CHAPTER-1

INTRODUCTION

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1.0 Introduction

Information technology (IT) has been evolving rapidly during the latter half of the 20th century, particularly since the 1960s and 1970s. It has revolutionized the media and modes of computing, storing, and communicating information. The changes in the processing and distribution of information, made with enthusiasm and by necessity, have affected society in many ways. The application of IT facilitates innovation, free flow of information, creative expression, and effective management. The use of IT in libraries has tremendously increased because it provides enhanced user satisfaction, cost effectiveness, faster and simpler programmes, rapid responses, and easier operational procedures. Generally, the use of IT in libraries includes housekeeping operations, online access to library collections, the use of bibliographic databases, online literature searching, and the use of personal computers for office use. Library automation provides easier, faster and better services to library users.

New information and communication technologies are transforming and reforming the usual processes and services that had been traditionally performed by libraries over the last decades. The evolution from online to CD-ROM based services, and more recently, to Web-based services, has changed both the concept and scope of libraries and information centres world-wide.

The convergence of Information Technology (IT) and traditional information handling techniques has revolutionized the discipline of library and information science to a great extent. Traditional library systems have evolved into online information delivery systems that manifest as Digital Libraries today.
The extent of Digital Library Research and implementations are definite indicators of this trend. Numerous issues face libraries today. Libraries of all types are challenged to provide greater information access and improved levels of service, while coping with the pace of technological change and ever-increasing budget pressure.

1.1 Library Automation: An Overview

Information technology has great influence on all aspects of life. Almost all places of work and living environment are being computerized. Library and information centres are not an exception. Initially, the hype was towards library automation to mechanize many of the manual jobs. Computers have made a big mark in information storage and retrieval. Particularly, networking of computers made information accessible to distant places and motivated online delivery of tailor-made information services to users at their desktops. Thus, the advent of Internet has opened up a new era for local libraries to become global libraries wherein collection of one library or repository is no more restricted to few users of the parent organization.

In the early 1970s, libraries began to adopt software applications to allow them to perform specific functions more efficiently. In the course of time, these systems became more widespread and their benefits more evident. There was an increase in both the number of vendors and the number of automated functions. At the same time, computer power increased while its cost decreased.

The next phase of library automation combined several library activities into one integrated system, allowing librarians to perform almost all their functions online. This produced the turnkey systems commonly known as
Integrated Library Systems (ILS) that subsequently dominated library management and service functions. Data entered once could be used in multiple ways, which increased efficiency and accuracy. These integrated software applications were introduced to the marketplace, using minicomputers capable of processing Machine Readable Cataloguing (MARC) records, a national standard record format on flat files. During the 1980s many library vendors began to offer host-terminal applications, thus launching the era of one-way networking over communication networks. At this stage, the hardware, operating system, and application software were proprietary, and permitted little customization or sharing between academic institutions and their users.

The transition from large scale computing technologies to microcomputers was well under way by the mid-1980s. This trend required re-education of the library and systems IT staff, which added significant cost to libraries. Three changes followed: different library application providers, more powerful technologies, and software applications and networking configurations that were no longer developed in-house. Libraries of all types began utilizing new application systems to automate resource sharing. Union Catalogs and Inter-Library Loan modules were developed by library software vendors to allow cooperating institutions to combine their catalogs and allow patrons of one library to request and borrow materials from linked institutions. These technologies fostered the growth of library consortia and the extension of offerings beyond the organizational boundaries of individual libraries.

As the 1980s ended, libraries and computing centers were tackling communications, relational databases, and information distribution challenges. It
became a key for universities to provide their campuses with communication technologies that wired libraries, classrooms and dormitories. The wiring of universities for networking was a prerequisite for accessing local intranet and external Internet database resources. Intranets provided campus connectivity using TCP/IP communication standards. This permitted interconnectivity of computing resources: servers, PC desktops, and terminals. The 1990s saw greater use of campus communication infrastructures and commercial communication systems to create and store information and then to deliver it from libraries to end users. Similar technology advances came later to school and public library systems (Cibbarelli, 1999).

Large databases from periodical, magazine, and journal publishers became increasingly available in digital format - at first on CD-ROM; later via online services. Library services are transitioning from local traditional collections to global resources provided on demand via the most advanced networking technologies. Today, library collections are used by people on campus as well as by individuals who are not even located on the library’s physical facilities. Thus, individuals associated with a given institution and accessing resources from afar need new electronic interface tools. As a result, professional librarians must be computer literate and knowledgeable about Internet technologies to fully participate in the planning, design, and implementation of future library services.

The Internet has had a dramatic impact on the tools libraries use to index, supply, and deliver information. Intranets have an equal impact, a fact unfortunately not always recognized by information professionals.
A truly integrated library system is a relational database, containing bibliographic records for each title. All library functions are processed from these records and updates appear in real time. Systems lacking true integration contain records for each title in each module, and data is separately stored into each module. However, most of these systems have some type of "behind the scenes" or "seamless" software which transfers data between some of the modules. Traditional Integrated Library System (ILLS) commonly include modules that perform:

- **Acquisitions**: tracking the purchase of materials through ordering, claiming, receiving, invoicing and processing.
- **Cataloguing**: creating catalog records.
- **Serials Control**: automating ordering, receipt, routing, and renewals of all serial subscriptions.
- **Circulation**: allowing librarians to check materials in and out, place renewals or holds, and enter payments.
- **Online Public Access Catalog (OPAC)**: an electronic record of holding, bibliographic, and item information.
- **Services**: information services such as Bibliographic Enquiry Service, Inter Library Loan, Document Delivery Service, etc.
- **Administration**: ensure staff and patrons are granted permission to appropriate modules and features, install software updates, view system-generated reports, and perform other database maintenance and repair functions.
1.2 Library Automation Status in India

Computerising Indian libraries has been a rather slow process until recently, largely because of the lack of trained manpower and availability of suitable cost effective library management software. The automation routines and information services was initiated in the early 1960s. INSDOC, Delhi and DRTC, Bangalore were in the forefront with regard to carrying out experiments in application of computers in the libraries. Since the late 1980s computerisation has gained the momentum. Libraries of BARC, IIT, TIFR Mumbai had started using computers in their activities. In the late 1990s the situation changed completely, with more and more library professionals getting trained in computer application. NISSAT, Library Networks have also played a major role in carrying out experiments in application of computers in the libraries. The libraries started with library automation systems like storage and information retrieval system like CDS/ISIS, in-house developed software using dBASE, Foxpro etc. Libraries have had their share of both successes and failures in implementing automation systems. The reasons for the failure include, among other things, making wrong choices in selecting systems. Some may argue that the libraries did not have very many choices and they had to select one from a small list of three or four systems. However, there are examples of libraries which selected the best among the available systems and implemented them with success.

India has over 340 universities and 17,000 colleges (UGC, 2006). Most of the universities are funded either by Central Government or by State Governments and while a few are funded by private bodies. In order to facilitate
the modernization and to promote resource sharing among the libraries and information centers attached to these academic institutions, the University Grants Commission established Information and Library Network (INFLIBNET) Centre during 1991. One of the major objectives of INFLIBNET Programme is to modernize libraries and information centers (Kumar and Kumbar, 2000). It has developed an Integrated Library Software called SOUL which is being used in many libraries. INFLIBNET has trained many library professionals in use of information technology applications for libraries in India (INFLIBNET Centre, 2006).

The increasing availability of commercial library-specific software packages has allowed libraries a wider choice meeting its software needs. Many of the libraries are using computers for automating their activities and good progress has made. Efforts are also underway to network all the university and college libraries for resource sharing in the country. Nonetheless, what once appeared to be a utopia is now a tangible reality. Today, almost all university libraries are automated or about to complete the process. A number of fully operational networks have also been established, and considerable progress is being made with respect to the creation of union databases.

The remarkably rapid expansion of the Internet has made possible remote access to the existing OPACs, many of which are now connected to the Web. At the same time, an increasing number of reference collections are now available on CD-ROM, and ever-greater use is being made of the Web as an information resource. All this is encouraging the development of guidelines on interlibrary
co-operation policies. Successful implementation of Integrated Library Software in a library is a prerequisite for resource sharing.

The level and success of automation have varied across the different types of library, reflecting the uneven development of a process rather than as a steady progression; in fact, most automated systems have been installed over the last few years.

1.3 Need for the Study

Modern libraries are complex systems that consist of many procedures and functions. Traditionally, these functions have included acquisition of materials, cataloguing and classification, circulation and interlibrary loan, serials management, and reference services. The most important function, however, has been the provision of service to the users. For centuries, librarians have managed warehouses of documents by acquiring, cataloguing, and classifying books, journals, and other materials, and circulating them to their clients. Computer and telecommunication technologies have empowered the information professionals to select, organize, retrieve, and transfer the actual information effectively and efficiently to the users.

A library can satisfy the information needs of its users only when it has a system in place to generate need based information services for each individual. User expectations go beyond borrow / return of library books and journals. They want a most convenient way to keep abreast of their field. Library’s ability to generate services like CAS, SDI, ILL, DDS has been improved by the implementation of integrated library systems and availability of electronic resources.
Many libraries are using these technologies in various fields. The impact of information technology on libraries, the condition of changes taking place in trends of Integrated Library Software and services is enormous. So there are a number of areas to assess the impact of information technology, especially integrated library software on libraries. A literature search on Library and Information Science Abstracts (LISA), INSPEC database and scanning of journal articles, convention volumes revealed the complete lack of in-depth studies on the topic except a few general surveys. Hence, the present study has been undertaken.

1.4 Statement of the Problem

Looking at the complex factors involved in implementation and use of library management software, it was felt necessary to investigate the problem entitled "An Investigation of the Effective Use of Integrated Library Software in Indian University Libraries." It is hoped that the study will give the state-of-the-art of the present infrastructure related to information technology, library automation and the level of use of housekeeping operations using integrated library software. It is expected that this study would provide library professionals with a broad idea about the level of use of integrated library software in Indian university libraries. It will also help the software developers to incorporate gaps and the possible functional specifications of the integrated library software and in turn it will benefit the library community in providing effective services to the user community. The study would also provide library managers, professionals and policy makers with some clear insights about the benefits of using Integrated Library Software. The study would also affect the perceptions of planning library automation and may enable the library professionals and policy makers to take appropriate decisions in this regard.
1.5 **Scope of the Study**

The scope is limited to study the use of Integrated Library Software in selected University Libraries in India. It covers about one hundred and fifteen University libraries, which belong to State, Central and Deemed university categories and funded by the UGC under the INFLIBNET Programme for Library Automation and Networking. The study covers only those university and institution libraries where in Library Automation Software are used regularly. The study covers only seven areas of library housekeeping activities and services, viz., Acquisitions, Serials Control, Cataloguing, Circulations, OPAC, Services and Administration and Maintenance. The scope is limited to study the level of effective use of Integrated Library Software from implementation and operation point of view.

**Terminology**

Integrated Library Software is an integrated group of computer programs that automates multiple library operations, viz., Acquisitions, Serials Control, Catalog, Circulation, OPAC and Reference Service running on one or more microcomputer operating systems. Integrated online library systems today are considered part of the "knowledge" or "information" software network that manages an institution’s internal and external database resources.

Although preference is given to the term integrated library software (ILS) in this study, integrated library management system (ILMS), library automation system, library automation software, and library management system are terms that often carry exactly the same meaning.
1.6 **Objectives of the Study**

The following are the objectives envisaged for the present investigation:

1) To measure the infrastructure available for use of integrated library software in University Libraries effectively.

2) To investigate the use of Acquisition Module of Integrated Library Software in the University Libraries.

3) To study the use of Serials Control Module of Integrated Library Software in the University Libraries.

4) To examine the use of Catalog Module of Integrated Library Software in the University Libraries.

5) To study the use of Circulation Module of Integrated Library Software in the University Libraries.

6) To identify the use of various integrated library software in Indian University Libraries.

7) To study the use of information technology, standards and protocols in the Integrated Library Software.

8) To find out common problems faced by the libraries in relation to automated systems.

9) To explore and suggest areas of improvement for increasing the performance level of the Integrated Library Software in India.

10) To propose guidelines and generalised functional specifications for ideal Integrated Library Software for the academic community.
1.7 Hypotheses

Keeping in view the need for the study and its objectives, the following hypotheses have been formulated;

**Hypothesis 1:** The majority of the University Libraries would prefer commercial application software for library automation.

**Hypothesis 2:** Available Integrated Library Software in India fall short of the needs of the modern library.

**Hypothesis 3:** Acquisition Module is modestly used in University Libraries.

**Hypothesis 4:** Serials Control module is very complex in nature and less used in Indian University Libraries.

**Hypothesis 5:** Catalog Module is matured enough and it is amply used in University Libraries.

**Hypothesis 6:** Circulation Module is reasonably used in University Libraries.

**Hypothesis 7:** Customer Support for Integrated Library Software is below the satisfactory level.

1.8 Methodology

Survey research method has been adopted for the present investigation. The sample for the study are selected from University Libraries funded by University Grants Commission under the INFLIBNET Programme. Libraries are selected on the basis of the library automation status represented by review of
literature. The present survey was conducted during the period from June 2004 to June 2005. The survey has been carried out by administrating a questionnaire (Appendix 1) to the selected university libraries, and the responded questionnaire was analysed for data interpretation and conclusion. Data received from the questionnaires was augmented by on-site visits, discussions and interviews with university libraries wherever it was necessitated. The data required for this study has been collected from both primary and secondary sources. Secondary sources of data used include journal articles, books, reports, official records, university websites and other published documents.

Prior to gathering the primary data for the research study, a questionnaire was pilot tested. The purpose of pilot study was to test the validity of the questionnaire both as a data collection instrument and as a statistical measurement device. The pilot testing helped to refine the questionnaire.

The study concentrates on Automated University Libraries, specifically on the aspects of status of Information Technology Infrastructure, Functions, Features and Services usage of Automated University Libraries in India. Questionnaires were administered to 121 University Libraries in India and only 115 libraries returned filled-in questionnaires, thus resulting into a response rate of 95.04 %. The data collected from all the respondents was analysed by using suitable statistical techniques such as Median and Skewness with MS Excel and SPSS packages.

Likert Scale

The Likert technique presents a set of attitude statements. Subjects are asked to express agreement or disagreement of a five-point scale. Each degree of
agreement is given a numerical value from one to five. Thus a total numerical value can be calculated from all the responses. A typical question using a Likert Scale might pose a statement and ask the respondent with 5 point scale with 1 being low (Poor) and 5 being high (Excellent) (Clason and Dormody, 1994).

The responses elicited are coded as 1-2-3-4-5, but this remains just a coding. It makes no sense to add a response of agree (coded as 2) to a response of undecided (coded as 3) to get a ‘mean’ response of 2.5. The maximum possible score for any statement is 5. For the present study the data collected are manipulated by statistical package and calculated Total of responses, Median and Skewness in interpreting the data.

1.9 Chapterisation

Keeping in view the aims and objectives of research topic, the whole study is organised into following seven chapters;

Chapter 1: Introduction

This chapter attempts to establish the need for the study on effective use of integrated library software for housekeeping operations and services. It includes a brief introduction, highlights the need for the present study. It also provides objectives, hypotheses, scope and methodology adopted for the present study.

Chapter 2: Review of Related Literature

The purpose of this chapter is to present a brief review of the published literature relating to information technology applications in library, library automation, integrated library software and house-keeping operations and
services in university libraries. The literature published in India and abroad is reviewed and listed in chronological order under sub-topics.

Chapter 3: Integrated Library Software: An overview

An attempt is made in this chapter to delineate the integrated library software used in Indian university libraries. A brief description of the standards and protocols related to integrated library software and each library automation software has been provided.

Chapter 4: Library Housekeeping Operations and Services

An effort has been made in this chapter to delineate the integrated library software objectives of the automated housekeeping operations, viz., acquisition, catalog, serials control, circulation, OPAC, services and administration and maintenance. Each operation involves a number of automated functions which are briefly described.

Chapter 5: Data Analysis and Presentation

This chapter reports a detailed analysis of the effective use of the integrated library software considered in this study. Usage of major functions and features of housekeeping operations and services of integrated library software are analysed in detail. It also encompasses a study of information technology infrastructure, manpower and resources. It also covers library automation software, commencement of automation of library functions, etc.
Chapter 6: Integrated Library Software - Model

This chapter presents guidelines for features, functions and standards could be included in a model integrated library software. Suggestions have been made to improve the level of use of integrated library software in university libraries.

Chapter 7: Findings, Suggestions and Conclusions

The concluding chapter presents the findings, observations and suggestions made in various preceding chapters. The assessment results are enumerated by feature and functionwise. Few suggestions made by libraries are also mentioned. Suggestions have been made for future research in this chapter.

The last part of the thesis includes Appendix 1 which is a questionnaire, and Appendix 2 is a list of Universities Studied.

References


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