

BLIS semester II
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Reference Sources & Services
Topic – **LIBRARY AUTOMATION**
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LIBRARY AUTOMATION: DEFINITION, NEED, PURPOSE, AND ADVANTAGES

Introduction

Libraries are known for using Information and Communication Technology (ICT) both for automation of its routine activities as well as for providing search services to the users. Computers are increasingly used in libraries both for internal operations as well as for accessing information that is available in the four walls of the library. The application of computers avoid repetitive jobs and save labour and time both for users as well as outside the library staff. Computers are not only used as a data processing tool, but also for information storage, access and retrieval.

The use of computers for information storage and retrieval began with the production of computer-generated and printed indices for scientific and technical literature in 1960s. Subsequently, several organizations started using computers not only for generation and printing of indices but also for creation of computer readable

databases, By early 1970s, several published indexing and abstracting journals, such as Biological Abstracts, Chemical Abstracts, Index Medicus, etc. were not only produced by computer, they were also made available as computer readable databases on magnetic tapes and several organizations started subscribing to them on magnetic media to organize local information storage and retrieval services.

Integrated library automation packages were introduced in libraries in 1970s. Minicomputers were used in 1970s in the libraries to computerize operations like circulation, acquisition, cataloguing, serials and Library OPAC. The trend picked up in early 1980s with introduction of PCs at a cost affordable to the libraries. Past two decades have witnessed unprecedented developments in computer technology. Resultantly, inexpensive computing resources are now within easy reach of libraries. Computers are being used increasingly to automate various activities in libraries using a suitable off-the-shelf general or specific-purpose software package now available in a wide range for library automation.

This module covers definition, history, need & purpose of library automation. Planning for library automation, automation of in-house operations i.e. Cataloguing, OPAC, Circulation, Acquisition, Serial Control etc. Barcode Technology & RFID is also covered in this module.

Definitions of Library Automation

The Oxford English Dictionary (Simpson & Weiner, 1989) defines automation as “application of automatic control to any branch of industry or science by extension, the use of electronic or mechanical devices to replace human labour”.

ALA Glossary of Library and Information Science defines automation

as “the performance of an operation, a series of operation or a process by self activating, self controlling, or automatic means. Automation implies use of automatic data processing equipment such as a computer or other labour saving devices”. Although, the term automation was first introduced by D. S. Harder in 1936, the word library automation is being used in literature for the last five decades.

According to Encyclopedia of Library and Information Sciences (Kent, 1977) “Library Automation is the use of automatic and semiautomatic data processing machines to perform such traditional library activities as acquisitions, cataloguing and circulation. These activities are not necessarily performed in traditional ways, the activities themselves are those traditionally associated with libraries; library automation may thus be distinguished from related fields such as information retrieval, automatic indexing and abstracting and automatic textual analysis”.

Library automation is the general term for ICT trends and techniques that are used for replacing manual system in the library. The term “integrated library system” refers to sharing of a common database (for documents and patrons) to perform all the basic functions of a library.

History of Library Automation

The initial work on library automation began in 1930's when punch card equipment was implemented for circulation and acquisition in libraries. During the 1930's and early 1940's progress on computer systems was slow because of depression and World War II. The library automation progressed along with the developments in computer and communication technology. The landmark developments in history of library automation are as follows:

- From 1946 to 1947, two significant computers were built. The ENIAC I (Electronic Numerical Integrator and Calculator) computer was developed by John Mauchly and J. Presper Eckert at the University of Pennsylvania. It contained over 18,000 vacuum tubes, weighed thirty tons and was housed in two stories of a building. Another computer, EDVAC, was designed to store two programs at once and switch between the sets of instructions.
- A major breakthrough occurred in 1947 when Bell Laboratories replaced vacuum tubes with the invention of the transistor. The transistors decreased the size of the computer, and at the same time increased the speed and capacity.
- The UNIVAC I (Universal Automatic Computer) became the first computer using transistors and was used at the U.S. Bureau of the Census from 1951 until 1963. Software development also was in progress during this time. Operating systems and programming languages were developed for the computers being built.
- Invention of integrated circuit by Robert Noyce of Intel and Jack Kirby of Texas Instruments in 1960s can be considered as yet another landmark. All the components of an electronic circuit were placed onto a single "chip" of silicon.
- Development of a new indexing technique called "keyword in context" (KWIC) by H.P. Luhn, in 1961 for articles appearing in Chemical Abstracts. Although keyword indexing was not new, it was found to be very suitable for the computer as it was inexpensive and it presented multiple access points.
- Use of computer for the production of machine readable catalogue records by the Library of Congress (LoC) in mid-1960s. Between 1965 and 1968, LoC began the MARC I project, followed quickly by MARC II. MARC was designed as way of "tagging" bibliographic records using 3-digit numbers to identify fields.

- The MARC II format became the basis of a standard incorporated by NISO (National Information Standards Organization) in 1974. This was a significant development because the standards meant that a bibliographic record could be read and transferred by the computer between different library systems.
- ARPANET, a network established by the Defense Advanced Research Projects Agency in 1969 brought into existence the use of e-mail, telnet and ftp.
- The use of commercial systems for searching reference databases (such as DIALOG) began in 1970s. BALLOTS (Bibliographical Automation of Large Library Operations) in the late 1970's was one of the first and later became the foundation for RLIN (the Research Libraries Information Network).
- The On-line Computer Library Center started its first cooperative cataloguing venture in 1970s. This significant project facilitated technical processing of library materials in member libraries.
- A sub-net of ARPANET made MELVYL, the University of California online public access catalogue, available on a national level in 1980. The MELVYL is still used as centralized integrated library software by all the campuses of University of California.
- During 1980s, the size of computers decreased, at the same time, technology provided faster chips, additional RAM and greater storage capacity. The use of microcomputers during the 1980's expanded tremendously into the homes, schools, libraries and offices specially in developed countries.
- The UNESCO started distributing Micro CDS / ISIS in 1980s through its distribution centre in every developed country. Free availability of Micro CDS / ISIS, developed specially for library applications, proved

a boon for the librarians in developing countries.

- Several integrated library packages started appearing in the marketplace. The LibSys in India was launched towards the end of 1980s.
- In 1980s, several other software became available to librarians, such as spreadsheets and databases for help in library administration and information dissemination.
- The introduction of CD-ROMs in the late 80s changed the way libraries operate. CD-ROMs became available containing databases, software, and information previously only available through print, making the information more accessible.
- Connections to "outside" databases such as OCLC, DIALOG, and RLIN continued, however, in the early 90's the databases that were previously available on-line became available on CD-ROM, either in parts or in their entirety. Libraries could then gain information through a variety of options.
- The Internet gave rise to yet another era in library automation. The use of networks for e-mail, ftp, telnet, Internet, and connections to on-line commercial systems grew.
- The World Wide Web developed in 1993 became the fastest growing media of information delivery of all kinds.
- Expert systems and knowledge systems became available in the 90s with improvement in software and hardware capabilities. With the development of more advanced silicon computer chips, enlarged storage space and faster, increased capacity telecommunication lines, the ability to quickly process, store, send and retrieve information is causing the current information delivery services to flourish.

Need & Purpose of Library Automation

The exponential growth of information has made manual system redundant necessitating requirement of computerized information storage and retrieval. Effective and efficient handling of huge quantum of information is only possible by using computers, which have the added advantage of being highly accurate, and timely that adds value to information. Use of computers in automating the library routines is specifically useful for the following reasons:

- Much of the works involved in library are repetitive, tedious, and mechanical in nature requiring accurate updating of records in files. The same bibliographic record in a library is used to perform multiple operations. Each operation may concern with individual copies of a title. A bibliographic record created at the time of ordering a document is first used for its acquisition, then for technical processing and subsequently for library OPAC, circulation, binding, etc.;
- Automation permits decentralized access to a bibliographic record by multiple users. A staff member in a branch library can verify the status of an order without maintaining duplicate files or without making an enquiry. A user can check to see if a book is out on loan or available on the shelf of the library;
- The application of information technology in libraries results in increased operational efficiency. It ensures ease of functioning, accuracy and economy in human labour with greater speed;
- The library staff, specially the younger ones, finds use of computers interesting and exciting. Use of computers can be a motivating factor for several library staff members;
- The IT increases productivity of library staff. It relieves professional

staff from clerical chores so that they can be fruitfully used for user-oriented library services; and

- It improves quality of services rendered by the library.

Advantages of Library Automation

Improved Customer Service

Automation of the library helps take some of the workload off of librarians and other staff members in the areas of acquisitions, cataloging and circulation, which in turn allows them to better serve their patrons. This extra time can lead to more programs being facilitated in the library and make library staff available to answer reference questions and help people who having trouble researching or finding the right information.

Cataloging Improvements

Automated cataloging standards, such as MARC (Machine Readable Cataloging), allow for quicker cataloging of library items. Not only does this allow the librarian more time to dedicate to improving customer service, but it also makes the sharing of materials from location to location much easier and much more affordable.

Easier Access

Not only does automation of library materials make it easier to find books, buy it also makes it easier to access journals and some books online from a home computer or elsewhere. The automation of library collections also allows the library to be more flexible when it comes to any increases in demand.

Collections

Automation of the library allows for an improvement in the variety, amount and quality of materials that are available in the library's collection. It can also help make weeding out old, outdated and

irrelevant books and materials from the collection, which helps keep the library's collection more streamlined and easier to find the right item.

Lasting Effects

Automation is also a way of preparing the collection to become sustainable with the ever-increasing shift to a technology-based society, in terms of information dissemination, paired with the ever-decreasing amount of funding for libraries. Automation will help libraries who begin to struggle and are forced to lay off staff. Switching to an automated system allows libraries to add on features when they become available in the future, instead of having to do a complete overhaul of their collections and cataloging methods.