

A CRITICAL STUDY ON AUTOMATION AND NETWORKING IN DEGREE COLLEGE LIBRARIES OF ASSAM, INDIA

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INTRODUCTION

Libraries are in the midst of radical changes. These changes are, perhaps, unavoidable and compelling. In the present day context libraries are moving beyond their traditional role as custodians of recorded knowledge and integrating new methods of information storage, retrieval and transmission into their existing services and patterns.

They are, at the same time, incorporating the extensive changes that new technologies bring to organizational structures and staff responsibilities. Libraries currently are experiencing technological transition in how services are provided and in what these services are. These changes are attributed in literature to three major phenomena: the information explosion, escalating costs, and the technology revolution. In particular, in the recent past it is the computer and communication technologies which have drastically changed the working of libraries.

While the computer technology provided hitherto unavailable power for the organization and manipulation of information, communication technology provided immense scope for the speedy and accurate dissemination of information. Over the past few years, there have been many developments in computer technology. One of the revolutionary developments has been the advent of comparatively cheap microcomputer systems, with increasing sophisticated features which can be used for a variety of library applications. As a result, it is not uncommon to find a micro-computer even in a small library in a developing country like India also. Computers in libraries are used to assist a variety of functions, such as, maintaining and providing access to catalogue items in the collection, managing the circulation of items, controlling the serial publications and allowing the retrieval of information from local files, searching external of information sources for references or for full text of documents and so on. Library Automation refers to the use of computers to serve the needs of library users.

The operations of a Library get a quantum jump with the introductions of computers. The computers help to provide fast and reliable access to the resources available in the library as well as elsewhere. The application of computers in the library operations avoids repetitive jobs and saves lot of labour, time, speeds up operations, increases use of library resources. Computers are not only used as a tool for processing the data, but also for data storage and accessing.

Application of computer for library activities is no longer a controversial issue. Many authors have identified and justified the reasons for the development of automated library systems (computer – based library system). Joseph Matthews (1980) has summarized them as follows:

- The tasks of a function may be eliminated or completed more accurately, more quickly, and with increased control than with other alternatives. Typically these tasks are clerical, routine and repetitive in nature, and thus desirable candidates for automation. For example, an automated circulation control system may all but eliminate the need for personal to prepare overdue notices.
- Increase demands for service and their accompanying library workloads must be counterbalanced with improved productivity, especially with either static or declining budget resources.
- Automation may facilitate the collection of data that will assist the librarian in the management of the library's collection while simultaneously providing new and more detailed data to support its budget.
- Automation may provide the means to offer new or improved services to patrons, provide valuable by-products (often unanticipated) as a result of automation, and facilitate cooperation between libraries.
- Automation may avoid the need to hire additional staff, even with increased demands for service.

What is Automation?

The term automation has been described in literature in various contexts leading to different meanings. The term was first used by Mr. M. S. Harder of General Motor Company (USA) in 1836 and he defined automations “ the automatic link of parts between progressive production processes in relation to engineering industries”. Since then the term has been applied to a wide variety of automatic machineries and systems and is commonly used to describe any operation in which there is substantial substitution of controlled action of human efforts of intelligence. The term automation is being defined as follows in some of the recognized sources:-

“Automatic control of an apparatus, processor system by mechanical or electronic devices that take place of human organs of observation, efforts or decision” – Third New Webster's English Dictionary

“Production system so integrated that materials move through the required operations with little or no human assistance” – McGraw-Hill Encyclopaedia of Science and Technology.

The term automation is used in automatic manufacturing, control system, computing machinery or equipment that reduces the participation of human labour in production or services” – New Encyclopaedia Britanica

On the basis of the definitions of automation the following may be considered to be its essentials characteristics-

- i. The operations of process are carried out automatically.
- ii. Avoids or reduces human actions and thus serves labour.
- iii. Increases accuracy and quality of work.
- iv. Increases efficiency and speed-up the operations.

Library Automation

The phenomena of mechanization of traditional library activities, such as acquisition, serial control, cataloguing, circulation control etc. was called library automation. Today, the term Library Automation is used extensively to refer primarily to the use of computers to perform the library activities. In recent times the topics like computerized information storage and retrieval, semi-automatic / automatic indexing, networking of automated systems were also treated as part of Library Automation. Though, telecommunication plays a vital role in automatic information storage and retrieval in general and for networking in particular.

Need of Library Automation

Information is now considered as important resources for socio-economic development of society. Information is the key element that marks the difference between the highly developed and the developing societies in the world. The information explosion has created problem in proper handling of information. Automation of library services is imperative for efficiency and effective working of a library system. Automation of library facilitates more accuracy and efficiency and library staff finds considerable support of equipment used in automation in their routine work performance.

The following factors have necessitated Library Automation-

- i. Information and literature explosion
- ii. Emergence of new techniques
- iii. Depth of content-analysis, selection and manipulation.
- iv. Immediate access to specialized information

The automation in libraries has become necessary due to multi-dimensional development of activities and ever increasing work load. Hence to keep the house-keeping routines up-toe-date and clear-up the pending

jobs, library automation has become must. Through automation various jobs can be done with great speed and accuracy. Computers can easily handle and cope-up with ever-increasing work load of libraries. They can be used mainly for two types of jobs i.e. a) House –Keeping routines and b) Information services.

Under house-keeping routines fall jobs like ordering of documents, acquisition, classification, cataloguing, circulation control and maintenance of statistics and other records important from the angle of management. With the use of computers for routine jobs better and quick services are assured. Under information services computers are used for generation and collection of information, Information Retrieval, Current Awareness Services (CAS), Selective Dissemination of Information (SDI), consultation of data bases, information transfer etc. During last 3-4 decades it has been experienced that by using computers, the libraries could achieve better standards, efficient organization, better control on collection, best co-operation & co-ordination and improved services.

To emphasize the need of library automation, the opinions of some eminent library scientist, quoted below-

Jessey H. Shera lays stress on “the use of machines in libraries is a solution to the problems of staff and storage and result in reduction of mistakes. A high speed and better quality of tasks in less time is assured”

G.M. Taylor Mention library automation as “more items at least cost”

B.C. Vickery:- opinions that library automation has following three aspects-

- a) Replacement of human-brain and manpower by machine for routine jobs.
- b) Automation is economic only when there is a continuous flow of information to be manipulated.
- c) Automation information processing operated at a very high speed and it is very economic if a large quantum of information is to be manipulated.

Objectives of Library Automation

The objectives of library automation can be calculated as follows-

- 1- **Easy Functioning:** - Several jobs which are tedious and time-taking, if done manually, can be performed easily by using computers.
- 2- **Accuracy:**- To error is human nature, also their decisions may be affected by a number of factors e.g. economical, social, psychological or environmental and hence every possibility of a mistake. Through automation chances of mistake are eliminated or reduced to minimum.
- 3- **Promptness in Service:**- Some jobs like stock-verification, compilation of union catalogue and / or bibliographies, if done manually may take months or even year /years. Such task can be done by computer in a short time.

- 4- **Economy:-** The use of computer saves human labour, money, and time and thus results into great economy.
- 5- **Elimination of Duplication in Work:-** The information feed in computer once can be used and manipulated for various purposes and thus duplications is avoided.
- 6- **Better Services and Ready Access to Information:-** Through computers, users are served with their desired information immediately. To search for desired specific information which is tedious and time-taking job for human beings can be done within a few minutes by computers.
- 7- **Great speed in manipulation of data:** - if the same information has to be used for various purposes, in a manual system it is a slow and tough task but in data processing system its speed is very high.

Scope of Library Automation:

The scope of library automation is being described by some eminent library scholars in the following words-

Dr. J.H. Shera laid emphasis on the use of machines in libraries particularly for bibliographic and indexing operations. Further comments that “Automation has already proved itself an effective means for facilitating certain types of bibliographic and indexing operations.”

Dr. S.R. Ranganathan Experimented automation in classification, circulation, information retrieval and reprography at DRTC, Bangalore. In his opinion, “Mechanization is time saving device and can be applied if economical to circulation of books and information retrieval”.

Jahoda & Accola have observed by making survey that automation is applicable and truthful in acquisition work, bibliographies, budget record, cataloguing, circulation control, serial control and binding record.

H.L. Griffith divided library data processing in to three groups-

- a) House-keeping functions
- b) Information dissemination
- c) Retrospective searching

D. Melcher observes that automation is not only used in clerical jobs but also in publishing notable type of composition, indexing, directory compilation, SDI, machine translation

E.V. Christensen recommends that Library Automation may have two areas of application for special libraries-

- i). Actual application of automation derived from its use.
- ii). Intellectual application of automation.

He further suggested the following three areas of library activities in which can be applied

- i). Organization of activities
- ii). Dissemination of current information
- iii). Information retrieval

Though these areas overlap yet automation is applicable in disseminating the information, preparation of bibliographies, abstracts, regular acquisition slips and indexing.

Automation Activities in Libraries:

The various activities to be automated in a library may be summarized as follows-

A) Acquisition Work

1. Ordering work
 - a) Preparation of order slips and cards
 - b) Sending order to vendor
 - c) Updating the record file
2. Recording Work
 - a) Verification of books according to order file and bill file
 - b) Printing out the lists of documents received and documents not received
3. Maintenance of Accounts

B) Cataloguing:-

- a) Preparation of catalogue cards
- b) Preparation of authority file
- c) Arranging the catalogue cards
- d) In to desires sequence
- e) Preparation of shelf list
- f) Preparation of list of items catalogued
- g) Preparation of list of printed catalogue cards
- h) Compilation of union catalogue

C) Circulation Control:

- a) Registration of members
- b) Issue of borrowers cards
- c) Charging of documents
- d) Discharging of documents
- e) Updating of record files
- f) Reminders for overdue
- g) Maintenance of Statistics

h) Information Retrieval

i) Inter Library loan

D) Serial Control

a) Ordering work

b) Recording work

c) Updating the record file

d) Reminders to vendors and publishers

e) List of serials in binding

f) List of holdings

g) List of new addition

h) Any other information

E) Documentation and Information Retrieval

a) Indexing of micro and macro documents

b) Preparation of Thesaurus

c) Abstracting

d) Searching and print out of answer to the queries

e) Preparation and updating of database.

f) Selective Dissemination of Information Service

g) Current awareness service

h) Preparation of Documentation Lists / Bibliographies

F) Stock verification

a) Preparation of list of accession number of the total documents accessioned in library.

b) Preparation of list of accession numbers of documents available in the library.

c) Print out the list of accession number of missing documents.

d) Print out the list of missing documents with full bibliographic descriptions.

Library Networking:

A library network is broadly describe as a group of libraries coming together with some agreement of understanding to help each other with a view of satisfying the information needs of their uses. It plays a vital role to promote and facilitate sharing of the resources, information and services among all participating library without any geographical restrictions. Computer and telecommunication technologies use to play a vital role in promoting communication among libraries. The main objective of library networking is to easy and quick communication of information.

College Libraries

The Academic library provides study and research facilities to the under graduate and post graduate students and faculty and staff members of the degree college. It plays a role of as lifeline of all academic activities in the college. Libraries have rich collection of books, journals, electronic reading materials, audio-visual materials etc.

2. SELECTION OF THE PROBLEM

The library automation which started in late 1970 in few special libraries have now reached at most of the university libraries. Research is not satisfactory at college libraries due to various problems. It is essential to identify the barriers, analyze the convenient steps for automation of the libraries and thereby network the libraries for benefit of the society. (Uddin, 2009).

The present status of the degree college libraries and the extent of library automation and networking are not standardized. The library services rendered by these libraries may not be satisfactory of the users, because of their weakness. The present state of such information services shows that some of the information services may not be to the user's expectation. It is assumed that the information services should fully benefit to the users community. With point of view, the researcher has to undertaken this problem for the present study. (Sharma and Tripathi, 1989)

Hence the problem the researcher has planned to undertake is to evaluate the various information services provided in degree college libraries and to find out barriers to make the library state-of-the art in terms of standard and quality of those services as well as suggest cost effective solution to overcome those barriers and to provide suggestions for successful planning of automation and Networking of library

4. STATEMENT OF THE PROBLEM:

A CRITICAL STUDY ON "LIBRARY AUTOMATION AND NETWORKIN IN DEGREE COLLEGE LIBRARIES OF ASSAM STATE"

5. RATIONALE AND SIGNIFICANCE OF THE STUDY:

Automation of Library ensures automated services to the clients as well as automated in- house work. Automation envisages training of knowledgeable technicians. The Library Automation is planned for the purpose of automated acquisition, technical processing, circulation, cataloguing, serial control and online public access catalogue, Etc, (Gupta, 1992).

There are various library software's available in the present day like in house developed library software, commercial developed library software and co- operative based developed software which of this backbone of this training. One, among the available software should be taken up for training of automation and

networking of libraries, (Kumar, 1987).

Today, we live in the era of information technology, and libraries are expected to use information more expeditiously and exhaustively than before computerization of library housekeeping operations is an important activity in this context automation when used in a library or similar environment, refers to the computerization or mechanization of activities. (Harinarayana, 1991)

Finance plays a significant role in the organization and management of a library. However today in this world, information explosion, traditional tools which were developed from last so many years have proved to be inadequate. This is due to greater awareness of the importance of information for socioeconomic improvement. Traditional methods for running successful libraries are considered as impediments in today's information based society. Therefore, to maintain high standards of services, libraries demand to perceptive librarians to confront unprecedented developments in information. This will enable them with a new set of alternatives for gathering, organizing and disseminating the information. The libraries would then successively meet the challenges of new technology. (Vyas, 1997)

6. Review of Literature

Certain articles have appeared in Indian periodicals on the basic issues involved in the application of computers to library activities. Taneja, S.K (1985), Bal Krishnan M.R (1988); Chopra, H.R & Kalra, O.P (1989); Dekhang, Goky (1986); Gupta, Shams her & Others (1989); Panda K. C and Karisiddappa, C.R (1980) and Ravichandra Rao, I. K (1988) discuss about application of computers to libraries including house-keeping operations. They, in general, discuss about various aspects such as historical developments, advantages of computerized systems, files & data structures required, etc., in relation to automation as well as automated house-keeping operations. Singh, K.J (1985) has tried to identify the trend towards automation in libraries in India. However a more comprehensive survey, has been reported by Kumar, P.S.G (1987) and Satyanarayana (1991) Ingra,

T.K.S (1986) and Ravi Chandra Rao, I.K (1983,1986, 1990) have explained in detail the application of computers to house-keeping operations. They discuss about various aspects such as hardware, software, and database & file structure, data dictionary, eprogramming language etc. A few books also have been published in India on library automation. Important among them are those published by Singh, S.P (1975), Mahapatra, P.K (1985); Kumar, P.S.G. (1987); Madan, Som Nath (1987); Devarajan G & Rahelamma, A.V (1990); Ravic Rao,I.K (1990); and Raman Nair, R handra (1992)

Apart from the above literature, many basic books on library automation provide few tips on evaluation of automated systems (Herring (1986); Lovecy (1986); Rowley (1993); Lane (1990); Clayton (1992) and so on). The above-mentioned studies provide useful guidelines to develop an appropriate evaluation tool. However,

as far as the actual evaluations of the automated systems themselves are concerned, the journal "Library Technology Reports" published by American Library Association has reported a few studies. Each issue of this journal is devoted to evaluation of a particular library system or equipment. As early as 1977, the journal has published a study "Computer based circulation systems-A current review and evaluation" by Scholze (1977). The author has evaluated five systems available at that time. Later, various studies on evaluation of circulation systems have been reported in the same journal. Boss (1979) has given a detailed discussion on selection and evaluation of automated circulation control systems in his article 'Circulation Control: the options'. A revised version of the same article was published by Boss and McQueen (1982). In 1986, Matthews (1986) evaluated sixteen commercially available microcomputer-based circulation control systems. Emily (1986) again reports in the same year the evaluation of 18 automated circulation control systems of large libraries. After four years of this study, again Matthews (1990, See Part I & II) updates and amplifies his earlier study by evaluating 24 integrated library systems which contained circulation module also? Similarly, studies on evaluation of automated acquisition systems and automated serials control systems have appeared in Library Technology Reports journal (See Boss (1981), Boss (1986), Boss (1992) for Acquisitions; and McQueen & Boss (1984), Boss (1992) for Serials control). The important journals on library automation listed earlier do carry studies on individual automated systems. A sample search on LISA CD-ROM (Updated up to Fall 1993) Retrieved more than 810 records on the subject. This magnitude of the literature published on the subject restricts the investigator even to enlist them all here. As already stated, many of them are not really evaluative in nature as they just describe the system's functioning.

7. AIMS AND OBJECTIVES OF THE STUDY

The main purpose of the research work is to study the situation and conditions of library automation and networking in degree colleges in Assam state, various barriers of library automation and networking and to provide feasible and cost effective solution to remove these barriers and allow libraries to cater the standard and quality services to the user community.

More specifically the objectives of the study are enlisted as given below:

1. To study the present status of library automation and networking in degree colleges libraries in Assam state
2. To study the provision of budget for library automation and networking during last three years.
3. To study the computer skilled professional staff for library automation (Qualification, experience)
4. To evaluate the library software / Hardware adopted by the degree colleges in libraries.
5. To study the house-keeping operations (Acquisition module, Circulation, cataloguing, serial control, OPAC / Web OPAC (Internet / Intranet).
6. To find the various barriers in the process the automation and networking faced by degree college

libraries such as inadequate staff, insufficient budget, etc.)

7. To study the usage the networking facility for sharing of information and resources used to cater various services to user community.
8. To provide suggestions and solutions to improve the quality of library automation and networking in degree college libraries in terms of library operations, equipments and technology usage towards catering quality and standards of services to its user community.

7. SCOPE OF THE STUDY

The following is the scope of the study: The study covers only automated and network based degree college libraries which are in actual using library automation and networking activities in Acquisition, Cataloguing, Serials Control, Circulation, Stock verification etc.

Presently, there are 333 degree colleges available in Assam state of different categories. They are affiliated from different universities of Assam.

Government Degree College -07, Provincial Degree

Colleges -295, Aided Degree Colleges – 24, Private

Degree College – 07

The study covers all types of degree college libraries and collects primary data through pre-tested questionnaire and interview method.

8. LIMITATIONS OF THE STUDY

The present study being a one man investigation, the work will be done with available resources and time. The following are the limitations of the study: The study covered only those automated degree college libraries which are performing their house-keeping works through library software and networking as Acquisition, Circulation, Classification and Cataloguing, serial control and Stock verification etc. Those degree colleges which are not using automation and networking in library activities will not cover in this study. The study will cover only those libraries which permit and provide essential and sufficient data to the investigator.

9. HYPOTHESIS AND ASSUMPTIONS

Hypothesis is an important intellectual instrument of research. Hypothesis is a tentative solution to the problem.

James E. Creighton defines “A hypothesis is a tentative supposition of provisional guess which seems to

explain the situation under observation”. (Creighton,2000)

P.V. Young defines “A provisional central idea which becomes the basis for fruitful investigation is known as hypothesis”. (Young,1973)

The following hypothesis have been formulated for the present study-

1. The present status of library automation and networking of the degree college libraries is not satisfactory.
2. IT / Network based information services are not fully developed.
3. The funds provided for library automation and networking are inadequate.
4. The present staff of the library is insufficient and not trained for handling of library software, automation and networking.
5. The facility of campus link, outside link and access on web in degree college libraries is in progress.

10. RESEARCH METHODOLOGY AND SAMPLING TECHNIQUES

The term ‘methodology’ means “The techniques and frames of reference by which researchers approach and carry out an enquiry” (Busha & Harter, 1980).

Research methodology means “research methods or techniques refer to the methods , the researchers use in performing research operations” (Kotheri,2004).

The study is basically an analytical one. For this purpose primary data will be collected, the following research method will be adopted for the study.

Descriptive methods of Research:

In this type of research, the researcher will only to present the things which are happening. Thus it is based on survey and fact finding enquiries of various types. For this purpose researcher will arrange the enquiries for achieving the exact thing that he will determine. The study will be based on survey.

Sample and Sample Size

Sample Techniques (Survey):

Survey method is one of the most common methods used to conduct research in social science. When adequate information about some social problem is not available in records like files and other resources, the researcher has to gather data from the population through personal contact, interviews or others techniques that are commonly called as social survey.

The survey methods consists of various techniques like observation, questionnaire and interview but only questionnaire techniques is discussed in length as it is used to collect data.

In this study, a short **structured questionnaire** will be designed and distribute among the respondent in the colleges under the study

Sources of Data:

The researcher will collect necessary information / data form primary and secondary sources of information available in libraries, information and documentation enters and offices.

These sources include: Research Journals, Research reports, Thesis, Dissertations, Conference / Seminar proceedings, Books, Encyclopedia, and Handbook etc. It will find through internet search that more specifically on the research topic.

11. METHOD OF COLLECTION OF DATA (Questionnaire)

As the research is descriptive in nature, the present study will use the pretested, structured questionnaire and administered observation and interview will also be used to generate data to make the study reliable.

12. PLAN FOR DATA ANALYSIS

The data will be collected through structured questionnaire and the empirical data will be collected through personal visits / observation and will be analyzed, interpreted and presented through tables, graphs, pie-diagrams/ bar chart etc. The findings will also consider as important guidelines to draw the conclusion. Data will be analyzed through various statistical techniques and tools for finding accuracy in result.

13. CHAPTERIZATION OF THE STUDY

The present research work will outline in seven chapters. These will cover all related aspects of research topic undertaken for study.

CHAPTER 1: INTRODUCTION

Introduction, Library automation and networking concepts, Need of the study, objective of the study, scope of the study, limitation of the study, significance, selection of the problem, hypothesis, research methodology, and organization of the study

CHAPTER 2: REVIEW OF LITERATURE

The literature search is an attempt to identify, locate and synthesis completed research reports, articles, books and other materials about the specific problems of a research topic

CHAPTER 3: HISTORICAL DEVELOPMENT OF ACADEMIC LIBRARIES IN INDIA

This chapter deal information regarding history and development of academic libraries, School, college and University Libraries, Role of UGC for development of college Libraries and resources, building infrastructures, Role of INFLIBNET for improving automation and networking and digitization of resources

CHAPTER 4: LIBRARY AUTOMATION AND NETWORKING IN UNIVERSITY AND COLLEGE LIBRARIES IN INDIA.

Historical perspective of library automation in India as well as abroad, Concept of library automation, system approach of library automation, objective of library automation, need of library automation, steps in library automation, implementing library automation and housekeeping operations. It also describe automated library services

CHAPTER 5: MODEL PLANE FOR LIBRARY AUTOMATION AND NETWORKING IN DEGREE COLLEGE LIBRARIES

In this chapter researcher design the model plan for library automation and networking in Degree College libraries in Assam state

CHAPTER 6: ANALYSIS AND INTERPRETATION OF DATA

The relevant data will be collected through questionnaire and personal interview and data will be analyzed and interpreted by way of tabulation, graphs, pi-charts and percentage circles etc.

CHAPTER 7: FINDINGS, SUGGESTIONS AND CONCLUSION

On the basis of analysis and interpretation of data the researcher would like to arrive at specific findings and important suggestions will be configured based on the findings of the study and test the hypothesis and fulfill the objectives of the study. The conclusion of this chapter will be helpful for future researcher and degree college managements.

BIBLIOGRAPHY APPENDEX

1. List of degree colleges
2. List of table and figures
3. Abbreviations
4. Questionnaire

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