyo (2004) expressed new services and delivery modes incorporating: electronic collections, such as e-journals, e-books, and databases; virtual reference services (VRS), and other online services. Innovation of new services that are peculiar to the Web environment is the trend in modern electronic libraries. Libraries continue to harness new technologies to offer services in effective and innovative ways to meet the changing needs of their users.

Silva (2005) discussed the impact of Internet services and resources on medical research and teaching at McGill University Libraries.

Dee (2005) reported that thirty six (21%) of the academic health science libraries examined provide digital chat reference services; this was an approximately 6% increase over the twenty five libraries (21%) located in 2002. The study reveals the 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 chatting services.

**Benjamin (2006)** studied the Google search engine impact on the library services and found that Google did not rise any threat to the manner in which traditional library services is delivered. The librarian will continue to function as facilitator and mediator between the users and the information being sought and Google will be information repertoire available for use within the library.

**Mohamed (2007)** investigated the application of information and communication technologies (ICT) in special libraries of Kerala and the study revealed that though the libraries had hardware, software and communication facilities to some extent, ICT-based resources and services were not reaching the users according to their expectations. Library automation in special libraries was largely commenced during the decade of 90s. CDS/ISIS was used more in the libraries than others. The library catalogue found to be the most popular area for automation. The e-mail was the highest preferred ICT-based resources. Most of the libraries were hampered by lack of funds, infrastructure and skilled professionals to embark on automation. A good number of the library users were not satisfied with the application of ICT.

**Khare (2007)** in his research paper explained that use internet for research purpose and also show that research scholars are aware of internet services. The author presents the comparative study of faculty-wise use of internet services. Internet is a boon for researchers as it has brought information scattered all over the world within the easy reach of the researchers.

**Malik (2007)** in his research paper focused that E-Journals are easily searchable, accessible, inexpensive and flexible. There are same demerits also need machine to read, less weightage, perishable citation ignorance by search engine. Despite the series of disadvantages or demerits posed by the world of e-journals, they are must for
modern teaching being world. These problems may over come in due course of time with more technological development and economic enhancement of the Indian uses and providers. These e- journals should be popularized in the academic culture of India.

Doraswamy (2007) attempted to examine the current status of knowledge and utility of digital resources by 160 faculty members through online databases, CD-ROM databases, and e-journals, OPAC etc available in the engineering college libraries. It has been observed in study that use of digital resources was still inadequate among the engineering faculties of the universities in the developing countries.

Tholkappian and Chandran (2007) conducted a study on role of e-books in academic libraries. In his study he focused that E-books have become the significant part of human life in 21st Century. The technology advances today make it possible to think in terms of storing knowledge universe of the human race in digital forms. E-book culture will be growing very speedily in academic libraries in India.

Borang and Sharma (2008) reported the status of ICT based services in libraries of academic institutions in Arunachal Pradesh. The libraries under the study were providing access to e-resources, internet, consortium activities and OPAC. The author found the positive effect and importance of these services to user group.

Fatima (2008) investigated the impact of internet on reference. The result shows that all responding libraries have internet access and all but one provided access to their users. On average, users have internet access for three and a half years on average; reference librarians have internet access for five years. Librarians reported that the reference process took longer, that user search behavior had changed and expectations had increased while the majority of libraries had websites, but only a little number of librarians had individual pages that they maintained and updated. The majority of libraries provided electronic reference via e-mail and the library websites, but these are characterized by low usage.
Theresa and Lalithamba (2008) reported that application of ICT in libraries has become inevitable in the time of information explosion and widespread use of digital resources. The modernization of libraries and information centers enabled information transfer and access, meeting objectives and thereby establishing of library and information networks. This initiative shows a major shift in resource development, sharing and their utilization at various stages. They subscribe electronic and web-based resources. They participated in library consortia and build digital libraries. Effective application of ICT in libraries helps in performing their operations and services most efficiently.

Dhanavandan, Esmail and Mani (2008) attempted to identify the usage of CD ROM databases and the INTERNET resources by the engineering students in Cuddalore District. Responses of 190 users showed that the CDROM databases and the Internet resources were useful and highly demanded, whereas print resources were also required alongside, as they were found convenient to use of internet based e-recourses.

Thibodeau (2009) describes the greatest and innovative change was in library services between 1989 and 2005-06, in the area of information access, 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.

Wang (2009) 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 considering the IT impact; they still need professional assistance and education programme for using IT applications for information search in the increase of e-resources.

Ani (2010) in his study investigated the extent and level of internet access and use by U.G. students in three Nigerian universities as well as the electronic resources
used by these students on the Internet. The findings of the study revealed that the internet was extensively used by U.G. students in the surveyed universities. In spite of the extensive use of the internet, there existed a lower level of use of e- resources such as the e- journals and online databases which were essential for learning and research activities. The findings of the study also revealed the need for user education and use in university libraries in Nigeria for maximum utilization and optimum use of e-resources.

Negahban (2010) assessed the extent of utilization and familiarity in accessing digital technologies of information among ninety seven P.G. students in Shiraz city. The results revealed that in familiarity with accessing digital sources, more familiarity was found in e-journals on the Internet and less familiarity was observed for encyclopedia through internet, directories and yellow pages and digital libraries. The selected sample had more familiarity with book search and book shops on internet, internet relay chatting and email and less of teleconferencing. Research scholars had higher familiarity with book shops and book search than students.

Shuva and Akhter (2011) carried a study to analyze the use of the Internet among the 461 students of the Arts Faculty of the Dhaka University. The study elaborated the various aspects of the Internet use, such as frequency of use, place for internet browsing, search engines, use of internet services, purposes of internet use, problems encountered by the students and satisfaction level with the internet facilities provided.

Sujatha (2011) analyzed the patterns of use of the internet among 335 teachers and students of the five colleges in Mangalore city. The study investigated the level of academic community’s access to the Internet, reasons for non-use of Internet, satisfaction with the internet facilities provided in these institutions as well as the problems and challenges faced in the use of the internet. The study revealed that the level of student’s access to the internet was low and the major reason was that at the
time of the study, computers with internet facilities were insufficient. The findings also revealed that the rate of internet use was high among the teachers and students of commerce and Science faculty as compared to the faculty of arts. However, majority of the students expressed their interest in internet use and were enthusiastic in improving their skills in the use of the internet. The study recommended provisions for infrastructure development like as computers work stations, fast access, and providing orientation and training programmes for effective and efficient use of the internet.

2.5 ICT Skills among Library and Information Science Professionals

Subbarao (1998) studied the impact of information technology (IT) on the knowledge and skill base of library staffs in IIT Bombay and reported that IT had radically changed the nature of work, and as a consequence the context and skill base of many jobs in a library require evaluation and redefinition. The library staff responded positively to the changing environment, maintaining a satisfactory balance with traditional print information services. There was a substantial educational role for the librarian in familiarizing users with the networked environment and it was possible to carry out many of the activities associated with this role of cyber world.

Sharma (1998) explored in his paper, that the IT involves computers, e-media, storage devices and satellite, telecommunications. IT has made a intensive impact on academic libraries. Academic libraries in India still face several challenges, problems and obstacles due to the occurrences of IT. He has listed all the challenges and dealt in detail with one of the foremost challenges, i.e., manpower development in the context of IT. The provision of raising facilities on IT in the library schools, inclusion in curriculum, short term training facilities by other organizations, participation in workshops, seminars, conferences, conventions, refresher courses, etc. were discussed. The librarians have to play their role effectively in future for their own survival and profession otherwise they will be replaced by a new emerging group of professionals.
Murthy (1999) has explored the role of librarians in the area of IT. The relevant facets to libraries from IT point of view are–computer technology, telecommunication technology, printing and reprographic technology, and technical communications. The application of IT can be used in the following areas in libraries – collection development and acquisition, circulation, cataloguing and classification, reference work, document preservation, conservation. The importance of consolidation, information repackaging and analysis would become necessary in future, which requires a reasonable amount of knowledge of IT.

Ojha and others (2000) studied about the application of Information Technology in Indian libraries during the last decade of 20th century. They made an attempt to visualize Indian Librarianship in 21st century in the light of ever-changing IT. According to author the impact of IT in Library and Information Science is in the activities of networking, internet and multimedia. The use of computers in libraries, particularly for information management emphasized in which case the library professionals have to change from traditional techniques to modern techniques.

Abu (2003) 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 indicate the extent of the gap of digital divide among the information professionals in Malaysia. He indicates the importance of training programs for enhancing the professional skill.

Temjen and Saraf (2003) studies the attitudes of academic and research library professionals towards IT and its relationship with library and information science courses in India. The five variables identified through factor analysis are anxiety, efficiency, work performance, use confidence and acceptance.. He reports that anxiety ranks highest among the different variables of attitude towards IT and suggests
IT infrastructural facilities and training and education in IT to library professionals working in North east to be at par with the main stream. The study identifies the attitudes of library professionals working in the seven states of North eastern part of India, based on already developed and tested scales of attitudes towards computer and IT.

Adeyoyin (2005) 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 eighteen Nigerian university libraries. Analysis of the data shows that, on a self-assessment basis, out of about 268 professional librarians, only 87 (32%) were ICT-literate, implying that the remaining 181 (68%) of professional librarians were ICT-illiterate. The study also suggests the methods of improving professional skills of library and information professionals.

Amarnath (2007) conducted a survey on 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, ICT knowledge and skills amongst the librarians, problems the librarians faced in the use of ICTs and the need of ICT training. 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.

Ramesh Babu, Vinayagamoorthy and Gopalakrishnan (2007) report a survey of the ICT skills among librarians in engineering educational institutions in Tamil Nadu. The study try to identify the means of acquiring ICT skills, types of ICT skills possessed by the librarians, assess the level/extent of different types of ICT skills, and identify the constraints in acquiring ICT skills by the librarians. The knowledge in ICT relates to operating systems, packages and programming languages, library automation software, web awareness, knowledge of online resources and services, and also technical and managerial skills. The results show that the librarians of these
institutions are acquiring considerable basic skills in ICT. However, they need to focus more on network-based services and digital library services. The study suggested the library and information science professionals are needed to acquire ICT knowledge and skills to provide nascent services to satisfy the users.

Nath and Kumar (2007) explores in a survey of librarians of Chandigarh city to assess the ways in which librarians use ICT’s applications, their level of knowledge and skills, problems faced to ICT’s implementation and their training needs. A questionnaire was used to survey the ICT skills and knowledge of librarians with nine sections on respondents background, file management, word processing, spreadsheets, databases, presentations, E-mail and Internet. Survey of twenty one academic and public libraries reveal a low level of ICT knowledge among librarians and a general lack of formal training among the academic librarians. The study also investigates the extent of adoption of ICT in Chandigarh city libraries as modern tools of providing library service. The study recommends library education with an appropriate curriculum including both traditional as well as ICT based.

Eve (2007) has 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. The study revealed that the level of ICT literacy skill among academic librarians in Enugu state is low due to financial problems, very poor ICT infrastructural facilities, lack of library management interest and positive attitude and lack of training opportunity in the libraries studied.

Mohamed Haneefa and Shukoor (2010) report the information and communication technology (ICT) literacy among the library professionals of Calicut University. The study includes only the library professionals in the central library and departmental libraries of Calicut University. The use of ICT-based resources and services, library
automation software, and general purpose application software is high among the junior professionals than the senior library staff. The study reveals that the Professional Assistants are more ICT proficient in ICT skills than the Junior Librarians Assistant and Assistant Librarians. The use of digital library and institutional repository software is very low among the library professionals. Majority of the professionals had confidence in routine ICT and Internet tasks, and need training or orientation in library automation, digital library and institutional repository software.

Santhi, Radhakrishnan and Swaroop Rani (2010) investigated the relationship between computer literacy of 114 Academic Staff of affiliated engineering colleges under Coimbatore Anna University at Karur District, Tamil Nadu. The study was aimed at investigating the relationship between computing skills of academic staff and their use of e-resources such as OPACs, and the Internet. The study revealed that a majority of faculty members were using computers. It was suggested that adequate emphasis should be given to developing basic computing skills among library users through user education and orientation programmes and user training on using OPAC, Internet and other electronic products.

Sampath Kumar and Biradar (2010) In his research article ‘use of ICT in college libraries in Karnataka, India’ observe the use of ICT in thirty one college libraries in Karnataka, India by analyzing the ICT infrastructure, status of library automation, barriers to library automation and librarians' attitude towards the ICT implication. The survey presents that the lack of budget, manpower, skilled staff and training are the main obstacles for automation of library activities. Even though library professionals have shown a positive attitude towards the use of ICT applications and library automation, majority expressed the need for appropriate training programmes.
Murugesan and Balasubramani (2011) conducted a study on application of ICT based resources and services in R&D libraries in Tamilnadu. He focused on the main objective of the study that to find out use and application of ICT in research and development libraries in Tamil Nadu. The study suggested that the Research & Development institutions should give priority to resource sharing through consortia approach and boosts the funds and recruitment of information technology trained staff for better ICT based services and products to their library users.
References:


9. Arup Kumar, Mondal, and Bandyopadhyay Amit Kumar. "Application of ICT and Related Manpower Problems in the College Libraries of Burdwan."


26. Gulati, A. "Use of Information and Communication Technology in Libraries and


51. Rao, Siriginidi Subba. “Networking of Libraries and Information Center:


