Chapter – II

STUDIES ON LIBRARY AUTOMATION:
REVIEW OF LITERATURE

2.0 INTRODUCTION

It is important for any researcher to have an extension review of literature in the area of her/his work. Generally, sources of information are consulted in order to get the necessary background knowledge of the problem undertaken for the study. It is concerned with surveying a particular work related to the work under study. It is a must for any researcher to avoid duplication in his/her work. It also helps in having a wider knowledge of the topic chosen and provides the latest information for the relevant work and a comprehensive knowledge to a researcher. In order to have a thorough understanding of the library automation, literatures are being reviewed in this chapter of the work taking in to consideration various aspects of automation covering studies taken up in India and abroad as well.

2.1 PURPOSE OF LITERATURE REVIEW

The present review has been taken up with the following purposes:

- to define the limit of the study,
- to have a thorough understanding of the problem under study,
- to understand the latest developments in the field of the study so as to help in designing the study,
to make the objectives of the study more clear and concise, and

to understand and analyze previous studies and their recommendations for further research.

2.2 SCOPE AND COVERAGE OF THE REVIEW

The present review has covered literature which are related to the topic under study. Review of those studies has been divided into the following sub-sections:

(a) Automation

(b) Computerization

(c) ICT Applications

(d) Impact of ICT

(e) Software for automation

The review has covered literature published in various sources since 1980 till 2011 on various dimensions and aspects of automation as grouped above.

2.3 ARRANGEMENT

The review has been arranged under major area of research as grouped under the headings as divided by sub-sections above. Studies conducted by the researchers both in abroad and India have been taken together under the similar areas of study. The arrangement of literature has been done in chronological basis on ascending order.
2.4 STUDIES ON AUTOMATION

Automation of different types of libraries is found to be conducted by different researchers in various parts of the world as the following review shows.

Poor planning, poor design and poor implementation are the problems of automation and computerization of library information system. In this context Dwivedi (1992) in his study has identified five types of problems. The identified category of the problems are: failure of suppliers to deliver the necessary equipment, failure of suppliers to deliver the required software, inadequate service response, some machines used in library automation projects are simply poor machines, either poorly engineered or poorly built and finally software supplied may be faulty, a problem which usually gets solved one way or another, but which may fatally disrupt the time schedule or the planned budget projects of all sizes. Besides, he also mentioned about poor planning, poor design and poor implementation as the problem of automation and computerization.

In the study of Library and Information Network System, Boralyan and Ramadevi (1995) highlights the proliferation of scientific and technical literature that the world has been witnessing knowledge and information explosion during the past few decades. Emphasis the need for computer application, for automation and its implication on resources sharing. States the objectives and the technology used in resource sharing and also describe the characteristics and types of library resource network.
In his study, Henry (1997) had discussed the challenges and opportunities involved in automating library illustrating with examples of what American libraries have accomplished and what may be the word of warning for Indian libraries. The study also highlighted that Indian libraries are facing difficulties at a time when financial resources are dwindling and the costs of automated system are increasing.

Dilroshan (1998) studied the problem of selected two university library namely University of Moratuwa Library (UML) and University of Colombo Library (UML) in the process of their automation by using a survey research method. The study discussed staff issues, managerial and financial issues etc. and highlighted their most common and often encountered problems like, power failure, outdated hardware, customizing software difficulties in training the staff, etc. The same also put suggestions to overcome the problems and put recommendations for future course of action.

In the study of automation of public libraries Babu and Parammeswaran (1999) discussed application of information technology for library and information services in the context of electronic information era taking into consideration the professional staff. Application of information technology in public libraries in Tamil Nadu has been discussed in which staff opinion has been analysed and public, staff attitude towards information technology application has also been taken into account.
In a study on Library Automation and Information Networking, Radheshyam Singh (1999) highlighted the need for developing Imphal-Library-Network (Inplibnet) as a number of urban library networks in the country like DELNET, CALIBNET, BOMNET, ADINET, etc. It would be useful for resource sharing of various organization/library and checking the duplicate purchase in the city.

Discussing the need for automation in libraries Mittal (2001) in his study gave certain points such as growth rate of information, difficulty faced in updating information due to voluminous increase, rise in the degree of specialization, resource sharing, high speed accuracy, efficiency of work. The same also has emphasised to change the old concept of libraries through automation.

Discussing a modular library automation for next millennium, Sharma, Zeidi, and Srivastava (2001) put up the sole purpose of the library and information centres as to organise and provide easy access to the information, with maximum efficiency in the use of resources, i.e. staff, space, money, material, etc. The package LIBNET has been discussed in detail which encompasses various library management facets: Book manager, Budgeting and Forecasting. It also emphasised that both technical and professional people need to work in close harmony, to insure proper functioning in the management of services.
Discussing the process of automating the library, functions using the modern technology like application of computers, tele-communications, computer software, micro forms of media, human interface, Barman (2003), made a comparative study of available library software packages. The study highlighted that the most important works during library automation is to build up a backbone database of library collections. The comparative study has found that the SOUL would be the only solution for library automation, which will provide a lot in changing the automation environment of Dibrugarh University Library.

Jitender Singh (2003) discussed a comprehensive understanding regarding the process of library automation. The same highlighted the core reasons for automation, and provided basic points to be considered during the process of automation and discussed the issue related with its future maintenance and up-gradation management. The study suggested a deep and proper analysis and study, planning, monitoring, feedback and further discussion to draw new conclusions.

While studying the status of Library Automation of Manipur University Library under INFLIBNET Programme, Joteen Singh (2003) highlighted the INFLIBNET section of the Library in which inputs were noted, services given by the section were examined with tables and highlighted positive aspects. The study suggested for a full-fledged research on INFLIBNET section of Manipur University.
A study was conducted by Kumar (2003) regarding automation in five university libraries of Haryana. The study had revealed that the automation activities were initiated in the university libraries a decade ago but none of them shifted completely over to the automated system. The finding shows that interaction between staff should be established and more infrastructure are needed in majority of the libraries.

In a study Nath (2003) highlighted information age, application of modern gadgets in automating library to provide specific and exhaustive information at a greater speed than ever. The same also discussed various steps taken up in the automation process of Hem Baruah Library, Assam. The advantages and disadvantages of LAN have also been discussed in detail in the study. Significance of SOUL package, its application and services explored in the library have been highlighted by the researcher.

In another study, Pandey (2003) discussed some of the experiences and problems faced by Kamala Nehru College Library in its Automation. The same has explored that the college was in need of more hardware like micro computer, selection of right application software and was facing financial problem. The study rightly pointed out that software programmes have to be considered as tools that help to solve problems rather than as ‘solution’ to problems. Different software like CDS/ISIS, LibSys, Techlib+Oasis, Suchika, TLMS, NETLIB etc. were also discussed and compared to find out suitable one for the library automation.
Sameni and Muhammad (2003) discussed the initiatives taken up by the University in Bangladesh to automate the library with the help of customized library software “library management system”. Four modules of software are discussed in detail in the study. It also highlighted the situation of academic libraries and problems faced in automating the libraries. The study put suggestions to the UGC of Bangladesh to follow the initiative taken up by INFLIBNET under UGC of India towards automating academic library system.

In a case study of automation of North-Eastern Hill University Library Kumar (2004) discussed the work of automation in Tura campus library. The study highlighted about the selection of hardware, software and training of library staff for the automation of a library. It also evaluated automation work of the Library and enumerated various problems faced by the library professionals during automation.

In a study on Library Automation in India, Moorthy (2004) analysed the growth of computers in the country, computerization and its beginning, liberalized economic policy of the government and application of information technology and cited growth of computers industry during the Eight Year Plan (1992-97. The study highlighted development of library automation software in India, taking into consideration the activities of the Indian National Scientific Documentation Centre (INSDOC) as one of the pioneer institutions in the field of library automation, since 1964. The study also discussed special factors, which were able to undertake library automation and some library software packages available in India.
In a case study carried out by Ramana (2004) on automation and networking of central library of CSJM University had shown the scenario of automation of libraries, hardware and support used for library automation, staff strength and software used (i.e. SOUL) in the library.

In the study of library automation and networking for managing library and information services Sinha and Satpathy (2004) discussed and highlighted the age of pre computer before 1950-1960 in which library services were done manually. The study considered the twentieth century as sweeping changes in the world of information technology (IT) and communication that enhanced the productivity of information work and services. The study also highlighted various factors of using information technology in libraries.

In the study of Problems and Prospects of Automation with Reference to Special Libraries in Jabalpur, Thapa and Sahoo (2004) analysed various problems faced by the authorities and the staff during the process of automation of the library. The study also analysed prospects that automation has brought to the special libraries in the District.

Chakraborty and Maisal (2005) in their study have revealed that library automation and networking do not depend only on the capacity of the computer or the networking never or even the software used since they are only tools. Much were found to depend on the quality of manpower of the libraries and the perfection of the work they do.
In the planning and management for library automation Sahu, Nageswaran and Singh (2005) described the basic elements of managing the automation planning process in primarily special and R & D libraries. They provided a detailed overview of a planning process designed to help to make decisions about library automation. The study also suggested that a library should conduct a major re-examination of its plan every five years, and review the same on an annual basis.

Highlighting INFLIBNET and its activities in Library automation Satyanarayana (2005) discussed the objectives and activities of INFLIBNET in software development, human resource development, development of union database, network facilities, bibliographic standards, university information system, publication and services, etc. and various information services initiated by the INFLIBNET.

Sen (2005) studied on automation of college library which considered that entire library automation programme requires judicious decision making at various stages. Such decision may be related to ‘do it’ or ‘buy it’ services, selection of hardware and software platform, application software, types of services to be rendered, etc.

While conducting a national survey of the status of school library automation in Malaysian Chinese secondary schools, Tee Lay (2005) revealed that the Malaysian Chinese secondary school libraries started automation during 1990s and have been actively involved in library automation projects since 2000.
It also identified important factors in determining the system used and areas, need for future planning, initiatives in implementing library automation, etc.

Looking back to the history of automation in special libraries in India, Thapa and Sahoo (2005) in a study pointed out some of the organizations as pioneers and their efforts towards automation in special libraries. Some such libraries as covered in the study include – 42 national research laboratories under CSIR, IASLIC, National Science Library, INSDOC, Bhabha Atomic Research Centre, Tata Institute of Fundamental Research laboratory, development of National Information Systems in India in late 1970s and 1980. The development of artificial intelligence (AI) in the late 1990s is also considered as a pioneer in the history of automating special libraries.

Barman and Singh (2007) in a study has focused on the manpower aspects of library automation in the college libraries of Assam. The status of automation has been discussed along with the library survey, library software, and library services.

With the objective of knowing software package being used, services and functions, to identify automation and networked services being provided Seema (2007) conducted a case study at the technical deemed university libraries in North India, which has revealed that five out of six libraries use LibSys, all the libraries providing searching facility to their collections through OPAC, three providing journals holding lists, five having web sites, four offering internet
browsing, three libraries linking to other useful sites for easy access to information by the user community. The study also highlighted that all the libraries are looking to maximize the benefits of automation by spreading computer use to as many aspects of library activities as possible by taking advantage of development in computer hardware, software and telecommunications.

A survey has been conducted by Bansode and Peiera (2008) on library automation in college libraries in Goa to find out libraries that have undertaken automation, areas of automation, whether sufficient staff is available to carry out automation and barriers to automation faced by the libraries. The study have thrown the light that majority of the college libraries have no qualified librarians as per UGC guidelines. Of the 23 libraries with automation, as the findings show, only one has specialized staff in ICT. The study also suggested that library staff should be sent to training courses to upgrade their IT skills, so that they can become competent to automate their libraries.

Shivpal Gautam and Ritu (2008) studied open source solutions and their impact on areas of information, knowledge and content management. It highlighted library community the concerned areas in library automation, and discussed about automation product such as commercial, not for profit and open source. The study also highlighted features of library automation software, which are mostly in practice by libraries i.e., Libsys, SOUL and open source system KOHA.
Ahmad (2009) studied on Library Automation of Al-Barkaat Institute of Management Studies, Aligarh with the help of Alice for Window (AFW) Library Software. The study found that ABIMS Library was the first fully automated library among all self financing Institutes available in Aligarh, which has provided, Online services to its users through Inter Library LAN System in which users can access the library database from the Online Public Access (OPAC) and also help to library staff to provide good reference service to staff and students.

The concept of automation has changed the scenario of library management. In this regard, discussing library automation, its problems and prospects Bhanja and Barik (2009) highlighted in a study that success of library automation mostly depend upon nature of softwares used for the purpose and emphasis on selection of good library software for automation.

Ibohal Singh and Giridhari Singh (2009) in a study discussed the library automation in public library system in North East India. Based on the findings of a sponsored research project, the study highlighted Public Library System, ICT, Scope and Methodology adopted and emphasized background information, services, existence of library committee and automation status of the libraries in the region.

The status of Automation of the Central Library, IIT Guwahati has been assessed by Sarma and Jyotirekha (2009). The study discussed the status of automation and networking, hardwares used in the library, services and facilities provided. The same has shown that the library was fully automated using Libsys
software package. The study also revealed that IIT Guwahati Library provides excellent service to its user and it could be considered as one of the best libraries in North East India.

In carrying out a pilot survey in ten special libraries in Manipur assessing their automation status, Vaiphei and Bembem (2009) analysed the problems and prospects of automation in Manipur. The study revealed that most of the special libraries in Manipur are not automated due to various problems like lack of separate building, untrained staff, no qualified librarian and paucity of funds for library, etc.

Information has been regarded as a national resource which affects all human activities. Information is power and indispensable. In this context, Bhuyan (2011) in a study discussed about the automation and networking of public libraries in India with special reference to two districts of Assam. The study shown that due to financial inadequacy, lack of proper administrative structure within the library, lack of professionally trained staff and non-availability of mechanical devices, the public libraries are limiting themselves to the traditional and pedestrian functions of the library.

In assessing the present status of automation of public libraries in Assam, Das (2011) found that infrastructure and the service of the public libraries in Assam are not modernized but somehow traditional services are provided to community and public library automation is in its initial stage though its process have been started during 2004-2005.
Jayaprakash and Balasubramani (2011) in their study have emphasised that automation of library operations and services are essential for efficient functioning of the library and saving the library users time. In this purview, the study has investigated the Automation in University libraries in Tamil Nadu. It discussed automation, its need and application in university Libraries. The study explained the various problems faced by authorities and the staff during the process of automation. The tool adopted to conduct the study was a well structured questionnaire.

Joshi and Nikose (2011) discussing problems and prospects in automation and networking in libraries in India, highlighted some of the scientific and technical libraries working and leading in library automation under such R&D institutions like CSIR, ICMR, ICAR AND DRDO. The study also described networking as the linkage of working procedures for the exchange of information resources and revealed some of the barriers of networking as higher education authorities still have a dilemma as to whether or not resource sharing is possible through networking. Potentialities of INFLIBNET, as the study shows, are still not known to many academic libraries and UGC fails to provide appropriate funds to academic libraries for computer software and hardware.

A study was carried out to assess the automation status of district library Kamrup by Medhi and Deka (2011) which has revealed that the library does not use computer for automation of the library services. The study also found that the library was still giving traditional based services to the users.
2.5 STUDIES ON COMPUTERISATION

Computerization of different types of libraries has been found as an area of research conducted by different researchers. The following section shows the studies undertaken in this aspect.

Kumar (1980) in his study highlighted reasons of use of computers in libraries and information center and found that computer has been used to serve large users and to serve volume and variety of literature to be handled by librarians. He also put suggestions that the sooner the libraries get involved in automation better it will be.

Computers make possible better utilization of personnel and wider and more flexible range of service. Ambia (1992) in this connection discussed in detail the application of computers to library and information services, various aspects of library and information services which can be computerised or mechanized or automated.

In a study of computerization of library, Dominic and Nirmala (2002) explained the need for computerization of library and stated the areas of computer applications in the library. In the same, KIT Library computerization has been discussed. Application of softwares, their various kinds and features and functions of LIBASOFT have also been studied.

Success of the library depends upon the satisfaction of its user community. User satisfaction depends on receiving right information at an
appropriate time. Veerajaneyulu and Uma (2004) discussed computerization of acquisition system with SOUL software and highlighted that to carry out various operations in a library effectively there is a need for automation. The study considered that SOUL software can provide total solution for library automation and faster service to deliver right kind of information to the users.

Lihitkar and Rajyalakshimi (2005) studied the need for library automation giving special reference to Nagpur University Library and its uses perception by using questionnaire and interview methods showing tables and charts of different department of university. The study highlighted UGC INFLIBNET providing grant for library automation.

Omrin and Olayinka (2007) in a study seek to find out the advent of computer on libraries and information centers. Majority of the public libraries in Nigeria are found to perform their operations manually and have no requisite technologies to easily access information resources and services most especially on the internet, on-line data bases and CD ROM databases and lack of skilled staff in computerization was also observed. Computerization has a lot of impact on library and information centers since it helps them perform better than when their operations are manually carried out.

Imchen (2009) in his study, discussed computer application in libraries of Nagaland and also made an attempt of bringing awareness among the librarian the importance of computer application in libraries in the state. Personal
interview and random sampling technique, and observation method have been used successfully in his study.

2.6 STUDIES ON ICT APPLICATION

Application of Information and Communication Technology in different types of libraries is found to be conducted by researchers in certain studies as understand from the following.

Preparing a vision for European library, study of library cooperation based on information technology networks has been conducted by Mortien (1991). The study had shown that information technology has opened up new possibilities in the recent years and promised to continue to do so in future. The same also discussed the professional dreams and interest in libraries that has emerged in the European community and new patterns in cooperation among European libraries. It also suggested to be cautious in wasting money on unsuitable programme.

Ochongwu (1994) studied the ways and extents of the application of modern information technologies to the management of library operations in Nigeria. Application of technology and current trends of Library automation, resource sharing, preservation of library materials, automatic extraction of information from texts, etc. have been discussed in detail. More emphasis has been given on automatic transmission of texts, problems of application and future prospects, etc. in the study.
In a study Ibohal Singh (1996) has discussed about various issues associated with the automation of libraries. Impact of computer in library management and automation have been emphasized upon covering aspects on areas of automation, housekeeping operations, other computer enabled services, planning for library automation, etc. The study also minutely considered the important issues to be taken into account while planning for the library automation.

Yadagiri (1999) in a study discussed briefly the application of information technology (IT) in the creation of database, housekeeping services such as circulation desk, OPAC, etc. and introduction of latest IT infrastructure, viz. bar coding technology, digital graphic printer, multimedia system, CD-ROM, audio visual media, etc. in the Regional Engineering College Library, Warangal.

In a study of application of IT in University library services of Jabalpur (Madhya Pradesh), Chopra and Mukherji (2000) highlighted the status of networking among academic libraries of Jabalpur before and after 1995. The need, importance and usefulness of Local Area Network in and within the university and other academic libraries have also been considered in the study.

Agila (2001) in his study of application of Information technology in modern academic library has given due importance to information technology and proved that Information Technology as very applicable and useful in library for accessing information effectively.
Library Professionals must get ready to gear up themselves to meet the challenges concerning with effective and efficient methods of using new technologies in the library. The study made by Dhiman (2001) has discussed the changing role of library professionals in the Era of IT and suggested various steps to be taken to meet the challenges. The study also cited that it is a bitter true that library professionals would certainly lag behind or even be thrown out if they would not accept the challenges of the changing scenario of information services.

In their study, Kundu and Gupta (2002) revealed that a society that marches with the pace of technological changes survive and do not get extinct. It further described information technology as the sole mean to cope up with information explosion in the 21st century.

While studying the information technology in user education, Mange (2002) discussed the changes due to advent of information technology in library that has necessitated changes in the user education. Information technology has a great impact on user education particularly in the methods and techniques such as lectures, library tour, printed booklet, guides, seminars and workshops, orientation, and display audio-visual.

Ibohal Singh and Khomdon Singh (2003) in a study highlighted scenario of higher education in the North East India and discussed the application of IT in the libraries with special reference to Central Agricultural University and Manipur University. The observations made and general findings of the study
revealed that IT application in the North East Libraries are not very much encouraging in the state.

Society has positive response if the libraries provide user services in a most convenient way. Studying the impediments in the use of Information Technology in Indian Libraries, Ramesh (2003) discussed various points that lead to impediments like physical resource, human resource, inertia, culture, motivation and management.

In another study, Afonso (2004) discussed the impact of new information technology, implication of library automation and essential factor for computerization. The study also discussed the importance of computerization of public libraries. It has also explained in detail the essential factors involved in the scope of computerization of different library functions using advanced information technology.

Information and Communication Technology (ICT) has a very vast meaning, it has been dominating each and every aspect of this universe. Chauhan and Murthy (2004) in a study discussed ICT and its impact on information management and revealed that due to ICT the world has become a global village and the other side of ICT is its acceleration of information explosion, which enables to manage the digital contents in a systematic order for use. Discussing digital library, Greenstone digital library, Dspace, UGC-Infonet network, the study also suggested the library professionals to wake up and gear up to meet the challenges of digital environment.
The Indian Space Research Organisation (ISRO) has pursued the utilization of space technology for education and development. Development and Education Communication Unit (DECU) of ISRO Ahmedabad has been a nodal agency for several of the ISRO communication projects as Manihar Singh (2004) discussed in a study in which he Gyan Darshan -1 (GD-1), GD-2, GD-4 and other educational satellite communications like EDUSAT, C and Ku Band, etc. have played important roles.

A data application is an implementation of data mining technology that solves a specific business or research problem. This has been revealed in a study taken up by Prakash and Umesh (2004). The study discussed reasons for the growth of data mining, stages of the data mining process and five major elements of data mining and its application in library and information service. The same also gave an overview on data sources and possible applications of data mining techniques in the library.

In a study Veeranjaneyulu and Narasimhulu (2004) highlighted that computer applications in the field of Library and Information Science has been a major factor attracting the attention of the Information Professionals throughout the world. The study also discussed the application of computers to agricultural libraries, information technology infrastructure, information technology application in ANGRU Libraries, IT facilities in the Libraries.

Kannappanavar (2005) in a study assessed the hardware and software facilities available in Engineering College Libraries. The study found only two
colleges having computer facilities and one developing its own library software. Structured questionnaire was used in the study and data were shown in table. The impact of IT application has also been discussed. The study also suggested for allotting special grant for further improvement of the library.

Establishing computer-aided and internet connected rural knowledge centers will help trigger a knowledge revolution in agriculture and will lead to an efficient and eco-sensitive precision farming movement. The study of Veeranjaneyulu (2005) is a new dimension in this perspective that highlighted information technology as a medium for agricultural information transfer. It also studied leveraging information technology for agriculture, described internet in technology transfer and role of internet in the transfer of agricultural technology.

ICT infrastructure is an important resource of modern library or information centre. In the study of ICT Infrastructure in Special Libraries in Kerela, Mohamed (2006) has revealed that the libraries of Kerala apply ICT for providing efficient services. The investigation also shows that majority of the special libraries have basic hardware facilities like servers, computers, printers, barcode printer, and barcode scanner, etc.

Information centres and libraries of biomedical institutions play an important role in providing information services to their users. The study conducted by Nath (2006) towards this perspective covered 126 biomedical institutions using questionnaire method. The investigation indicated that existing communication technology facilities in biomedical ICLs have drastically
improved during 2004-05, in comparison with 1994-95 and 1997-98. The availability of communication technologies also grew from 55.56% in 1994-95 to 100% in 2004-05 in the institutions covered in the survey.

The people in rural and tribal areas of our country are greatly handicapped because of the culture of poverty as revealed by Sonal and Saroja (2006) in their study of information technology and rural library. The study has also revealed that remote areas still live in darkness and isolation what to speak of advances in technology. They suggested that the need of the day is to provide basic amenities which are pre requisite to any technological development like electrification, telephone facilities, transport facilities, etc.

In the study of information technology- past- present and future, Kumar (2007) pointed out the major components of information technology like computer technology, communication technology, multimedia technology, optical technology and barcode technology in detail. The study also highlighted origin and development of information technology and discussed present trends of information technology and its impact in the society.

College libraries play an important role in keeping pace with modern development in information technology and information service to the student, as Sinha and Bhattacharjee (2007) studied. The study concluded that the status of computerization of library housekeeping operations and computer based library services of college libraries of Southern Assam was in nascent stage. Only few
colleges, which are best colleges affiliated to Assam University, Silchar have started implementing project of automation and networking their college libraries which serve of the students more better. The study suggested that Government of Assam and UGC should come forward to provide substantial financial assistance to the colleges located in the remote areas of South Assam, which is popularly known as Barak Valley to start with modernization of their college libraries and services so as to bring these colleges at par with the college libraries located in other parts of India.

ICT in fact encompasses any medium to record information (magnetic disk/ tape, optical disks (CD/DVD), flash memory etc. and arguably also paper records); technology for broadcasting information- radio, television, and technology for communicating through voice and sound or images- microphone, camera, loudspeaker, and telephone to cellular phone. Amudha and Lawrence (2009) in this regard, giving details of the ICT access in India and world discussed country-wise users ranking, e-readiness of different countries and public-private partnership in developing ICT.

ICT can be used to support learning in a range of contexts that take place in “an environment of high expectations” so, the future technologies can be utilized in the field of education. Antony and Jasmine (2009) in this context, have revealed the need of ICT and discussed the basics of ICT technology “click and explore” or “just log on to the miracle’s the keyword of exploring in to the
ICT technologies. The study also highlighted terminologies like email, weblog or a Blog, podcast, etc.

Connectivity in rural area is a big issue for development. The face of Indian agriculture can be transformed by a well conceived deployment of Information technology. In this context, Babu and Devipriya (2009) discussed various keys for making ICT rural friendly that ICT should be used as a vehicle for imparting market driven skills through the pedagogic methodology of learning by doing.

Using a semi-structured Questionnaire, Birjit, Ibohal Singh and Madhuri Devi (2009) studied ICT applications in Libraries in Manipur. The over-all scenario of ICT application in 48 selected various types of libraries in the state have been discussed. It analysed the staff component and level of training, collection development, status of the libraries, status of ICT application, etc.

Attempting to highlight the overall scenario of ICT application in KC Das Commerce College Library, Deka (2009) studied the nature and development of the library, automation process applied like computerization, barcode technology and Local Area Network, etc. The study found the library as one of the best college libraries for initiating library automation in Assam.

Libraries and Information centres have been employing ICT and electronic information resources and delivering services to satisfy the diverse information needs of their users. Gupta (2009) in a study investigated the views
of the users towards e-resources provided by CSL library. The finding of the study have shown that most of the users are using computer daily and revealed that CDRL library uses LINUX Windows NT and Windows 98/2000/XP operating system for networking purpose which are useful in automating the library.

Theological College Library plays an important role in providing overall library and information services to the students, teachers, researchers and society. **Haominthang and Madhuri Devi (2009)** in a study discussed the status of ICT application in theological college libraries in Manipur. Impact of ICT and problems of ICT application also have been analysed. The study suggested certain points to overcome problems of ICT application in the library.

ICT and information resources have become increasingly important to the academic and R & D Community for education and research studies in their field of interest towards organizational development. **Kasirao and Santhakumar (2009)** in their study stressed to develop and maintain the ICT based information products and services, access facilities in information/documentation centers towards organizational development, role of information scientists on information products and services in knowledge management in ICT Era, and planning strategies towards the effective use of information products and services.

In a study, **Murugan and Lawrence (2009)** discussed ICT as the modern science of gathering, storing, manipulating, processing and communicating the desired types of information in a specific environment. The same also considered
ICT for automation leading to a tremendous revolution that has taken place in the last decade taking into account its advantages and disadvantages.

Highlighting the overall idea regarding ICT applications in libraries and information centres in the North East India, Panigrahi (2009) discussed the need and importance of library services in automated environment. His study also discussed the influence LICs to automate the works and services of the libraries. The same has also recommended to promote open source software in large scale in these libraries and information centres.

Sivasankari Thilagavathy and Nithyanandam (2009) studied the status of information and communication technology usage in North, West and Central Chennai public libraries selecting 10 public libraries. The focus given in the study includes hardware and software application, their automation status and barriers to the usage of ICTs.

The ongoing dynamism between librarians and information technology will lead to new roles for libraries as shown by Stephen and Lawrence (2009) in their study on the role of ICT in the development of libraries like, electronic communication development, new technology development, electromagnetic security systems, transitions in the careers of librarian, and virtual library, etc.

An Empirical Study on the implementation ICT in Academic Library with reference to Engineering College Library has been done by Sundarajan (2009) emphasising upon the usage ratio of the library source, sophisticated user
environment, drastic change in library usage due to implementation of ICT in Academic library. The study revealed that technology changes bring the changes in the library activities and usages. It also put suggestions for updating facilities which is a need in modern society. Modernization and ICT are inevitable to the academic libraries to attract the user and enhance the status, the study further established.

The use of ICT has been examined by Kumar and Biradar (2010) in 31 colleges libraries in Karnataka, by investigating the ICT infrastructure, current status of library automation, barriers to implementation of library automation and also librarians attitudes towards the use of ICT.

Mondal and Bandyopadhyay (2010) examined the situation of IT application and related manpower problems in government-aided general degree college libraries of Burdwan Sadar (North and South), West Bengal.

ICT is changing the work of public libraries and information centers, as the study of Chinasamy and Atoring (2011) have shown. The same discussed what ICT development is? It highlighted ICT based public library activities such as data processing, circulation, cataloguing, bibliography, prepared in house database and also public library services through ICT: CD-ROM searching, online networking, photocopying, on-line information service, news clipping scanning service, database searching service and audio-visual service, etc. The study also suggested that all must help develop ICT –based libraries to meet the changing demands of the users.
ICT has made remarkable revolution with the new models in library services as described by Rimai (2011) in her study. According to the study, ICT holds the key to the success of modernizing information services. The study also dwelt on the significance of ICT in public libraries and information centers. Essential ICT infrastructures on public libraries and information centers have been identified by the study as Hardware infrastructure, Network infrastructure, collection infrastructure, service infrastructure, manpower infrastructure. The study also highlighted various problems in implementation of ICT in public libraries and information centers.

In the study of how effectively ICT is being used in college libraries, Thakuria and Borthakur (2011) discussed the existing scenario of ICT application in the college libraries of Jorhat and Sonitpur. The study assessed the status of ICT application in college libraries, hardware and software, automation status and use of software of the said College Libraries of the area.

Dwumfuo and Linda (2012) carried out a research to assess the utilization of information resources by parliamentarians in Ghana to find out information need and use, what they perceive as information, the reasons for acquiring information, awareness and extend of usage of information and ICT resources available. The study revealed that the library provides relevant information services to the parliamentarians. However, they do not patronize the library as expected, due to their purported busy schedules. It also revealed that some members of parliament lack adequate IT skills and therefore must be given some ICT training to enable them access electronic resources more efficiently.
The study also recommended that some information may be required in their original forms; some other forms should be repackaged to suit the exact need of the legislators to avoid irrelevances.

Implementation of information and communication technology in the library depends largely on the librarian’s attitude in this digital age. The truth of the same has been shown by Shahnaz (2012) in a study carried out on the “use of information and communication technology in collection development in scientific and research institute libraries in Iran”. The study has revealed that internet/intranet was the most important source through which the users become aware of modern information technologies used in the library. It also shows that most of the librarians feel ICT application affects the collection development of library. The study suggested that developing countries should consider training for librarian who does not have knowledge of ICT in order to remove the fear and anxiety hindering them from developing good attitude towards the use of ICT in the libraries.

2.7 STUDIES ON IMPACT OF ICT

Impact of Information and Communication Technology (ICT) on different types of libraries has been studied by a few scholars. The following review has given us certain aspects on it.

Information technologies have provided a powerful tool to the libraries/information centers for effective management of library resources and
information services to meet the diversified needs of the users. **Saxena and Mehta (1990)** in their study discussed the impact of new developments in information technologies on libraries/information professionals in the libraries/information centre management that different modern information technologies are available for different purposes. It also discussed the role and responsibilities of information professionals that have been changed due to impact of IT and highlighted role of system analyst that has become a very useful tool in the library/information system management particularly in the computerized information system.

Twenty first century is expected to change the entire scenario of information science. The present information age is going to face much more challenges due to rapid technological advancements which will create new wave of opportunities for using information virtually in all human pursuits. **OJha and Sharma (2003)** in their study discussed the impact of information technology on libraries and shown the changing scenario, use of computer, advances in information technology, etc.

Rural population requires at least some of the tools of the information age to take advantage of knowledge. Intensive techniques involved in sustainable crop and animal husbandry can be used to get better value added for their product. **Ariefa (2009)** in his study discussed the overall impact of information and communication technology on rural development and also highlighted various ICT gadgets like wireless telephone, local cable television, direct
broadcast satellite, community technology centers etc. and their impact on rural development.

**Bembem and Vaiphei (2009)** conducted a survey on the access to digital information resources by social science research scholars of Manipur University by using a questionnaire distributed to 100 scholars in 7 Departments of the University. The paper analysed about the skills and knowledge of the digital information resources of the research scholars and how they access to such resources. The ICT infrastructure available in the libraries, as the survey shows, has a great impact on the access to such resources.

In the study of Impact of Information and Communication Technology on Libraries and Library Professionals in Aurangabad City, **Shakuntala, Veena and Shaista (2009)** discussed changes brought by information and communication technology. The study also highlighted status of library Automation in Aurangabad with special reference to Babasaheb Ambedkar Marathwada University. Usage of library software, changing scenario of Aurangabad Libraries with the use of ICT, changing role of librarian, problems of automation and benefit of automation and impact on the mission of library and library professionals were some of the important major issues discussed in the study.

### 2.8 STUDIES ON SOFTWARE FOR AUTOMATION

Concerning Automation Software used in different types of libraries, some researchers have conducted studies as the following review shows.
Francis (1998) discussed standard requirements of library software in Indian context and gave a broad guideline for the same. As the study reveals, standard software should be issued and also suggested to establish a constant mechanism to make aware the library professionals about the development in the field of issuing of guidelines for standard library software and evaluation of the software by a software evaluation committee at national level.

In a study, Misra (1999) discussed and analyzed library software and its selection by identifying key areas of the functions and activities of the library to be computerized. It also emphasised to sort out various types of services or works as the functions and procedures of one section are entirely different from other section though closely related and combined efforts lead towards the better library service. Guidelines for appropriate library software have also been defined in the study. It has been stressed that clear vision of library’s aims, objectives and requirements is necessary to give utmost important guidelines which should be treated as not negotiable requirements of the library during evaluation of different library software packages.

Rao and Sainul (1999) in a study compared the features of Library Automation Software which gives an ample opportunity for the LIS professionals and planners to have an automated library system with the use of an appropriate software.

Husian and Ansari (2007) discussed the salient features of Cataloguing Module of three automation software packages, namely, Alice for Windows, Libsys and Virtua and their acceptability in a developing nation. This study also
emphasized on the introduction of computers in libraries as it immensely enhanced the effectiveness of library services including organization and retrieval.

Mullah (2010) carried out a survey of engineering college libraries that have computerized their operations and services. The survey provided an implicit view of the professional experiences of the engineering college librarian in computerizing their housekeeping operations.

2.9 CONCLUSION

The review shows that library automation is an important area of research in Library and Information Science. The advent of IT or ICT has given impetus to automate existing library systems around the world. The technology has successfully been used in modernizing the housekeeping operations, ICT has also enabled to provide services in automated environment. In the field of library automation, researchers are found to carry out studies on various perspectives of the issue. Studies carried out by a number of scholars around the world on various aspects of library automation have thrown us many clues on the issue. The review has also indicated that in the study of library automation, there are a number of parameters to be dealt with. While proper planning has necessitated the automation for the libraries, interests and commitments of the authorities concerned, the skills of the library professionals to adopt the new system and their attitude towards the powers are also very much required. Infrastructure development, human resource development, selection of hardware and software
requirements, areas of the library operations and functions to be automated, financial provisions, etc. are some of the key issues to be taken care of, for automating the libraries, as the review shows. Various problems in automating library systems and prospects for the same have also been explored by the researchers. Use of different methods and techniques are also observed by different researchers in their studies, which has enabled the investigator to adopt most appropriate and feasible ones for the present study. In fact, the one hundred articles collected from various sources for the present review have given us ample opportunity to understand various issues associated with automation of library and information system. This helps the investigator to understand clearly on various aspects covered in the present study.

References


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