Chapter III

Review of Related Literature

CHAPTER-III

REVIEW OF RELATED LITERATURE

There are number of studies available on various aspects of library automation. The researcher has done exhaustive literature search. This literature review process has helped her to master the previous scholarship, since it is done with critical perspective. This process has proved to be an important aid in the construction of the structured interview schedule. It has established the domain the interview will explore. It specified categories and relationships that may organize the data. It helped the researcher to determine what the respondent should be asked about and what the researcher should listen for. It established an inventory of the categories and relationships that the interview must investigate. This process has enabled her to define the problems and assess the data.

The major studies that the researcher could find were only those which are related to automation of library. These specify the requisite of library automation, problems faced during the process, i.e. pre automation problems and problems faced at the time of implementing the system. From the available literature, it has been evident that the research study being carried out by the researcher, i.e. post automation problems in libraries, is still untouched. The researcher has studied the available literature in depth, to understand different aspects of her research study. These different aspects are being discussed by the researcher to arrive at the niche of her present research study. The studies which have been reviewed have been further divided into specific categories for understanding and assessing the research problem as presented below.

1. LIBRARY AUTOMATION

(a) SCENARIO IN INDIA

(b) SCENARIO IN OTHER COUNTRIES

2. LIBRARY MANAGEMENT SOFTWARE

3. ELECTRONIC RESOURCES MANAGEMENT

4. USER AWARENESS

5. FINANCIAL CONSTRAINTS IN IMPLEMENTATION

6. HUMAN RESOURCE FACTORS IN LIBRARY MANAGEMENT

7. TECHNICAL AND TECHNOLOGICAL ASPECTS IN LIBRARY AUTOMATION

1. LIBRARY AUTOMATION

Library automation systems in general are used to create and maintain large bibliographic databases. Another important task of the library, i.e. the library housekeeping job became easy and simple after the implementation of library automation system. In the developed countries, this system started working way back in the period of 1970, but it got the rapid momentum in the 1990s. It can be said that in developing countries like India, library automation system began somewhere in the early 1990s.

Literature available on automation system of different types of libraries has been studied to understand different factors affecting the functionality of library automation system.

(a) SCENARIO IN INDIA

In many developing countries like India, user pressure has been an important reason why libraries have sought to automate. Users, especially in academic and research institutions, have been responsible for initiatives that have led to library automation in these institutions. Some of the articles reviewed below present the clear picture of status of library automation system in university and college libraries, newspaper libraries, agricultural libraries and several other special libraries in India.

Manjunath (1999), in his paper entitled, *"Library automation: Why and how?"* attempts to give some idea for beginners in library automation. The author suggests that even though wide ranges of technology/products are available, it is necessary for librarians to keep a watch on the developments and to choose appropriate technology depending on the needs. It is also very important for librarians to interact with computer professionals as the library automation at all levels needs good co-ordination among both these professionals.

Another study by Yogendra Singh (2003), entitled, *"Library automation in academic libraries in India: Problems and prospects"*, traces briefly the history of library automation in India. He further tries to analyse the various factors that directly or indirectly affect the progress of library automation such as management issues, resource available with the libraries, level of skill of staff, availability of suitable software, geographical location of the library etc. He also discusses the role of INFLIBNET in library automation. He concludes with the remark that things are changing for the better as library automation in academic libraries is being regarded as the need of the day.

With respect to automation and networking, Vyas (1997), in his paper entitled, *"Library automation and networking in India: Problems and prospects"*, presents the information scene in India. Networking systems at the national and local levels are described. The constraints of networking in Indian academic libraries are explained. While concluding, the author suggests that major information library networks should have a more realistic and time-bound programme.

Information and Libraries Network (INFLIBNET) has played major role in automating university library system, Murthy and Cholin (2003) in their paper entitled, *"Library automation"*, discuss the impact of automation on the library. According to them it has created new types of work, influenced inter personal relationships, and transformed traditional organizational structures into new institutional entities. The paper briefs about INFLIBNET and its role in automation of university libraries in India, SOUL software development, retrospective conversion and document delivery projects and union catalogue software tool development. It further informs about the UGC-Infonet – An initiative of UGC for networking Indian universities and e-subscription for the universities.

Some of the articles reviewed below give the actual scenario of automation of university libraries of different states of India like, Punjab, Haryana, Chandigarh, Rajasthan, Andhra Pradesh and Kerala.

Dabas and others (2003), in their paper entitled, *"Automation scenario in university libraries: A study of some selected libraries"*, attempt to review and audit the present scenario of library automation in nine university libraries in Punjab, Haryana and Chandigarh. The paper discusses need and importance of library automation, amenities due to networks and networking. The paper further tries to identify the obstructions in library automation and impact of automation on the libraries under study. The paper concludes with the remarks of corrective measures to be considered for the automation process.

Vyas (2003), in his paper entitled, *"Application of information technology in university libraries of Rajasthan: A survey report"*, gives the detailed study of the status of library automation in 12 state universities as well as deemed university institutions of Rajasthan. The survey method was conducted to find out the different aspects of library automation, such as availability of reading material, financial support to library automation, hardware configuration in libraries, use of application software, status of in-house database preparation, user services, housekeeping operations, networking accessibilities of libraries, problems in computerization and networking, future plans and proposals for computerization and networking, assessment of computer applications and networking, and measurement of satisfaction regarding automation of information system. The author expresses dissatisfaction of after-sales-service of software supplier i.e. INFLIBNET. The paper concludes with the suggestion to UGC for sanctioning a post of Information Scientist and a Technical Assistant for the accomplishment of library automation.

Chandraiah (2003), in his paper entitled, *"University library automation scenario – A study", covers* the present state of automation at three university libraries situated at Tirupati (Andhra Pradesh). The data analysis of hardware, software, manpower facilities available at each library has been made. The study also extends to understand specific problems of the university libraries in automation.

Suku and Pillai (2005), in the paper, *"Perspectives on automation of university libraries in Kerala: Status, problems and prospects"*, discuss the scenario of automation activities of university libraries in Kerala. The survey findings mainly cover various aspects of library automation such as information technology infrastructure, in-house activities, information services and their usage, manpower development, and budget. It further describes the role of INFLIBNET centre in accelerating the automation activities of university libraries, especially in the context of UGC-Infonet programme. The problems are being identified and possible suggestions are stated.

Bansode and Periera (2008), in their paper entitled, *"A survey of library automation in college libraries in Goa state, India"*, reveal the fact that status of automation in college libraries of Goa is similar to that of college libraries throughout India. The authors suggest that college library professionals must upgrade their skills in order to meet the growing expectations of users from their libraries.

Following are few of the articles reviewed of automated library system of special libraries. Their experiences lay emphasis on certain aspects of library automation which they find, are hindrances to speedy automation. These are related with computer literacy of LIS staff and hardware and software related issues.

Jose, Panda, and GiriRao (2005), in their paper entitled, *"State of automation in major newspaper libraries in Delhi city: A study"*, provide an insight into the current state of automation of ten major daily newspaper libraries of Delhi. The paper primarily highlights aspects like, computer literacy of LIS professionals working in the major newspaper libraries, availability of various IT components including computers and the areas of computerization so far have been made in these libraries. The study finally suggests that Media libraries should achieve the state-of-the-art in IT to be used in their information processing and retrieval activities.

Thapa and Sahoo (2005), in their paper entitled, *"Problems and prospects of automation: A survey of special libraries in Bhopal"*, highlight various problems faced during the process of automation and suggest ways to overcome these problems. It also aims at analyzing the benefits of automation. The findings show that lack of staff, lack of

computer training in staff, hesitancy in learning to use computers and software and hardware problems are the major hindrances to speedy automation.

Neena Singh (2005), in her paper entitled, *"Revamping agricultural library and information services in India: Retrospect and prospect"*, discusses the state of agriculture libraries in India and evaluates parameters such as need for Agriculture Library Association, Automation and Networking, Agriculture Documentation Centre, professional development of library staff, professional status etc., and suggests measures for improvement of library services.

Few of the case studies of automated libraries have been reviewed. This is to understand their experience and the challenges faced by them.

In an article by Bhatt and others (2005), entitled, *"Initiation of automating library services at Smt. Hansa Mehta library: An excavating experience"*, the experience of retro conversion work carried out in their university library is presented. It describes the practical aspect of the task carried out in a very large library and provides guidelines to other libraries that have yet to automate their library. It also reflects positive approach and involvement of library staff in automating library services.

Another study by Bhatt and Makwana (2005) on, *"Library automation: A case study of Parul Arogya Seva Mandal central library, Baroda"*, states the challenges being faced by library professionals in the age of information technology. Further, the authors share their experience of automating the library system with the use of SOUL software. The problems being faced by them during the process and its possible solutions have been discussed.

One more study by Antherjanam and Sheeja (2008) entitled, *"Impact of ICT on library and information science: Major shifts and practices in CUSAT central library"*, describes in detail the impact of ICT services and major shifts and practices in the library of Cochin University of Science and Technology. The major disadvantages of ICT being noted by the authors are the high cost, need for expertise, socio technical issues, information insecurity and more technology dependence.

(b) SCENARIO IN OTHER COUNTRIES

In USA, UK, and Europe, from early 1980s there was a rapid growth in number of libraries opting for automating their operations. These libraries have rich experience of automation systems. They have shared their knowledge in different research papers. Following are some studies that have been reviewed by the investigator.

Salmon (1975), in chapter 10 of the book titled 'Library Automation Systems', explains different networks, as he finds it as an important factor in the library automation system. In this context he says, "Technological advances are often unpredictable, and frequently the most exciting and the most significant are those which can least be foreseen. The breakthrough will occur within the next decade and offer a new approach, perhaps even begin a new era in library automation".

Drabenstott and others (1989), in their paper entitled, *"Truth in automating: Case studies in library automation"*, address the expectations and realities of their respective library's automation projects, including staff impact, costs and funding, time and schedules, users, computer support, vendors and consultants. While concluding they suggest that the key to success include: very clear political objectives at the beginning of the project; careful definition of the project structure; a well-prepared automation plan; carefully-considered, contractual commitments with a vendor; and flexibility and adaptability.

Stuart (1990), in his paper entitled, *"Ownership and access database and OPAC: Present and future opportunities for academic libraries"*, explains two fundamental strategies of ownership and access and examines their short to medium term development. Further the author says that the role of automation in academic libraries is considered in relation to external developments and to improved user services.

Dickmann (1990), in the paper *"Managing a large library automation project: Observations based on the Surrey county library experience"*, puts automation project into three stages of planning, choosing and implementation. The article charts the progress through these three stages in Surrey County Library, concentrating on the management issues and lessons learned in the process.

September (1990), in his paper entitled, *"Automation and academic library management: A case study"*, outlines the history of automation in the libraries of the University of Michigan and a detailed study is presented of the strategic planning and implementation of the integrated library system of Michigan. Emphasis is also placed on the evolution of new management structures in the library to deal successfully with, and driven by, the new system.

Yaacob and Harun (1996), in their paper entitled, *"Information technology implementations in libraries and information centres in Malaysia: Impact and pitfalls"*, show concerns on some of the basic issues of the library and information centre, like, library automation, online access, electronic data interchange, document delivery, CDROMs, multimedia, Internet and standards. The research finds out that there is a positive environment for implementing information technology for both decision-makers and the IT industry in Malaysia. Positive government attitudes and the allocation of funds for technological development have enabled an increasing number of libraries to embark on all kinds of IT. The paper attempts to investigate the impact of new technologies on the management of libraries, as well as training in the use of the system. The development in IT and the anticipated setting up of the networking systems are regarded as revolutionary in terms of the actual as well the potential impact on the library management and services.

Tedd (1996), in her paper entitled, *"An overview of some Estonian libraries and their computer systems: A visitor's impressions"*, outlines the main problems faced by Estonian libraries in recent years and the steps taken to improve the situation. It provides insight, through analysis, and identifies the problems – lack of funds, lack of qualifications, organizational problems and further searches for possible solutions like, networking, resource sharing, use of information technology and international co-operation.

Brown and others (1996), in their paper entitled, *"West Virginia: Library automation"*, address the basic problem of West Virginia that is its topography. The mountains provide spectacular views, and stunning areas for citizens who wish to maintain their independence but those mountains and that remoteness also create difficulties in information equity.

Gorny and Jazdon (1997), in their paper, *"The implementation of information technology projects in Polish research and academic libraries in the early 1990s: Questions of scope and effectiveness"*, report the results of an inquiry directed to Polish academic, research and scientific libraries. An appraisal of the current IT infrastructure, degree of advances in automation in libraries, and utilizations of electronic sources has been carried out. The study reveals that academic libraries have best developed IT infrastructure compared to special libraries of the research and scientific institutes. The reason of this situation in special libraries is due to the lack of financial resources.

Younis (1999), in his research paper entitled, *"The effect of automated systems on Jordanian university libraries' organizational structure"*, explores the effect of automation on academic libraries, organizational structure and technical and administrative services. The study further tries to find out the motives of staff and users, to use the systems, and their satisfaction and acceptance of this technology. It further stresses the need to develop software packages conducive to the Arab libraries, their needs, plans for academic training, and the necessity for a network linkage, both locally and internationally.

Okemwa (1999), in the paper entitled, *"Managing a library automation project: The Moi university experience"*, examines the major problems associated with managing a library automation project in a developing country. According to author, the Moi University experience is representative of the type of problems that a library project manager in a developing country is likely to face. Poor infrastructure, shortage of technical expertise, lack of information technology and a shortage of qualified managers are some of the managerial hurdles that have been highlighted.

Mulimila (2000), in the paper entitled, *"Information technology applications in East Africa government -owned university libraries"*, reviews the trend of Information Technology (IT) applications in East Africa government-owned university libraries. It was revealed that the extent of IT applications in those libraries was very limited. Financial resources and lack of trained manpower in IT remained the most critical obstacles in the application of information technology in East Africa government-owned university libraries.

Haslam and others (2002), in their paper entitled, *"The automated storage and retrieval system (ASRS) in Lied library"*, describe the process the library undertook in determining how the collections should be stored, taking into consideration the nature of the collections, their formats, and usage. The implementation of automated storage and retrieval system (ASRS) was time consuming but the result was the installation of a space efficient, user-friendly system with fast delivery of items to library users.

Talagala and Gamage (2003), in their paper entitled, "Library automation in Sri Lanka: An overview", give the picture of progress of automation activities in libraries in Sri Lanka. The paper discusses the impact of CDS/ISIS on library automation, development of Integrated Information Systems; usage of other library software, other IT related activities in libraries, access to online databases. The paper concludes featuring many problems in the application of IT in libraries; they are lack of funds, lack of competent staff to handle IT, lack of training facilities, and lack of an automation process.

Yapa (2003), in his paper entitled, *"Utilization of ICT for LIS with special reference to Sri Lanka"*, presents overall scenario of use of ICT in Sri Lanka and particularly in libraries. Author argues that, National Information Policy and National Information Infrastructure are essential, if a country would like to exploit the IT to its advantage. A brief account of automation of libraries of Sri Lanka is presented along with the highlights of challenges faced by the libraries.

Uddin, Chaudhary and Islam (2003), in their paper entitled, *"Automation scenario of some leading agricultural libraries of Bangladesh: An overview"*, provide an overview of the application of IT in leading Agriculture Universities in Bangladesh. The paper presents various IT tools being used by these libraries and status of in house function. Authors have made an effort to highlight the challenges faced by libraries such as incompatible data format, computer hardware and software, inadequate skilled manpower, insufficient budget, absence of advanced training facilities for professionals, lack of communication and cooperation among the various institutions engaged in automation and lack of prior studies before embarking upon automation. The paper concludes with recommendations to build up an efficient computer based library services in the agricultural library and information centres of Bangladesh.

Munshi (2003), in his paper entitled, *"Library automation in Bangladesh: The Dhaka university library experiences"*, presents the model of Dhaka University Library Automation Project (DULAP). The paper also discusses the features and objectives of DULAP, requisite hardware and software, functions and activities of the program, facilities offered to users and tasks to be accomplished. The author concludes the paper with a remark that in modern times, none of the developing nations can afford to neglect the existence and advancement of Information Technology.

Younis (2006), in his paper entitled, *"Local online information systems in Jordanian university libraries"*, presents factual data gathered by author on the use of local online information systems, automation, online connections, online public catalogues (OPACs), CD-ROM –based systems in 19 Jordanian university libraries.

Amekuedee (2005), in the paper entitled, *"An evaluation of library automation in some Ghanaian university libraries"*, studies the status of library automation in Ghana's three older public university libraries. The findings reveal that even though the university libraries realize the importance of library automation, they are hampered by lack of funds, lack of support from the university administrations, and lack of skilled staff to embark on automation of all library processes.

Line (2006), in the paper entitled, *"Forty years of library automation: A personal reflection"*, recalls the experiences with library automation during the job of librarianship. The paper provides an overview of author's involvement with computer systems in libraries over the past 40 years. He feels that there have been many developments in libraries in a comparatively short period of time as a result of using computer systems, and this may only be the start of a revolution. In a nutshell the paper gives historical aspects of library automation.

Evans and Thomas (2007), in their paper entitled, *"Implementation of an integrated information management system at the National Library of Wales"*, describe the experience of the national library of Wales, UK in implementing an integrated information management system. The findings emphasize the need for a well prepared yet flexible approach to project planning, and the need for consultation and an ongoing dialogue with staff.

2. LIBRARY MANAGEMENT SOFTWARE

Library management software, and matters related to library software play an important role in smooth-functioning of library automation system. There are research papers discussing these issues in particular. During the process of reviewing such literature, the researcher came across certain important factors which should be kept in mind at the time of purchasing the library management software.

In the case of IIT Kharagpur, they have shifted from commercial software to in-house software. The article written by Jeevan, entitled, *"In-house library software development at IIT Kharagpur: Opportunities and challenges"*, describes why the in-house software had been developed for the library automation process in the central library of Indian Institute of Technology, Kharagpur. He explains the reasons for the replacement of the existing commercial package which was being in use for several years for the library automation process.

He elaborates further the key reasons for embarking upon the indigenous software development efforts. According to him they are: high cost, need for customization, false promises, need for special expertise, no source code, not so user-friendly interface, rigidity in operations, reports etc., lack of security, lack of customer support, no RDBMS etc. He feels the efforts were fruitful because it has helped in minimizing the lacuna with the existing package. It has also enhanced the electronic communication and work in a web enabled environment.

Selection and implementation of library software is one of the important factors during the pre automation as well as the post automation period. Francis (2002), in his paper entitled, *"Implementing the VTLS library management system at Tomsk state university library: Impact on management"*, describes the changes brought about by the project, which included the creation of one of the first strategic development plans produced by a Tomsk State university library in Siberia, Russia and a considerable change in the attitudes of Tomsk State University Library staff. It further highlights the effects of one of the first implementations of a full Western automation system covering all functional modules on the structure of the library. Whereas Shafique and Mahmood (2007), in their paper entitled,

"Librarian's opinions about library software: A survey of libraries in Lahore", reveal the current status of software used in the libraries of Lahore. The findings state that most libraries purchased or developed software without any exchange of experience with each other. No standard tool or directory was available for the selection and evaluation of software, nor was comprehensive literature written and published in a Pakistani scenario discussing the technical and practical aspects of library software. Again the same authors, i.e. Shafique and Mahmood (2008), in their paper entitled, *"Integrated library software: A survey of Lahore"*, describe elaborately, one of the important aspect of library automation, i.e. selection of library management software. They have carried out comprehensive study on the current status of library software and its evaluation criteria in the city of Lahore.

Retrospective conversion is another major issue of library automation. Premchand, Gohel and Chandrakar (2003), in their paper entitled, *"Retrospective conversion tool for academic libraries in India : An initiative by INFLIBNET"*, highlight an ambitious plan of INFLIBNET to connect libraries, scholars and student by providing resources spread across the country using latest information technology tools. It bring to light the major objective of the centre, i.e. collecting the entire bibliographic sources of academic libraries and providing online access facility in the form of union catalogue of these resources. Retrospective conversion software is another effort by INFLIBNET, which is a significant tool for libraries, who are in the process of automation. Keeping in view the different challenges for Indian academic libraries, the authors are optimistic that this tool of retrospective conversion will boost the library automation in India particularly in terms of digitizing their resources and feel that it will come out as a milestone for it.

Retrieval capability of the software should be very effective. A comparative study by Harinarayan and Raghavan (2008), entitled, *"Retrieval capabilities of CDS/ISIS and LIBSYS: A comparison"*, examines the comparative retrieval effectiveness of the two packages, i.e., CDS/ISIS and LIBSYS. The result shows that neither of the two packages provides support for all the features that may be expected of ideal retrieval software. There appears to be some significant difference between CDS/ISIS and LIBSYS in terms of their ability to provide desirable features.

A case study of managing CD-ROM collection has been described by Mishra, Kumar and Tripathi (2008), in their paper entitled, *"CD-ROM collection management and development of a web interface by using WINISIS/GENISIS at P K Kelkar library, IIT Kanpur"*. The authors describe the processes involved in managing the CD-ROM collection at P. K. Kelkar Library. It outlines the planning and processes involved in organizing CD-ROM collection on shelves and development of a user interface through open-source software, i.e., Winisis and Genisis Web.

The support of software vendor is very important even after the implementation of the library automation system. In fact it has been found during the study that it is one of the major factors in the post automation period of library system.

The survey carried out by Khurshid (2003), entitled, *"A survey of the Arabian Gulf library automation marketplace"*, presents result of a survey of the Arabian Gulf Region marketplace for library automation systems. The paper provides a market review and evaluates the vendors' standing and discusses the various criteria that underpin relative success or failure in this specific marketplace.

A case study carried out by Kumbar and Mallaiah (2008), entitled, *"Changing pattern of user expectations regarding the library catalogue as an information retrieval tool: A case study of Mangalore university"*, describes the efforts of Mangalore university library in developing an Online public access catalogue with the aim of increasing the information retrieval efficiency and providing easy access to the users. The changing pattern of user expectations about the catalogue has also been examined. Result indicates the necessity for the joint effort of library professionals and software development experts to meet the user expectations effectively.

3. ELECTRONIC RESOURCES MANAGEMENT

In these days there are number of publications available in electronic format. These electronic resources are the product of latest innovations in information technology. Managing these electronic resources is one of the tasks of library automation system. It is

becoming a challenging task for the library professionals to procure, arrange and preserve these resources.

Mange and others (2005), in their paper entitled, *"Digital preservation: A challenge to libraries"*, discusses the challenges being faced by the libraries for the preservation of digital materials. Some of them are in the areas of planning, resource allocation and application of preservation methods and technologies necessary to ensure that digital information of continuing value remains accessible and usable.

Another interesting case study by Patel and Zala (2005), entitled, *"Digitization project of collections of MICA library : A case study in the context to newspapers, television commercials, dissertations and print ads"*, focuses on how Mudra Institute of Communications (MICA) library which is known as Knowledge Exchange and Information Centre (KEIC) is entering in the digital era. The newspaper clippings/downloads, television commercials, dissertations and print ads are target sources for digital project of KEIC.

Biswas and Ghosh (2004), in their paper entitled, *"Managing of electronic publishing by library and information professionals : Some problems and prospects in digital age"*, highlights the challenges being faced by library and information professionals in handling conventional and electronic resources as well as in selecting, collecting, organizing and ultimately disseminating information pin-pointedly and exhaustively to the clientele. He further adds that e-publishing has revolutionized the format of recorded knowledge and it is an excellent communication medium that cannot be duplicated by paper-based technology. He concludes with a remark that library and information professionals should accept the change and adapt to new situation for the benefit of the users.

4. USER AWARENESS

Library is a place that possesses a well-organised information system, which enables users to find out the required information in minimal time. The printed reading materials like books, manuscripts etc., were the only source of information in the past. With the passage of time the explosion of literature resulted in users demanding exhaustive and pinpointed

information. Information today exists in many forms than just as printed material. This led the libraries into digital era. Libraries started the use of computers and other technology for housekeeping operations and information services. Building digital libraries, being the next step of automation, requires certain attention towards its management aspect.

The users are the key components for any library. While transforming from traditional manual system to automated system in library, it is very important to make the users aware about it. The users should be trained to operate the new system so that they will get acquainted with it easily and will accept it whole heartedly.

A survey by Walmiki, Ramakrishnegowda and Prithviraj (2010), entitled, *"Awareness and use of UGC-Infonet digital library consortium by the faculty members of Karnataka state universities"*, presents the survey conducted on the awareness and use of UGC-Infonet e-resources by the faculties of Karnataka University. The major problems faced for inadequate utilization of these resources are, lack of knowledge to use, insufficient internet nodes, slow bandwidth and lack of relevant information sources.

One more survey by Joteen Singh, Th. Madhuri and Raychaudhury (2009), entitled, *"Use of internet based e-resources at Manipur university: A survey"*, describes the use of the electronic information focusing on the Internet services by the users of Manipur University Library. Further, it examines the utilization, purpose, difficulties and satisfaction level of users about Internet based e-resource services provided by the library. The paper finds that low speed Internet access, erratic power supply and lack of required full text journals are the major problems with regard to the use of Internet based e-resources.

A study by Gowda and Shivalingaiah (2009), entitled, *"Attitude of research scholars towards usage of electronic information resources: A survey of university libraries in Karnataka"*, shows that in general the research scholars prefer print resources and there exists significant differences in the preference of print and electronic resources like online journals and databases in the university libraries. The study identifies the gaps in the need and availability of electronic resources like online journals and databases in the university libraries.

The authors Pushpalatha and Mallaiah (2009), in their paper entitled, *"Use of information resources in chemistry: A study of Mangalore university library"*, reveal that majority of the users visit the library to borrow books, to consult periodicals and browse UGC INFONET journals. OPAC and the assistance of the library staff are the primary means to locate information. While concluding, the paper highlights that the various findings of the present study serve as guiding principles in developing need based collection and provide effective services to the users' community.

In the context of using e-resources, Sujatha and Mudhol (2008), in their paper entitled, *"Use of electronic information sources at the college of fisheries, Mangalore, India"*, examine the use of electronic information sources (EIS) by the teachers/scientists, research scholars and postgraduate students in the College of Fisheries, Mangalore. The users were probed about the possible constraints like retrieval of irrelevant information, poor connectivity and poor database searching skills. The study suggests that necessary steps be taken to strengthen the existing electronic information sources and services and maximize its use among the academic community.

Another study by Ansari and Amita (2008), entitled, *"Awareness and use of OPACs on five Delhi libraries"*, deals with the applicability and utility of OPACs in five libraries in New Delhi. The paper finds that OPAC system has changed the traditional concept of access to library resources. Document access is still one of the most important approaches of users to visit the library, and a study of the effectiveness of an OPAC is useful in this respect. The satisfaction level of users was high with the OPAC facilities, but not many users are aware of the expert searches provided by OPAC.

5. FINANCIAL CONSTRAINTS IN IMPLEMENTATION

To implement any project successfully, proper planning of budget in advance is the most essential task. The financial budget for the library is the most concerning factor of the day. The library professionals while preparing budget for implementing the automation system should also envisage and allocate the budget for the post implementation period.

A study by Dilroshan (2005), entitled, *"Identification of problems faced by university libraries in the process of automation: With special reference to the libraries of Moratuwa and Colombo Universities"*, identifies the problems faced by the university of Moratuwa library and the University of Colombo library in the process of automation. The study also aimed to identify the software packages used by the two libraries, available modules in it; the availability of infrastructure, hardware and financial facilities in these two libraries. The progress made by the two libraries in automation and the attitude of the staff towards library automation is also identified. Further, the attitude of university management towards library automation and solutions suggested by the two libraries to overcome the problems in automation are also examined. The findings revealed that, two libraries surveyed, faced several problems such as, inadequacy of infrastructure and hardware, problems in the software, lack of trained staff and funds.

Another study by Amekuedee (1995), entitled, *"Barriers to successful university library automation in Ghana with particular reference to the Balme library"*, portraits that library automation in university libraries in Ghana is a relatively new concept. Even though computers have been installed in the three university libraries in Ghana, computerization has not had much impact on the services provided by these libraries. This paper reviews the computerization projects in the university libraries in Ghana, with a particular reference to the Balme Library of the University of Ghana. Reasons for automation, areas of application and problems associated with automation are discussed. Also highlighted are barriers militating against successful university library automation, like financial problems, attitudinal problems, lack of co-operation among university libraries, hardware and software problems and personnel problems. Recommendations are made for the improvement of automation at the university libraries in Ghana. These include evaluation of existing systems, properly planned automation project, financial support and co-operation among the university libraries.

6. HUMAN RESOURCE FACTORS IN LIBRARY MANAGEMENT

The operational atmosphere of present day libraries is combined in areas that range from computing systems to traditional library functions. In addition to inter personal and team-work skill the library professionals need to develop necessary technical skills to deliver value added services and satisfaction to the users.

It is quite essential for the library in-charge to get the support of his staff in any new innovation in the library. A study by Hicks and Kirby (2005), entitled, *"Are your staff behind you"*, encounters the conventional belief that your staff are well informed of any forthcoming changes to the service and share your own perspective. The authors believe that this is less common than you think. They opine that staff is the most important asset of any library service. Managers are unlikely to convince them all of the need for change. If a majority of the staff in some services is enthusiastic, or at least understanding, shows that obtaining the support of a large group is not impossible. They feel that what the staff is saying in the car park that they are not saying in the staff meeting. An equally important factor is the training of all the staff members of library in the new project. A study by Glogoff (1989), entitled, *"Staff Training in the Automated Library Environment: A Symposium"*, describes that one of the unfortunate consequences of the changes in the project timetable has been the impact on staff training. In some cases staff found that considerable time had passed between an initial training sessions, and being in a position to practise their new skills on the system itself. In other cases the time period between training and working on the live system was shorter than planned, with the result that some staff may not have been 100 per cent confident in using the system before "go-live". This, of course, is a problem that should be recognized and avoided during future implementations. Different training programmes for the library staff should be organized. A study by Bayne and Radar (1990), entitled, *"Computer-based training for library staff : A demonstration project using Hypercard"*, describes about a one year project of Computer Based training (CBT) modules for the staff of University of Tennessee, Knoxville (UTK) libraries. The basic objectives of the project include, (a) to conduct an assessment of UTK libraries staff training needs and gather national advice on general training topics most needed in similar libraries; (b) to evaluate the effectiveness of the CBT modules through trainee responses and external

reviewing mechanisms and; (c) to prepare an implementation plan that will regularize use of the CBT modules in training of all staff.

The following study depicts that the cordial relationship of library professional with the computer professionals of the institute is very important. Patrick Murphy and Linda Murphy (1990), in their paper entitled, *"The librarian and the computer professional: Developing a working relationship"*, stress upon the prerequisite of a good communication relationship between the librarian and computer professional of the institute. This paper explores the interaction between computer professionals and library staff at the University of California-Irvine (UCI) library.

One can also take help of professional management consultancy for the smooth function of library. Gupta and Babbar (2002), in their article entitled, *"Need and provision of professional library management consultancy"*, explain the meaning of the term Professional Library Management Consultancy (PLMS). The paper discusses the five basic stages in the consultancy process. Further, it identifies the essential personal characteristics and specialized abilities required by consultants. It highlights some of the prominent areas where professional management consultants may play an important role in the management of libraries.

Given below are some of the studies which touches upon one or the other aspect of human resource management in librarianship. The study by Skretas (2005), entitled, *"Factors affecting the full use of library and information management systems by library personnel"*, provides a general list of factors that affects and determines the full use of library information management system (LIMS) by library staff. This list of factors could be used as a checklist by anyone wishing to investigate or control the reasons for the full use, or not, of an LIMS in a specific library.

Another study by Natarajan (2005), entitled, *"Cyber infrastructure: An opportunity for education and implications for research libraries"*, explains the concept of cyber infrastructure. Further, he envisages the need for human infrastructure due to the advancement of cyber infrastructure.

One more study by Booty (2005), entitled, *"Enquiry handling: New ways to teach old tricks"*, stresses on the need of training in enquiry handling skills. The paper describes in detail the training course for the library staff which has been developed at Essex's library for developing enquiry handling skills.

The MLA report (2004), *"Workforce development: Standalone training not enough"*, states that new opportunities have been found in ICT training for librarians-highlighting its role in developing new organizational way of thinking and working rather than merely training to fix competencies gap. The report discusses the three distinct models in use for the training purpose. While concluding, the report warns that traditional images of the library as 'neutral space' are fast becoming unhelpful and are acting as a thought-stopper.

A case study by Muckolls (2005), in the paper entitled, *"Change in a small law library: How we moved our department into 21st century"*, explains in detail the most important factor, i.e. dealing with the staff, while changing the conventional environment into the advanced technical work environment. The author gives different method of handling the staff, to motivate, to inspire and to prepare them for adapting the change required for 21st century work environment. While concluding the author says, "Personalities do not change, and I do not pretend that I was able to create entirely new people. But I do see an increased willingness on the part of the staff to be open to new ideas and methods. They have learned that the 21st century is a nice place to be."

A study by Hyams (2005), entitled, *"A new impetus to professional excellence"*, explores how CILIP's new framework of qualifications is redefining the library and information profession for the new millennium. The paper also states that the new framework has brought a revolution in the way employers see, do business with and, remunerate the LIS professionals they employ.

One more study by Arthur (2005), entitled, *" Evaluating the impact of the new opportunities fund ICTL programme for public libraries in Scotland, March 2005"*, states that it is essential to prepare the library staff for the change. Many staff members were apprehensive about the training and were initially reluctant about embracing the opportunity.

In some isolated cases the library managers did not successfully encourage and support staff to completion of training outcome. Some staff with well-developed ICT skills was under challenged. On the other hand Horsefall , in the paper entitled, *"The human impact of library automation"*, discusses a case study undertaken at a campus library of a multi-campus tertiary institution. The study examined the impact of an integrated turnkey system on library staff. The paper discusses the impact the automated system had on staff's quality of working life, job satisfaction, client relations, self-esteem, and morale. The result showed that the system had a significantly greater impact on library support staff than on librarians.

A presentation by Hashim and Mokhtar entitled, *"Trends and issues in preparing new era librarians and information professionals"*, stresses on the fact that the advancement of ICT has brought a lot of changes in the library services. There is a new change in paradigm. The librarians have to sharpen their skills and develop their professional competencies to survive in this era.

An experience of Mitchell (2003), presented in his paper entitled, *"Implementing the first library management system at MerthyrTydfil public libraries: An overview and impact on staff"*, shares the experience of process of selecting and implementing the first library management system in the library. In addition, the impact on staff that has had to change their working practices in a very short space of time is described.

A study by Chore and Deshmukh (2010), entitled, *"In-service training for library professionals in the changing environment"*, describes about the training needs for information professionals. The libraries will remain dumb and mute if the library professionals are not being trained continuously with the emerging trends and technology. The training increases the skill of staff members.

To understand human factors deeply Bergen (1988), in the paper entitled, *"Instruments to plague us? – Human factors in the management of library automation"* points out that the manager must take into account various human factors when introducing computers into the library. The author discusses the ways in which the manager can interest and motivate staff by eliminating causes of dissatisfaction and by taking positive steps in appealing to employees' self-interest in the possibilities of career advancement and the

challenge of mastering something new. While concluding, the author opines that, the onus is ultimately on librarians to demonstrate that they still have a key role to play in the provision of information.

Another paper by Connore (1992), entitled, *"Staff training in libraries: The implications of automation"*, provides an overview of the implications of automation. It discusses the reported effects of automation on library personnel, and explains the significance of these for the planning of training. It also outlines elements of training programme and finally raises considerations for suitable management style.

An investigator Nwali (1991), in the paper entitled, *"Staff development for computerisation: An account of Abubakar Tafawa Balewa University library, Bauchi"*, discusses the staff development efforts by the above mentioned university library with particular reference to the area of computer literacy courses. Staff development and retention are advocated for effective computerization of any library system.

Another study by Glogoff (1989), entitled, *"Staff training in the automated library environment: A symposium"*, expresses the diverse training needs, experiences, and practices adopted by individual libraries. This can be done by forming consortia comprising a large number of libraries. These consortia may also help in sharing online access to library resources.

7. TECHNICAL AND TECHNOLOGICAL ASPECTS IN LIBRARY AUTOMATION

In this age of information technology, technical knowledge of library automation is a must in library professionals. One cannot completely rely on the technical experts all the time. Power failure is one of the major issues in country like India. The alternative of it should always be maintained for the proper functioning of automated library system. While discussing about the technical capabilities of the software, a study by Ansari & Amita (2008), entitled, *" Awareness and use of OPACs on five Delhi libraries"*, deals with the applicability and utility of OPACs in five libraries in New Delhi. The paper points out that

search facilities of OPAC systems largely depend on the technical compatibility of the software.

As mentioned earlier, technologically sound environment is highly essential for the smooth running of the automated systems. A study by Ramakrishne & Walmiki (2009), entitled, *"ICT infrastructure in university libraries of Karnataka"*, surveys the status of ICT infrastructure in six selected university libraries of Karnataka. 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 sufficient hardware and software facilities and do not have adequate Internet nodes and bandwidth. The campus LANs of the universities are not fully extended to exploit the benefits of digital information environment.

There are certain major factors which have to be considered for the automated library system such as network based technological issues, Internet bandwidth (related to the speed of Internet), configuration of computers and printers. A study by Ross and Marmion (2000), entitled, *"System librarians and the client/server environment"*, examines the growth of automation at two university libraries. The author points out that outgrowth of the distributed computing and networking will increase growth in digitized resources, integration of systems, and developments in client/server technology, especially as they relate to the World Wide Web. While concluding, it is being mentioned that changes in the organizational structure reflect a need for a technical person at the upper management level.

These days web based services of the library are in much demand. A study by Kanamadi and Kumbar (2006), entitled, *"Web-based services expected from libraries: A case study of management institutes in Mumbai city"*, discusses the library portals and the web-based library services expected at management institutes in Mumbai City, Maharashtra State, India. The article explores the availability of institute website, importance and extent of the library details hosted on the institute's website. This survey reveals that the lack of interest of users in library website is because of the inadequate and static information being made available on it. This case study also reveals about the services users expect to access through the Internet at their convenience. Suggestions are provided at the end on how to make library portal more informative in order to attract more and more users.

A study by Baker (1999), entitled, *"The multimedia librarian in the twenty-first century: The viewpoint of a university librarian"*, indicates that academic libraries are at a crossroads, whether deciding on the pros and cons of converged services or juggling with slashed budgets in a frantic attempt to provide increasing number of services to more users. Further, the author point out that, new technology, despite offering wonderful opportunities, changes quicker than the seasons and frequently fails to perform as well as its hype. The author suggests that library professionals should regard this situation as an exciting challenge, rather than a threat. The author has also raised one important aspect, i.e., infrastructural problems posed by web. Though web development solve acute space problem with regard to books and journals – yet information technology creates its own space problems, with increased requirements for floor space simply to provide workstations.

A study by Dave (2004), entitled, *"The post-automation problems in some select libraries of Ahmedabad"*, attempts to find out various problems after automation in some select libraries of Ahmedabad. The study is a dissertation work of Krupa Dave for her MLISc course. The study had been carried out only for four libraries of Ahmedabad. The study highlighted different post automation problems faced by these libraries. This study is limited only to four libraries of Ahmedabad. To probe the study deeply, it was needed to carry out the study on a larger scale.

8. SUMMARY OF LITERATURE REVIEW

The above review of related literature reveals that, in the past, several studies on different facets of automated library system have been carried out. This includes the problems faced during the implementation process of automated systems in library. The researches that have been included here are also related with different perspectives of library automation systems like, library management software, electronic resources management, user awareness about the automated system, financial constraints in implementation of automation, human resource factors in library management and technical and technological aspects in library automation.

9. RESEARCH GAPS

The literature reviewed for the present study reflects the different facet of library automation. This includes the problems faced by the libraries before and at the time of the implementation of automated system. These are being termed as "Pre automation problems of the libraries".

The present research study which is being carried out by the researcher, focuses on the problems that are being faced by those libraries that have automated their libraries and are working with this system at least for three years. It can be observed from the above study that till now no one has worked upon this area, except a master's dissertation of four libraries.

Therefore, it is important to conduct a detailed research study on the 'Post Automation Problems'. Such a research study will help in understanding the subject in depth and it will further help the professionals to overcome the post automation problems faced by them. The present research study attempts to fill this gap.

REFERENCES

Amekuedee, J. O. (1995). Barriers to successful university library automation in Ghana with particular reference to the Balme library. *The International Information and Library Review , 27* (2), 171-181.

Amekuedee, J. O. (2005). An evaluation of library automation in some Ghanaian university libraries. *The Electronic Library , 23* (4), 442-452.

Ansari, M. A., & Amita. (2008). Awareness and use of OPACs on five Delhi libraries. *The Electronic Library , 26* (1), 111-129.

Antherjanam, S. D., & Sheeja, N. K. (28-29 February & 1 March 2008). Impact of ICT on Library and Information Science: Major Shifts and Practices in CUSAT Central Library. *6th International CALIBER-2008* (pp. 35-42). Allahabad: INFLIBNET.

Arthur, R. (2005). Evaluating the impact of the New Opportunities Fund ICTL Programme for Public Libraries in Scotland. *Library& Information News , March.*

Baker, D. (1999). The multimedia librarian in the twenty-first century: the viewpoint of a university librarian. *OCLC Systems and Services , 15* (1), 18-23.

Bansode, S. Y., & Periera, S. (2008). A Survey of Library Automation in College Libraries in Goa State, India. *Library Philosophy and Practice* , 1-7.

Bayne, P. S., & Rader, J. C. (1990). Computer-based training for library staff: A Demonstration Project Using Hypercard. *Proceedings of 5th Annual Computers in libraries '90*, (pp. 6-7).

Bergen, C. (1988). Instruments to Plague Us? – Human Factors in the Management of Library Automation. *Library Management , 9* (6), 2-55.

Bhatt, D., & Makwana, J. (2005). Library Automation: A Case Study of Parul Arogya Seva Mandal Central Library, Baroda. *51st ILA Conference, 17-20 December, 2005*, (pp. 56-64). Kurukshetra.

Bhatt, J., & others. (2005). Initiation of Automating Library Services at Smt. Hansa Mehta Library: An Excavating Experience. *Kurukshetra: 51st ILA Conference, 17-20 December, 2005*, (pp. 35-40).

Biswas, B. C., & Ghosh, B. K. (2004). Managing of electronic publishing by library and information professionals:Some problems and prospects in digital age. *IASLIC Bulletin, 49(3),* 183-190.

Booty, C. (2005). Enquiry Handling: New Ways to teach old tricks. *Information News , 4* (10), 26.

Brown, T. M., & others. (1996). West Virginia: Library Automation. *Library Hi Tech , 14* (2/3), 329-343.

Chandraiah, I. (2003). University Library Automation Scenario - A Sudy. *International Caliber 13-15 February* (pp. 72-78). Ahmedabad (India) : INFLIBNET.

Chore, N. V., & Deshmukh, A.K. (2010). In-service training for Library Professionals in the Changing Environment.

Connor, C. M. (1992). Staff Training in Libraries: The Implications of Automation. *Library Management, , 13* (6), 15-24.

Dabas, K. C., & others. (2003). Automation Scenario in University Libraries: A Study of Some Selected Libraries. *International Caliber 13-15 February* (pp. 81-93). Ahmedabad (India): INFLIBNET.

Dave, K. (2004).*The post automation problems in some select libraries of Ahmedabad.* Unpublished master's dissertation, M.S.University of Baroda, Vadodara.

Dickmann, J. (1990). Managing a large library automation project: observations based on the Surrey County Library experience. *Electronic Library and Information Systems , 24* (4), 321-331.

Dilroshan, T. L. (2005). Identification of problems faced by university libraries in the process of automation: with special reference to the libraries of Moratuwa and Colombo Universities. *Sri Lanka Journal of Librarianship and Information Management*, *1* (2), 82-98.

Drabenstott, J., & others. (1989). Truth in Automating: Case Studies in Library Automation. *Library Hi-Tech*, *7* (1), 95-111.

Evans, M. F., & Thomas, S. (2007). Implementation of an integrated information management system at the National Library of Wales. *Electronic Library and Information Systems*, *41* (4), 325-337.

Francis, S. (2002). Implementing the VTLS library management system at Tomsk State University Library: Impact on management. *Electronic library and Information Systems*, *36* (3), 166-175.

Glogoff, S. (1989). Staff Training in the Automated Library Environment: A Symposium. *Library Hi Tech*, *7* (4), 61-83.

Gorny, M., & A Jazdon, 1. 2.-2. (1997). The Implementation of information technology projects in Polish research and academic libraries in the early 1990s: questions of scope and effectiveness. *LibraryManagement*, *18* (6), 280-285.

Gowda, V., & Shivalingaiah, D. (2009). Attitude of research scholars towards usage of electronic information resources: A survey of university libraries in Karnataka. *Annals of Library and Information Studies*, *56*, 184-191.

Gupta, S. R., & Babbar, P. (2002). Need and Provision of Professional Library Management Consultancy. *Journal of Library & Information Science*, *27* (2), 142-151.

Harinarayan, N. S., & Raghavan, K. S. (2008). Retrieval Capabilities of CDS/ISIS and LibSys: a comparison. *Annals of Library and Information Studies*, *55*, 91-100.

Haslam, M., & others. (2002). The automated storage and retrieval system (ASRS) in Lied Library. *Library Hi Tech*, *20* (1), 71-89.

Hashim, L.B., & Haliza, M. (2005). *Trends and Issues in Preparing New Era Librarians and Information Professionals.* Retrieved on May8, 2009, from www.lib.usm.my/.../ICOL%202005%20Paper%203%20Laili%20Hashim%20&%20Wan%20Nor%20Haliza.pdf

Hicks, J., & Roland, K. (2005). Are your staff behind you? *Library & Information Update , 4* (5), 42-43.

Horsfall, Karen. (1991). *The Human Impact of Library Automation.* Retrieved on March 15, 2008, from web.simmons.edu/~chen/nit/NIT'92/195-hor.htm

Hyams, E. (2005). A new impetus to professional excellence. *Library & Information Update , 4* (6), 33-35.

Jeevan, V. K. (2003). In-House Library Software Development at IIT Kharagpur: Opportunities and Challenges. *International Caliber 13-15 February* (pp. 140-152). Ahmedabad (India): INFLIBNET.

Jose, B., Panda, K. C., & GiriRao, J. S. (2005). State of Automation in Major Newspaper Libraries in Delhi City: A Study. *Library Progress (International) , 25* (1), 23-35.

Kanamadi, S., & Kumbar, B. D. (2006). Web-based services expected from libraries: A case study of management institutes in Mumbai city. *Webology , 3* (2).

Khurshid, Z. (2003). A survey of the Arabian Gulf Library Automation Marketplace. *Electronic library and Information Systems , 37* (4), 226-233.

Kumbar, S. S., & Mallaiah, T. Y. (2008). Changing pattern of user expectations regarding the library catalogue as an information retrieval tool: a case study of Mangalore University. *Annals of Library and Information Studies , 55*, 7-16.

Line, B. M. (2006). Forty years of library automation: a personal reflection. *Electronic library and information systems , 40* (2), 118-122.

Mange, R., & others. (2005). Digital Preservation: A Challenge to Libraries. *Library Progress (International) , 25* (1), 43-48.

Manjunath, G. K. (2010). *Library Automation: Why and How?* Retrieved May 12, 2010, from http://www.igidr.ac.in/lib/paper1.html

Mishra, R., Kumar, R., & Tripathi, D. P. (2008). CD-ROM collection management and development of a web interface by using WINISIS/GENISIS at P K Kelkar Library, IIT Kanpur. *Annals of Library and Information Studies , 55*, 265-274.

Mitchell, V. (2003). Implementing the first library management system at MerthyrTydfil Public Libraries: an overview and impact on staff. *Electronic Library & Information Systems , 37* (2), 103-108.

Report, MLA. (2004). Workforce Development: Standalone training not enough, Competencies and Capabilities : new paradigms for workforce development in the 21st century library. *Information News,4(3),5.*

Muckolls, K. A. (2005). Change in a Small Law Library: How We Moved Our Department into the 21stCentury. *Information Outlook , 9* (4), 23-24.

Mulimila, R. T. (2000). Information Technology applications in East Africa government - owned university libraries. *Library Review , 49* (4), 86-192.

Munshi, N. M. (2003). Library Automation in Bangladesh: The Dhaka University Library Experiences. *International Caliber 13-15 February,2003* (pp. 153-165). Ahmedabad(India): INFLIBNET.

Murthy, T. A., & Cholin, V. S. (2003). Library Automation. *International Caliber 13-15 February,2003* (pp. 3-12). Ahmedabad (India): INFLIBNET.

Natarajan, M. (2005). Cyber infrastructure: An Opportunity for Education and Implications for Research Libraries. *Annals of Library and Information Studies , 52* (4), 147-153.

Nwali, L. O. (1991). Staff Development for Computerisation: An Account of AbubakarTafawaBalewa University Library, Bauchi. *Library Management , 12* (3), 13-18.

Okemwa, O. E. (1999). Managing a library automation project: the Moi University experience. *Library Management , 20* (4), 228-234.

Patel, N. R., & Zala, L. N. (2005). Digitization Project of Collections of MICA Library: A Case Study in the Context to Newspapers, Television Commercials, Dissertations and Print Ads. *ILA Bulletin , 41* (2), 5-10.

Premchand, Gohel, U., & Chandrakar, R. (2003). Retrospective conversion tool for academic libraries in India: An initiative by INFLIBNET. *International Caliber 13-15 February, 2003* (pp. 193-204). Ahmedabad: INFLIBNET.

Pushpalatha, K., & Mallaiah, T. Y. (2009). Use of information resources in chemistry: a study of Mangalore University Library. *Annals of Library and Information Studies , 56*, 175-183.

Ramakrishnegowda, K. C., & Walmiki, R. H. (2009). ICT infrastructure in university libraries of Karnataka. *Annals of Library and Information Studies , 56*, 236-241.

Ross, M., & Marmion, D. (2000). System Librarians and the client/server environment. *Library Hi Tech , 18* (2), 151-157.

Salmon, S. R. (1975). The Prospects of Library Automation Systems. *Library Automation Systems* , 235-253.

September, P. E. (1990). Automation and Academic library Management: A Case Study. *Library Review , 39* (3).

Shafique, F., & Mahmood, K. (2007). Librarian's Opinions about library software: a survey of libraries in Lahore. *The Electronic Library , 25* (6), 766-777.

Shafique, F., & Mahmood, K. (2008). Integrated Library Software: A Survey of Lahore. *Library Hi Tech News , 6*, 6-13.

Singh, J. R., Devin, M., & Raychaudhury., A. (2009). Use of internet based e-resources at Manipur University: a survey. *Annals of Library and Information Studies , 56*, 52-57.

Singh, N. (2005). Revamping Agricultural Library and Information services in India: Retrospect and Prospect. *Annals of Library and Information Studies , 52* (1), 31-36.

Singh, Y. (2003). Library Automation in Academic Libraries in India: Problems and Prospects. *International Caliber 13-15 February, 2003.* Ahmedabad (India): INFLIBNET.

Skretas, G. (2005). Factors affecting the full use of library and information management systems by library personnel. *Electronic Library and Information Systems , 39* (2), 139-146.

Stuart, J. (1990). Ownership and Access. Database and OPAC: Present and Future Opportunities for Academic Libraries. *Library Review , 39* (4).

Sujatha, H. R., & Mudhol, M. V. (2008). Use of electronic information sources at the College of Fisheries, Mangalore, India. *Annals of Library and Information Studies , 55*, 234-245.

Suku, J., & Pillai, M. G. (2005). Perspectives On ... Automation of University Libraries in Kerala :Status , Problems and Prospects. *The Journal of Academic Librarianship , 31* (2), 151-159.

Talagala, D., & Gamage, P. (2003). Library Automation in Srilanka: An Overview. *International Caliber 13-15 February, 2003* (pp. 228-238). Ahmedabad (India): INFLIBNET.

Tedd, L. A. (1996). An overview of some Estonian Libraries and their computer systems: A visitor's impressions. *Electronic library and Information Systems , 30* (3), 255-268.

Thapa, N., & Sahoo, K. C. (2005). Problems and Prospects of Automation: A Survey of Special Libraries in Bhopal. *Library Progress (International) , 25* (1), 71-83.

Uddin, M. H., Chaudhury, F. Q., & Islam, M. M. (2003). Automation Scenario of Some Leading Agricultural Libraries of Bangladesh: An Overview. *International Caliber 13-15 February, 2003* (pp. 166-177). Ahmedabad (India): INFLIBNET.

Vyas, S. D. (1997). *Library Automation and Networking in India: Problems and Prospects.* Retrieved May 12, 2010, from http://www.worlib.org/vol08no1/vyas_v08nl.shtml

Vyas, S. D. (2003). Application of Information Technology in University Libraries of Rajasthan : A Survey Report. *International Caliber 13-15 February,2003* (pp. 239-246). Ahmedabad (India): INFLIBNET.

Walmiki, R. H., Ramakrishnegowda, K. C., & Prithviraj, K. R. (2010). Awareness and use of UGC-Infonet digital library consortium by the faculty members of Karnataka State Universities. *Annals of Library and Information Studies , 57*, 33-43.

Yaacob, R. A., & Harun, M. H. (1996). Information Technology implementations in libraries and information centres in Malaysia: Impact and Pitfalls. *The Electronic Library , 14* (3), 233-242.

Yapa, N. U. (2003). Utilization of ICT for LIS with Special Reference to Sri Lanka. *International Caliber 13-15 February, 2003* (pp. 247-257). Ahmedabad (India): INFLIBNET.