Library Automation and Networking for Managing Library and Information Services

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LIBRARY AUTOMATION AND NETWORKING FOR MANAGING
LIBRARY AND INFORMATION SERVICES

Manoj Kumar Sinha
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INTRODUCTION:

The Library and Information Centre is the lighthouse for information dissemination, which is an important component of any educational institution, and hub of the teaching, and learning activities where students, researchers and teachers can explore the vast resources of information. The present age is regarded as the age of information and information has become the commodity in the present day context of information explosion and we are living in the Information society. Now information has become an essential item for every one. Each of us require information for our day-to-day activities. Library and Information Centre has been playing an important role in extending requisite services to its users. Library and Information Centre (LIC) is a social institution and it takes up the society with the world of enormous information. The Library and Information Centres are associated with schools, colleges, universities, research institutions, R&D organisations that have to provide quick and up-to-date information needs to the user community (Sinha, 1990).

In the traditional libraries users have to spend more time for searching a small piece of information and for that they have to depend mainly on the library professionals or library staff. But in the age of Information Communication Technology, computers are being used for the day-to-day house keeping activity of the library, which saves the time of the end users and library professionals also and at the same time avoid duplication of work and make the library service smooth and effective.

In pre-computer age (before 1950s- 1960s) library and information centres (LICs) were collecting, processing, organising and storing books in library and extend library and information services to its clientele and the house keeping and other library activities were performed manually. At that time the method of storing and preserving the print documents was traditional one. Gradually, the concept of keeping rare documents in microform came into existence. The documents were preserving and made available in the form of microfilm, microfiche and micro cards. Microfilm reader was being used to scan and read the documents for printing. Before the arrival of computer the production of documents in the form of printed books and journals were very less in numbers. The modern printing technology and desk top publishing (Offset/Screen Printing) with the application of computer or introduction of Desk Top Publishing, tremendous changes in the areas of printing

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and publishing technology have been noticed which resulted in the explosion of information in the form of printed and electronic form.

The twentieth century has witnessed sweeping changes in the world of information technology (IT) and communication. In metropolis town the computers have made their appearance in all types of libraries, sooner or later all libraries will be using computers for storage and retrieval of information. Information revolution is rapidly widening the scope of application of ITs with promise of ensuring timely access to relevant information to the users at all levels on one hand and on the other enhancing the productivity in information work and services. The specialised LICs have been using microcomputers for organising, processing, dissemination and retrieval of information to the users. Computerisation of bibliographic records facilitates for resource sharing with other local, regional, national and international LICs to form a network. The availability of current as well as retrospect bibliographic databases on CD-ROMs and online catalogues networking and downloading facilities have accelerated the pace of computerisation in larger LICs. India has made a little late start but our LICs are picking up very fast (Vashishth, 1992).

Due to rapid information explosion (with improved printing technology) and escalation in the cost of printing technology, ink and newsprint, it has become impossible for each library to acquire all the documents required by a particular library. At the same time due to acute financial crisis, adequate grants have not been provided by the funding agencies like UGC, AICTE CSIR, ICMR, ICAR, DST, DOEn etc., University Libraries /Institutional LICs (Library and Information Centres) are compelled to move towards automation of libraries and resource sharing among the libraries.

The drastic reduction in the cost of computing power resulted in computerisation, automation and networking of libraries in India. The past two decades have witnessed an unprecedented emergence of modern technologies related to the process of information storage, processing and transmission. Among them, computer may possibly be the most spectacular technological invention widely used now. Many other electronic technologies have also appearing in quick succession. These technologies have many potential to grow in future (Rajasekharan, 1992).

The library and information centres are not behind in the race of computerisation of the housekeeping activities and computer based library and information services. Due to enormous capacity of data storage, processing and retrieval of information, the Indian library and information centres have attracted towards use of Information Technology for computerisation of library activities and services under broader term of library automation and networking in order to extend computer based library and information services to the end users and make documents available through resource sharing by introducing the new concept of library networking.

Most of the Library and Information Centres (LICs) of India have started using computers and Information Communication Technologies in organising their collections, housekeeping...
operations, processing, retrieval and dissemination of information to the end users. The use and impact of ICTs is now visible in Indian library and information centres which may be due to the drastic reduction/escalation of the cost of hardware and software and their easy availability in the markets with service support from the suppliers or venders.

**SCENARIO OF USE OF INFORMATION TECHNOLOGY IN LIBRARY SERVICES:**

In view of enormous capacity of data storage, quick processing, access, retrieval and dissemination of information, library and information centres of our country have started using multi-media digital computers with latest software/hardware (configuration) with communication devices of modem and teleconferencing device, digital web camera etc, for information storage, processing, retrieval and dissemination of information, creation of databases, house keeping of library operations, IT based library and information services like searching of in-house databases, through OPAC, CD-ROM database searching, on-line databases, e-journal through Internet.

In beginning, the computers were adopted by big academic (technical & professional) institutions like IITs, IIMs, and others national institutions like CSIR, INSDOC, NASSDOC (ICSSR), DRTC, DESIDOC, DRDO, BARC, SAC AIIMS, and other institutions of higher learning of national importance. The condition of academic libraries, and information centres was in poor state of affairs. Except few Central Universities like JNU, Hyderabad University, Pondicherry Universities, IGNOU and some State Universities like Panjab University, University of Mumbai, Cochin University of Science and Technology, Osmania University, few Deemed Universities like Tata Institute of Social Sciences, etc., the use of Information Technology was not evident before 1990s.

The New Education Policy, 1986 recommended for improvement of library and information centres of universities, /institutions of higher learning which categorically emphasized that Information Technology should be used in the libraries for providing effective library and information services to the academic community.

In view of above and on the recommendation of seminar and symposia, workshops which were organised by various library professional bodies like ILA, IASLIC, the Ministry of Human Resource Development, Govt. of India directed UGC to establish a committee to give recommendation for modernisation of university/institutional library and information centres.

**ESTABLISHMENT OF INFLIBNET AND OTHER NETWORKS:**

Automation of library operations is gaining momentum because of the availability of digital computers at affordable cost and promise to create database, which is easy to retrieve desired information. The introduction of personal computers for library operations has been bringing new revolutionary changes and new dimensions in the whole library and information management and services.

The Govt. of India has been taking firm steps for computerization, automation and networking of LICs. A number of national, regional and city library and information networks such as NICNET,
INDONET, ADINET, CALIBNEBT, DELNET, INFLIBNET, MALIBNET, BONET, MYLIBNET, ERNET, CSIRNET etc. have been emerging and found their way. Many more are under different stages of development. In order to join and effectively participate in these library networks, LICs will have to be modernized and automated (Vashisht, 1994).

The high power committee recommended the establishment of Information and Library Network Centre, which would be an Inter-University Centre of UGC for, modernisation of university libraries and LICs of other institutions of higher learning. After recommendation, UGC has established INFLIBNET (Information and Library Network) Centre which is an Inter-University Centre with its headquarters at Ahmedabad, for computerisation, automation and networking of university libraries, IITs, NITs, libraries of institutions of national importance for resource sharing are among these libraries (Sinha and Satpathy, 1998).

The automation and networking of many universities, national institutions and other institutions of higher learning has been initiated by the national agencies dealing with information and library networks like NICNET, INFLIBNET, DELNET, CALIBNET and other metropolitan and city networks which have started developing various bibliographic databases of their holding. NICNET and ERNET have made e-mail Internet service available to the academic as well as in Government sectors. Some of the metropolitan and city library networks like ADINET, MALIBNET, CALIBNET, MYLIBNET, PUNNET, BONET etc. have also been initiated and couple of them have started functioning and providing various on-line services through these networks.

The impact of IT is also evident on the activities of many LICs associated with universities and other institutions of the national importance. Thanks to University Grants Commission for establishing INFLIBNET which have been playing an important role since its inception for initiating the automation and networking activities of library and information centres of universities, colleges, R&D laboratories, and various institutions of higher learning. So far 142 universities have been covered under the INFLIBNET Programme which have been funded with non-recurring grant of Rs.6.5 Lakhs for infrastructure development, purchase of computers and peripherals and recurring grants for five years to support the salary of information Scientist, data entry work, telephone charges for Internet use, and maintenance of the systems.

This is an era of information revolution; scientific and technical literature in paper form as well as in electronic form has been increasing widely with a faster rate. Considerable progress has been made in the field of information technology involving computers and telecommunication. Linking of computers with telecommunication has revolutionised the expansion of information systems, commercial vendors of information and users need is also increasing for pin-pointed, exhaustive and speedy information retrieval in the areas of their specialised fields.

The developments in information technology have effected drastic changes in the way in which information is collected, stored, retrieved and distributed. The main responsibilities of library

are to maximize users need, satisfaction and to minimize time loss to the user. Increasing the internal efficiency of day-to-day work within the library can only do it. The impact of computer has permitted all sectors of librarianship and information retrieval. The applications of computers can be grouped into those concerned with house keeping routine and those directed towards information retrieval.

**What is Library Automation ?**

The automation is defined as the technique; a process or a system operates automatically. According to the Encyclopedia of Information and Library Science, “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”.

Library automation may be defined in simple sense as “a process of mechanisation of library operations which are of a routine and repetitive nature. This covers usually housekeeping operations such as acquisition, serial control, cataloguing, circulation, references and administration work. We may also say that computerisation of all library operations is known as Library Automation.

**Why we should Automate Our Library ?**

The information storage and retrieval problem has become progressively more serious in recent years, especially in the areas of science and technology, where the volume of data and information is increasing at an unprecedented, nearly exponential rate. Keeping in view the tremendous flow of information, to organise information and to disseminate in systematic way, only computerization is answer. Computer aided system is more convenient, more flexible and more comprehensive and in the long run more economical. Followings are the need of automation and networking of library activities and services:

- To reduce the repetitive work and save time of library professionals in routine housekeeping operations and library services;
- To bring accuracy and speed of work;
- To bring economy and provide prompt library services;
- To increase efficiency of technical processing over a manual system;
- Financial savings due to automation;
- To improve library and information services for end users;
- To improve the efficiency of library administration and management;
- To facilitate resource sharing in networked environment at local, regional, national and international level;
• Automation helps in providing enormous capacity of data storage and retrieval;
• Improve our efficiency of work and provides consistency and improves our work control and
• To help in bibliographic control and updating of databases.

FACTORS OF USING INFORMATION TECHNOLOGY IN LIBRARIES

There are many factors, which advocate the use of Information Technology in library and
Information Centres:
• Availability of computer (Hardware/Software) at affordable costs;
• Huge storage capacity;
• Faster data processing;
• Quick information retrieval and dissemination;
• Easy access of information;
• User-friendliness;
• Requirement of less number of staffs;
• Faster communication through Internet/E-mail services; and What not.

Besides that some factors, which prompted for automation of library services, are as below:
• Computer is extremely fast in processing information and magnetic tape as storage making
reduce storage space.
• Many a time we require searching a database with a number of keywords with different
combinations. This requirement makes a manual search very complex and tedious. Random
accessing of information and rapid retrieval of information can easily make such search on
computerised system by creating proper information database.
• Computerised database can be accessed in interactive mode as per user requirements;
• Generates output in the form of a printed bibliography and multiple copies can be obtained.
• A single database can provide all possible combinations of services to the users.
• Database can be maintained either on small disk packs or tapes and can be transported at
a very low cost.
• Human errors minimized for day-to-day operations, which leads to better utilization of human
efficiency.

Areas of Library Automation and Networking:

Following are the areas of Library Automation and Networking:
• Acquisition
• Cataloguing and Indexing

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- Circulation
- Serial Control
- Library Administration and Management
- On Line Public Access Catalogue
- CD-ROM Databases Searches
- Resource sharing through Library
- Network/INTERNET
- Desktop Publishing (DTP)
- Office Automation
- Information Retrieval

Acquisition System:
- Suggestions and Selection of documents Approval of List
- Duplication checking of the documents
- Deciding vendor for supply
- Ordering
- Sending reminders for item not received
- Receiving the materials either by post/transport/entry of bills. Sending bills for payment
- Accessioning

Need of Automated Acquisition Control System:
- To manage and control the fund allocated for procurement of books in different discipline;
- to avoid duplication of books;
- to ensure efficiency and timelines and satisfaction of users;
- to keep relevant file up to date.
- Goal of Automation for Acquisition, Elimination of maintenance of several manual files and saving the time of associated staff.
- Maintenance of up to date files of order and receipts, funds details, vendors details and management data and
- Maintenance of records of acquired materials.
- Accounting and reporting of more accurate and timely financial data and
- Eliminating the need of manual processing of discount of foreign exchange and other invoices data.

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Function of Automated Acquisition Systems:
- To receive records of items to be acquired.
- To check whether the item requested are already in stock or on order
- To print supply orders for vendor
- To check when orders are overdue and follow up reminders for overdue orders
- To maintain file of records of item on orders
- To record the arrival of ordered item and prepare payment
- Report generation of acquired titles
- Printing of Accession list

Circulation System:
- Function of circulation counters
- Issue / Return of documents
- Registration of membership
- Renewal of membership
- Reservation of the documents
- Overdues reminders and collection of fine
- Maintenance of circulation statistics
- Inter library loan

Automated Circulation Systems:
- Tracing of documents on loan
- Keep records of reserved book
- Printing of over dues reminders
- Membership registration and Renewal of membership
- Lending (issue/return) of documents
- Reissue of documents
- Calculation of overdue fines and printing of fee receipts
- Provide detail information of borrowers and borrowed documents
- Handle different categories of users and special types of materials
- Daily statistics of circulation and other works; and
- Details of overdue charges and fine summery.
Serial Control System:
Serial control is one of the major areas of library automation. Following difficulties arise from manual serial control:

- Details of issues received in the library and their registration;
- Change of titles and publishers;
- Appearance of special issues/supplements, indexes etc.;
- Receiving serial by gifts or by exchange;
- Problems of storing and circulating individual issues and binding of complete issues;

Function of Automated Serial Control System:

- Inputting essential serial data for subscription;
- Ordering new serials for subscription;
- Renewal of already subscribed serials;
- Cancellation of subscribed serial necessary;
- Processing of invoices for payment;
- Registration of individual issues as and when issues are received;
- Sending reminders, if necessary;
- Regular follow up of missing issues;
- Preparation of list of serials received during specified period;
- Preparation of list of serials of library holdings with its status;
- Amount spent on serials subscriptions and their bindings;
- Estimation of Budget for serial subscription/renewal for next financial year;
- Updating Master File and editing of the data;
- Knowing details of the journals subscribed in library; and
- Binding control.

Cataloguing:

- Through acquisition modules;
- Retro - conversion;
- Catalogue search by OPAC.
Reference Service

Traditional libraries provide following reference services:
- Short range reference service;
- Long range reference service;
- Interlibrary Loan, Indexing and Abstracting services; and
- Translation services.

Automated Reference Services:
- Maintenance of In-house data base of books, serials, thesis;
- Search of CD ROM data base;
- Easy compilation of subject bibliographies;
- Use of national/international library networks for resource sharing, inter library loan and document delivery services;
- Computerized indexing, abstracting, CAS/SDI, Reader advisory services, and
- Internet Services.

Selection of Software for Library Services:

Following are some of the library application software used for data base creation and library services:
- CDS/ISIS (Computerized documentation system/Integrated set of information system)-developed by UNESCO
- LIBSYS
- MAITRAYEE
- SANJAY
- BASIS PLUS
- SLIM
- LIBRARIANS
- TULIPS
- WINISIS - Window Version of CDS/ISIS software
- WILISYS
- NIRMALS
- SOUL - Software for university library
- SOFTLINK

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STEPS FOR LIBRARY AUTOMATION AND NETWORKING FOR COMPUTERISATION OF LIBRARY SERVICES:

The first step regarding the computerisation of Library and Information Service is to decide for Computerisation. The next step is to perform a system analysis. After finalisation of activities to be computerised, the detail examination of each activity should be carried out which are as follows:

- To identify the data elements;
- To calculate the total storage capacity required;
- To ensure that the software (to be acquired or developed) is able to handle the size, number of fields and the records;
- To identify the various activities to be computerised; and
- To identify those data elements which are common to several functions.

METHODOLOGY TO COMPUTERISE AUTOMATE LIBRARY OPERATIONS:

- Decide various functions of library housekeeping operations;
- Identify the input requirements (data elements) for each activities;
- Identify the input in terms of records, files and media and determine the size of the files;
- Identify the output required for each of the function;
- Identify the output in terms of records, files and media and also identify the size of the files;
- Development of software in order to get desired results or output and buying the library commercial software to computerised certain or all function of the activities to be computerised;
- Implementation and evaluation of the process of computerisation.

PLANNING FOR LIBRARY AUTOMATION:

- Provision of fund for computerisation/Library Automation and Networking;
- Advance Planning for automation like selection of software; computer system configurations, staff for data base creation and their implementation;
- Acquisition of most recent computer systems (Server, Node, Printers, Software, Barcode Scanner, Digital Camera etc.)
- Selection of Library & Information Professionals for handling computer systems, library software etc.;
- Training for Data Creation work using CDS/ISIS or SOUL and other software;
- In- house networking of computer system;

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Creation of Database of books, serials, thesis, report;

Creation of Membership profile for Circulation Service;

On-line Circulation;

Online subscription of Serials Database;

Parallel systems of circulation

Online Acquisition;

Administration & Maintenance

Report Generation;

Maintenance of Hardware, software;

Adequate power supply, UPS, stand by generator;

Internet connectivity and becoming member of data network or library network;

Training to user for handling OPAC, Internet, CD-ROM Data bases searches / services;

Security of In-House Databases created for computerized / on-line service.

CONCLUSION

The success of Library Automation and Networking depends mainly upon the proper planning and appropriate decisions taken by the authority of the university from time to time. At the same time the motivation, zeal and lot of efforts of library and information professionals and well-trained data entry operators also results in quick and early implementation of computerisation of library activities.

On the other hand, the right selection of hardware and software, manpower training of exiting library professionals and data entry operators, proper planning, step by step implementation of the computerisation programme leads to the path of success.

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Unequal proportion in reservation is the utterance of devils. - the mad man's paradoxical overflow of inquisitiveness that must be condemned in any harsh language. I do not understand the philosophy behind it but I find 3 categories of persons living in the society - they are: the rich, the mediocore and the poor.

The above 3 categories of persons improperly exist among all castes in the society. Then why not reservation be made for the poor irrespective of caste adherence, besides the general category under which both rich and mediocore can be accommodated. The constitution must, therefore, be amended to bring down the nostalgia of peace, prosperity and tranquility among the people in the society and to restore normalcy thereof by making reservation for the poor and the distressed, over and above the mediocore and rich sections of the people irrespective of caste, creed, religion or other adherences.

Param Bhusan Dr. B. B. Shukla