CHAPTER – 4

LIBRARY AUTOMATION

Modern automotive technologies are fast developing since its origin by the middle of 19th century. Libraries were one of the first institutions to embrace automotive technologies. The technologies adopted in the libraries since then are fast changing according to the problems and need of the libraries. Libraries had to adopt new technologies to suit the constantly changing environment around it. As a growing organism it had to deal with an exponential rise in information resources. At the same time the demands for more and more precise information from the library users has increased. As obvious necessity libraries thus had to go for automation to make library services efficient to its library clientele. With the invention of computer and advancement in communication technologies the automation of libraries became much easier and faster. The results were quite visible. Libraries now can serve more and more users around the world in a 24 x 7 hour basis. Many more new technologies are fast emerging and libraries and their custodians’ needs to be vigilant to embrace them for betterment of library services.

4.1 What is library automation?

In simple terms automation is the process of doing things or getting some job done with the help of machines. Automation was first introduced in the factories for mass production of goods. This practice came into extensive use since the World War II. Automation was quite useful as it reduced human labour, reduced cost and saved a lot of time as jobs could be done much quickly. Slowly the use of automation spread into many different fields and not restricted to factories only. Libraries were one of the very beginners to use automation.

According to the Encyclopaedia of Library and Information Science edited by Miriam A. Drake (2005), “Automation is the technology concerned with a design and development of the process and systems that minimizes the necessity of human intervention in their operation.”

Swihart & Hefley (1973) define the term library automation as “library automation refers to the processing of certain routine clerical function in the library with the assistance of computer or other mechanized or semi-automatic equipment”.

33
As computer technology became more advanced and affordable the pace of library automation gained momentum. Then, came the revolution in communication technology and storage technology. Thus Information Technology (IT) revolutionized the automation scenario in the libraries.

4.2 Developments in Library Automation:

The first experiments with computers for library applications occurred in the 1950s. The earliest use of computers focused on their ability to process data efficiently, but by the end of the decade the computer's equally useful abilities to store, organize, and retrieve information efficiently were recognized as particularly appropriate for libraries. The 1950s period of library automation, although interesting, had little direct impact on the lives on competencies of most librarians and staff.

During the 1960s automation became a reality for many libraries, albeit the largest and best supported institutions, as specific areas of library operations incorporated discrete automation elements. Some significant developments during this period were- Launch of major governmental databases like Agricola, ERIC (Education Resources Information Center), and Medline; the establishment of OCLC (Ohio College Library Center); and the creation of the MARC (Machine Readable Cataloguing) record format by the Library of Congress. The computers used in these early automation efforts were offline, batch-processing systems, typically using punch cards for data entry. Typical library staff skills required during this time were mastering typewriting skills on keyboards and operating punch card machines.

The decade of 1970s saw major developments in computer technology such as online "time-sharing" systems and minicomputers. In the libraries, automation spread to major areas of library functions including: acquisitions, cataloguing, circulation, and bibliographic database searching. Although automation efforts at the beginning were initiated by laboratories and universities but during later part saw the emergence of automation vendors like Innovative Interface, and Dialog search services. Library staff competencies during this period were limited to their ability to follow step-by-step procedures to use computerized devices, ability to navigate choices on a terminal, knowledge of the MARC format, ability to input records into OCLC using terminal and modern technologies, and searching bibliographic databases using specialized commands, modern protocols, and Boolean logic.

During 1980s automation in individual section of the libraries became more consolidated. With the proliferation Library System vendors, the inhouse development of library systems were replaced by those developed by library vendors like NOTIS and VTLS. This period saw the introduction of personal computers in library and automated public access catalogues were first available. Use of compact disc (CD) databases on PCs and (and Macs) began to replace paper periodical indexes. Staff and librarian competencies during this period focused on becoming expert in the function-specific technology and dedicated hardware in the individual's particular department. Reference
librarians needed to understand how to search new computer database interfaces and how to teach these skills to users. The systems librarian had to know basic system maintenance, troubleshooting and configuration tasks. Library staffs in other areas of library operations were not expected to directly control or support technology in their areas beyond the basic user level.

1990s saw the considerable advancement in network technology and further ease of use of personal computer technology and its visible impact on libraries with growth of network based library cooperation and application of internet technology. Some of the skills required by the library staff during this period are- Working with different modules of ILS, Knowledge of PC technology, basics of Windows operating system, Word processing and other office applications, E-mail as a method of communication; few began to develop skills in creating Web pages, Interlibrary loan and searching online bibliographic databases.

The period of 2000s saw the explosive growth in digital resources, integration of systems, and development web technology. Besides the ILS some new products including link resolvers, metasearch engines, and tagging, focussed on improving users' success in finding relevant information are used. The use of open source application in library including ILS applications, institutional repositories, and infrastructure components (e.g., Apache web server, Linux operating software) also began. During this period library manpower is finding difficult to cope with the breath-taking speed of technological development. Although librarians and the library staff is taking this challenge optimistically.

4.3 Need and Purpose of Library Automation

Libraries are the lighthouses for information. The thirst of knowledge is increasing every day at various levels and on various subjects. There is a great demand to provide such information quickly on demand for which an efficient and accurate devices or tools are introduced, which is based on mechanized process. Today library automation is the need of the hour. Use of information technology in libraries has become inevitable in an era of information explosion and the emerging of a wide range of new technologies in order to satisfy changing complex information needs of users. The factors necessitating automation of HEIs libraries are the following:

* Capacity to handle any amount of data and information;
* Speedy processing of information and its retrieval;
* Flexibility in information search;
* Standardisation of library procedures;
* Participation in network programming and resource sharing;
* Provide better bibliographic control at local, regional, national and international level;
* High rate and better quality in performance;
* Avoid/eliminates duplication of works;
* Facilitate interdisciplinary nature of research and information;
* Economic implications of latest information technology;
* Overcome geographical and other barriers to communication; and,
* Improve the quality of existing services and to reduce routine and time consuming clerical works.

According to Bhardwaj & Shukla (2000) the factors that necessitate library automation are as follows:

(1) **Growing Information and Shrinking Space**

The enormous growth or information explosion of literature in each area, subject in number and size and results fragmentation of literature and increasing specialization in every field of knowledge. Due to this information explosion, the quantity, variety and complexity of information are being increased rapidly in every field. Computer application can solve this problem, as it is capable of storing huge bulk of information on tiny storage mediums i.e. a CD-ROM can store the text of the complete set of Encyclopaedia Britannica. Serials, abstracts, indexing periodicals etc. are already available on CD-ROM.

(2) **Organizing the flood of Information**

Increasing the number of clientele of library and information centers and their specialized desires forces us to change the method of organizing information because traditional methods is going to become inadequate. The manual method has serious limitations and, facing problem to provide access to reader's information that is available in a wide of publications from so many sources.

(3) **Cost hike of printed as well as electronic reading materials and resource sharing**

The rapidly enhancement price of information materials motivated the library and information centers to share their resources. They realize that the only way they could fulfil their client groups is by effective cooperation between libraries, information centers and networks and by sharing of all type of resources.

(4) **Enhancement in budget**

As increasing the members of the library, cost of information materials, services and growth of information or information explosion, the budget of the libraries is also raised. That is also allowed us to automate the library activities and make maximum utilization of the library funds.

Some other needs for automating a library are:

a) **Self-Survival:**

If the library does not go for automation it is highly felt that it will not cope with the new generation of users and slowly will lost in the dark days of history.
b) **Environmental Need:**
The user of any library now a day expects to use their computer literacy in the library environment also; automation helps to achieve the same. It is also needed to satisfy the new generation of user, to procure online publication, etc.

c) **Distance Learning:**
Only through library automation, the library can reach the distance user.

d) **Storage:**
Libraries are growing organism so without the application of computer it is very difficult to handle the space problem of a library.

e) **Profession Wide Standard:**
Librarian's role as philosopher and guide are generally ignored by the vast number of the members of the society. Application of computer in libraries hopes to make a positive change of the peoples towards this end.

f) **Resource Sharing:**
Resource sharing among libraries, demand library automation as minimal requirement.

4.4 **Advantages of Library Automation:**

Since computer can be used in performing each and every activities of the library, library automation can serve as solution to all the existing ills of libraries. In simple library automation has the following advantages:

i. **Automaticity:** The housekeeping operations will be carried out automatically, which will avoid or reduce human action.

ii. **Accuracy:** Automation significantly increases the accuracy of files and records, processing rules may be standardize and given to the computer in the form of a program, which can be used to verify that rules for the new data are being followed. Also if inputs are edited by computer much error can be deleted before the information is entered into the files and processed.

iii. **Increases Efficiency and Speed in Operation:** The use of computer almost invariably speed up the flow of work within the system, new books, reports and other material can be processed and released quickly to the waiting reader. In automated environment searching of information can be perform speedily, which saves the time of the library staff as well as user.

iv. **Improve Control over the Whole System:** Automation helps generating different kinds of statistics and records, which are more accurate and therefore helps in improved cost control and in improved planning.
v. Reduce Duplication of the Efforts or Work: Automation helps the inputting of data only for a single time, the integrated nature of software helps for its subsequent use for other purposes.

vi. Simultaneous Access: In an automated environment multiple users can access the same information sources or database.

vii. Decentralization: Automation permits decentralized access to records. A user can check to see whether a book is out on loan without consulting the library staff.

viii. Budget Saving: Computer equipment is cheaper than the personnel. Again, in case of an automated library, the unit operating cost is reducing than that of a non-automated library. The larger the number of transaction the lower the unit cost of automated libraries. Automation also saves physical space and cost on stationary items.

ix. Offer New Services Based on Technologies: Use of computer helps us to provide new services such as CAS/SDI, special purpose catalogue, new holding announcement service, etc.

x. Reliable: Computers are more reliable in the sense of breakdown, vacation etc., does not bore and can work longer hours than any human being.

xi. Protection: Computer make the ease and economy of producing and distributing multiple copies of cataloguing files, so it provides greater protection against loss of the catalogue by fire, earth quake and other natural disaster.

xii. Storage: Much information can be stored in reduced space with extensive provision of different access point.

xiii. Retrieval: The use of computer in libraries helps us for easy retrieval of information by using different search techniques. The retrieval information is relevant, fast and specific.

xiv. Exception Reporting: Automated system automatically provides overdue notice, follow up notice, location of order, editing of cataloguing activity, etc.

xv. Statistics: The use of computer in libraries helps us to generate different kinds of statistics and report within a minute itself. The statistics are automatically prepared by the computers which are more accurate and reliable than manually generated one.
xvi. **Stock Taking:** Stock taking is an inspection to check what is in the stock in relation to what it should be. In this process the current file compared with the inventory file (the old list of document possessed by the library) and the unmatched records in the inventory files are listed out. This list constitutes the untraceable or lost document.

xvii. **OPAC:** The library catalogue forms the base of most of the library activities such as circulation, reference service, literature search, inter-library loan, etc. The introduction of library automation brings OPAC facility to the library. The library staffs also get relief of cumbersome jobs of writing and preparing card catalogue and their subsequent filling.

Boakye was quoted by Joshi & Singh (2008) is of the opinion that, “Computers or database systems can help make any procedure for selecting, acquiring and processing easier, the collection of an academic library must be balanced in terms of the courses run and research undertaken by the clientele; unnecessary duplication of titles must be avoided to maximize limited funds; and, where possible, libraries with similar objectives can have resource-sharing programmes. Computers can help perform these procedures effectively and faster. Automation can make cataloguing easier for academic libraries. Automation helps libraries offer an improved service by providing easy access to resources in the home-based library and also to external libraries.”

4.5 **Areas of Library Automation:**

The basic purpose of library and the origin of computer are actually the same so; they cannot be separated from one another. In the library and information centers computers can be used for performing efficiently all sorts of jobs from the procurement of the reading materials to their organization and use, so it can serve as a panacea for all the existing ills of libraries and information centers. But, till now computer has been used successfully in the following areas of library activities:

4.5.1 **Library House Keeping Operation**

The library housekeeping operations such as acquisition, classification, cataloguing, serial control and circulation are the main areas of library automation which are discussed below:

a) **Acquisition:** The selection of materials can be made by the computer. Any library which is a part of online computerized Library System has access to catalogue entries and bibliographic data of all the libraries in the system. These databases can be used as a selection tools to purchase new documents for the particular library in question. The ordering and Acquisition are the routine jobs in the library and for a single time ordering it requires repetitive operation by different section. These repetitive operations and the requisite checking can very
well be done by the application of computer system. In computer operated acquisition system

b) **Classification:** A computer based classification system is being experimented at the Documentation Research and Training Center, Bangalore. It is based on Colon Classification System.

c) **Cataloguing:** The computerized cataloguing system operates with high speed for performing routine and repetitive jobs. Besides, in the cataloguing unit computer can also be used in various other ways such as producing book plates, book pockets, book cards, spine labels, etc. It can also produce a variety of records, card catalogue in the book form, printed catalogue, etc. as by products.

d) **Serial Control:** Serials are continuing publication having reasonably permanent titles and are also on going document appearing usually at regular intervals. Serial control comprises complex operations of library activities because of the very nature and characteristic of serial as library material. Again the conflict between the physical unit and the bibliographic unit makes a serial control a complex task.

e) **Circulation:** The circulation activities are the life stream of the library services. The library documents are for use and intended for the users, but they should come back from the users to be served to other user as well. At various points, documents are to be trapped for the users who have recorded their priority in using such documents.

4.5.2 Information Retrieval

Today, Online Public Access Catalogue (OPAC) or sometimes Web OPAC facility provided by the library and information centers helps in easy retrieval of information. Ex. MEDLARS.

4.5.3 Building Digital / Virtual Libraries Collection

Softwares like DSpace, Greenstone helps the libraries of HEIs to build their digital repositories containing the scholarly output of the institute. An important development in this field is that of building digital theses and dissertation collection in any HEIs.

4.5.4 Resource Sharing:

In order to facilitate the provision of material request on inter library loan basis, the use of computers and other latest telecommunication devices is being put to use in almost all countries of the world.
4.5.5 Library Network:

One of important application of library automation is the setting up of library networks connecting libraries wide apart geographically. Ex. INFLIBNET, Developing Library Network (DELNET).

4.5.6 Information System:

Information systems like UNISIST (World Science Information System); NISSAT (National System for Science and Technology, India); MEDLINE (MEDLARS Online); were feasible through automation.

4.5.7 User Services:

Specific user based services like a) Current Awareness Service (CAS); b) Selective Dissemination of Information Services (SDI); c) Indexing and Abstracting Service; d) Web Based Translation Services; e) Computer Based Indexing and Abstracting Services are possible through automation much easily.

4.6 Library Automation in India:

Computerization had its beginnings in India when punch cards were used during the late 1950s and early 1960s in few Indian libraries. Some of the milestones of computerization activities in India are as follows:

- Introduction of mainframe computers in India in mid 1950s
- Installation of the first computer at the Indian Statistical Institute (ISI) in Calcutta in 1955. The system was HEC-2M (of Hollerith India Ltd, later known as ICL)
- A second computer made in Russia (Ural), also installed at ISI in 1958.
- Mini computers started penetrating the market in late 1970s.
- Microcomputers were introduced in the 1980s in the country.
- Internet
- In the year 1986, the project “ERNET” was started.
- ERNET provides whole range of Internet services.
- INFLIBNET

During the introductory phase of 1955-1964, 16 computers were introduced (ten of them were from IBM) in the country. During the second phase of 1965-1972, 170 computers were installed in India (127 of these were from IBM). Out of these, 69 were in public sector institutions, 76 were in private sector and 35 were in academic and R&D institutions (Sharma, 2004). Liberalized economic policy of the government and application of information technology saw the all-round growth of the computers industry during the Eighth Plan (1992-97). In the late 1990s, the computer industry (both hardware and software) has attained maturity. This is the result of the new computer policy of 1994, the IT-friendly
measures of the government including the IT Action Plan, and the realization of the necessity of automation in all walks of life.

With the introduction of mini-computers during the late 1970s and microcomputers later in the 1980s, many of the libraries and information centers started using computers for their work. As these computers were costly, only elite institutions in the public, academic, R&D and private sectors could afford to buy them. The Indian National Scientific Documentation Center (INSDOC), one of the pioneer institutions in library automation field, started using computers for information processing in 1964 utilizing the IBM 1620 at IIT, Kanpur for its union catalogue. It also utilized the IBM 1620 at Delhi University for other related jobs. The Documentation Research and Training Center (DRTC), Bangalore also started the computerization work in the late 1960s. A Document Finding System was designed and developed with programs to prepare catalogues on tape which was later tested on the IBM 1401 system at ISI, Calcutta. In 1970, the library of NAL, Bangalore made efforts in computerizing the circulation control with an ICL 1004 system. Moorthy (2004) quotes that as per a survey conducted by Kamath, there were nine libraries which were using computers in the country. The various library routines where computerized procedures used by these libraries include: procurement (one library), charging and discharging of documents (one library), cataloguing (two libraries), preparing union catalogue (one library), and preparing addition lists (four libraries). INSDOC started providing computerized SDI service from January 1976 using the IBM 3701155 computer at IIT, Madras and the CANISDI software with CA Condensates database. INSPEC A&B databases were also used from 1977 for providing SDI services. In 1977 BHEL (R&D), Hyderabad started providing SDI services to the various units using computers. During 1970s a few more libraries started using computers for library routines. Notable among them include the Tata Institute of Fundamental Research (TIFR), Mumbai and the Space Applications Center (SAC), Ahmedabad. A number of seminars and workshops were conducted on various facets of library automation during this period by national institutions like SIET, DRTC, BARC, and INSDOC. This situation improved in the 1980s and the early 1990s with the launching of national and metropolitan networks. Further, during this period the prices of the computer hardware and software have started climbing down making them affordable to many libraries. Metropolitan networks like CALIBNET and DELNET, professional associations like ILA, AGLIS and IASLIC, and national institutions like INSDOC, DRTC, and SIET started training programmes in automation of libraries, bibliographic database development using CDSIISIS and other software packages. National institutions like DRTC, INSDOC and DESIDOC, were actively engaged in such programmes. NISSAT also supported such activities.

However, due to the high cost of mainframe and mini computers, use of punch cards continued till 1980s. The shift from punch cards took place only after the advent of microcomputers, which were generally cheaper than the mainframes, and the minis and many institutions could buy them. Many of the libraries and information centers started using computers for their work after the introduction of mini computers during late 1970s. Even these were generally costly, only elite institutions in the public, academic, R&D and private sectors could afford
them and so, the libraries in these institutions were able to utilize them to some extent. Library automation, as a result, did not progress satisfactorily. However, the arrival of microcomputers and personal computers (PCs) in the Indian market in the 1980s gave the necessary impetus; the environment began to change and library automation picked up momentum.

The main players in library automation in the past decade have been the special libraries of the country. Most of these library and information centers are in the R&D institutions under the central government and in universities. These include the Council of Scientific and Industrial Research (CSIR), Department of Atomic Energy (DAE), Defence Research and Development Organization (DRDO), Department of Science and Technology (DST), Indian Council of Agricultural Research (ICAR), Indian Council of Medical Research (ICMR), Indian Space Research Organization (ISRO), Public Sector Undertakings (PSUs) and the institutions of national importance like IITs, Indian Institute of Science (IISc), All India Institute of Medical Sciences (AIIMS), and National Medical Library. Although special libraries took the lead initially, many university libraries and libraries from major institutions in arts, humanities, social and behavioural sciences, and management are increasingly participating in library automation. Some special factors favoured special libraries, which were able to undertake library automation. These include: (i) easier decision making due to the relative autonomy they possess being in publicly-funded organizations, (ii) the pressure these libraries experience to provide efficient services and better, wider access to information (this pressure is the result of the goals or deadlines to be achieved by the institution), (iii) the wide availability of PCs, and (iv) the free availability of Unesco's Micro CDSIISIS which facilitated easy development of databases. Another factor is that in many of the institutions, internal talent was available in the form of computer specialists (programmers) who were responsible for the in-house development of library software.

4.7 Library Automation in HEIs:

The library automation in India was a slow process and got momentum in 1980s. Research and technical institutions were the forerunners and libraries of higher education institutions (HEIs) followed them (Faisal & Surendram, 2004). Although, computerization of library and information centers and their networking gained momentum in the developed countries during the mid-1960s, such activities commenced in India only during the 1980s. The first players in this sector were special libraries. University libraries joined the fray only during the 1990s, when the University Grants Commission established Information and Library Network (INFLIBNET) in 1991 as the national agency for coordinating the library automation activities of universities. However the libraries of HEI have made little progress in this direction. According to Moorthy (2004), the reasons for the slow pace of automation in HEI libraries are the following:

- Most HEI libraries in India function in a relatively less autonomous environment.
- The HEI libraries are a comparatively smaller unit within a larger setup.
- Libraries have to compete for scarce resources.
Undergraduates outnumber postgraduates, faculty, and research staff.

HEI libraries are not under as much pressure to improve their services as are scientific and technical libraries.

- lack of funds for acquiring necessary hardware and software facilities;
- lack of adequate trained manpower in the use of IT; and
- resistance on the part of library staff to change from their traditional practices to the use of IT.

Although some higher education institutions like ISI and IITs in the country have imported mainframe computers in the late 1950s and early 1960s, priority was being accorded for productivity-and R&D-linked jobs. This is because of the huge costs involved in getting mainframes and also due to the fact that library work was generally viewed as not so important by the concerned authorities who accorded lower priorities in allotting computer time for such work.

As quoted by Patel & Kumar (2003) a survey of university libraries in 1994-1995 found that “out of the 156 universities, 72 universities have responded and 60 per cent of them have PCs, 7 per cent have LAN, 6 per cent have UNIX, 43 per cent have library automation packages, 17 per cent have CD-ROM drives, 3 per cent have CD-Net, 1 per cent have online facility, 42 per cent have microfiche reader-printers and 64 per cent of them are members of library networks. They subscribe to 34 CD-ROM databases.” In India, University of Hyderabad library, NEHU library, Jawaharlal Nehru University library, and Punjab University library were some of the early higher education institute libraries to initiate library automation.

University Grants Commission (UGC) of India set up Information and Library Network (INFLIBNET) Centre as an Autonomous Inter-University Centre (IUC) in 1991. INFLIBNET started providing financial assistance to the academic libraries for library automation. INFLIBNET supports universities and other HEIs towards creating infrastructure facilities including buying PCs and modems, developing databases, and getting telephone and Internet connectivity. It is also providing recurring grants for some activities for 5 years after the initial grant is utilized. These efforts paid rich dividends and resulted in a significant level of automation of HEI libraries in the 1990s.

The situation of automation in the HEI libraries is slowly changing as Upadhyay (2009) notes “Most of the academic libraries at present have their web pages on their institutions websites and some are providing Web OPAC and digital library facility. But many academic libraries are still working traditionally due to absence of fund, basic infrastructure, action plans or priorities from authorities. However, the scenario is fast changing due to the changing information seeking behaviour of academic library users and the authorities are now realizing the need for information sharing through the use of Internet /ICT.” Murthy and Cholin are of the same view as quoted by Sharma (2009) that “all academic libraries [in India] now virtually depend on the IT systems for their basic operations such as acquisitions, cataloguing, circulation, serials control, and other functions”.

44
4.8 Library Automation in HEIs in North East India:

The North Eastern Council (NEC) initiated library automation in the universities of North East region of India including Manipur University in 1986. But the programme was not successful (Devi & Singh, 2007). North East Hill University, Shillong the first Central University in North East region initiated library computerisation in 1988. The Computer Unit was started in 1988 with a WIPRO PC800 computer and printer. By March 1989, the Computer Unit started the computerisation of key house-keeping functions using the CDS/ISIS package. The library automation with CDS/ISIS continued till 2002. The Campus Library acquired the LIBSYS v.4 (an Integrated Library Management Software) in 2002 and retrospective data conversion for the entire collection was successfully completed by June 2004 (http://www.nehu.ac.in/library). So NEHU being the first Central University in North East India took the lead in library automation. However the oldest University in North East India i.e. the Gauhati University in Assam initiated library automation much later in 1996. Initially computer hardware was procured and CDS/ISIS software was used for cataloguing operation, but the programme failed to move at the desired pace and got stalled due to many internal problems. Thus the automation activities in the libraries of higher education institutions in North East India were very slowly progressing.

In case of college libraries, the automation scenario was dismal with very few colleges initiating automation with help of freely available CDS/ISIS software. In the beginning, the major constrains of library automation were absence of planning, non-availability of vendor developed software at affordable prices, restrictions on the import of hardware, lack of trained manpower, lack of power supply, non-existence of standards, and absence of co-operation (Sinha, Chakarborty & Bhattacharjee, 2007). The computerization and networking activities in the college libraries of NE India got a thrust during the Assessment and Accreditation of the colleges by NAAC, Bangalore.

Automation activities in Universities of North East India gained momentum only in the 90s because of the special initiative of the University Grants Commission (U.G.C.) through its nodal agency INFLIBNET. INFLIBNET has helped the universities of the North-East to get grants from the U.G.C. for buying computers, data entry, telephone connection and V-sat connection, etc. The center has been imparting training courses on soft wares like CDS/ISIS, SOUL, etc. and on library automation. The center has also been organizing professional Annual Seminars such as CALIBER, PLANNER and other regional programmes from time to time. The center has become practically a school for training the library and information personnel. The center has to continue to provide its services to the university libraries of the north-east as per their programme (Devi & Singh, 2006).
Now, INFLIBNET is playing the lead role in automation of Universities and colleges in North Eastern region. Till 2009 INFLIBNET has distributed its in-house developed Software for University Library (SOUL) to 146 higher education institution libraries in North East Region (UGC Annual Report, 2008-2009). Under its UGC-Infonet Connectivity program all universities in North-East have been given 2 Mbps Internet bandwidth on priority basis under the special drive. Services of a national Internet Service Provider (ISP), having national presence, are hired to provide Internet connectivity as well as for resources conceptualization, planning, establishing and maintaining network and communication infrastructure for all universities covered under 12 B Act of the UGC. The ERNET India is the ISP for the UGCINFONET since the inception of the scheme in 2002. The UGC had signed a MoU with the ERNET India in April 2002 for providing Internet connectivity to the beneficiary universities. The INFLIBNET, as an IUC of the UGC, acts as a coordinating agency for monitoring the network and Internet bandwidth provided to the universities under the scheme and liaisons between ISP and universities. The UGC-INFONET is based on open IP platform, deploying state-of-the-art technologies like IP multicast, TCP spoofing and other Internet tools that provide interactive education on PC and TV, enabling on-line response to queries. Open systems architecture ensures support for current and future applications.

In Xth -Plan period, important autonomous colleges and prestigious colleges located in Assam have also been included under INFLIBNET Programme for receiving financial and technical support. INFLIBNET Center has developed SOUL Software (College Version) and this software is being installed in many colleges of Assam in particular and North East India in general (Sinha, Chakarborty & Bhattacharjee, 2007).

The pace of library automation was not as fast as rest of India as the libraries of higher education institutions in NE India are facing many problems. As Singh and Deka (2008) notes that “The main problems of library automation in Assam are trained manpower and to some extent the negative attitude of authorities also. Though libraries are hard-pressed in their budgets, however, in most cases the library professionals are not conversant with the environment of library automation”.

The Institutions of National importance like IIT and NITs in North East India initiated library automation from their early stage of establishment. For example, IIT Guwahati Central library initiated automation in 1995, i.e. a year after its establishment. But the libraries of technical colleges of North East India lacked direction in this respect and were mostly not automated. There is however not sufficient information sources on the automation activities of the HEI libraries in the North East India.
4.9 Issues for Library Automation:

Some of the issues involving automation of the library are discussed below:

- **Standards**: There should be an outstanding agreement on the requirement for standards in any automated library system and also agreement on their necessity as part of the program leading to such a system. For example, the catalogue records which go into the computer system are used to find information and to access information. From a librarian's standpoint, those records need to follow a standardized format and they need to contain certain types of information that is necessary to locate the primary information or the information itself.

- **Economics**: Economics of automation would cover issues such as planning and consulting costs; purchase of the system, hardware, and software; purchase of network-specific hardware, software, and cabling; internet connection costs; conversion of manual records into machine-readable form; access, and subscriptions where appropriate, to external databases and systems; ongoing operating costs; and maintenance of system hardware and software. Another aspect is the economic value of automated libraries. The economic resources are variable when played against different types of libraries.

- **Networks**: There is much current concern with impending networks as a consequence of automation and computerized transfer of information and data, everyone speaks of networks but no one knows what they are. There are questions of geographic, functional and other relationship as well as issues concerning roles and responsibilities with respect to network operations and organization, and the topic of initial development.

- **Hardware**: Computer technology and its hardware will play a continuing decisive role in any developing program of automation. What role does computer hardware play? Is the technology ahead of the requirements that the library community is capable of explicating? What are the inherent promises of computers to which libraries must accommodate in order to exploit the technology in a maximum manner?

- **Retrospective Conversion**: This issue is simple: an automated system will require that the entire bibliographic record exist in machine-readable form. Retrospective conversion of the existing record is necessary. How can this be accomplished? Centrally? Cooperatively? What about costs? Is the above assertion indisputable?

- **Manpower**: Any automation program in the library would require sufficient qualified manpower for operating and maintaining those systems which poses training and manpower allocation problem which is the subject of growing concern.
Automation is necessary to reduce human workload and accomplish jobs in the most efficient manner. In libraries of Institutions of Higher Education, automation has been adopted so as to tackle the enormous load of information acquired (dumped?) into it from a variety of sources from paper to digital bytes. Human workforce cannot alone handle such pressure at a time when demands for information is not only growing but is also becoming more complex. Computers can handle information quite efficiently and hence it has gained popularity among libraries of any kind. The libraries of Higher Education Institutions in India were late in adopting automation compared to some other research institutions of the country. But none the less, it has now tremendous impact on the HEI libraries and specially after creation of INFLIBNET by UGC in 1991, automation of the HEI library has spread throughout India and in particular in the HEI libraries of North East India. Since machine cannot take decisions of their own therefore, the role of the library manpower who handles these machines becomes crucial for giving efficient information services to the users. Thus, training and development of library manpower is of outmost importance. The next Chapter has a detail discussion on Human Resource Development (HRD) and its application in libraries.