

# UNIT-1

## Library Automation: Planning and Implementing

Location	Learning Outcome	Knowledge Evaluation	Performance Evaluation	Teaching and Training Method
<ul style="list-style-type: none"> <li>• Class room, library or computer laboratory.</li> </ul>	<ul style="list-style-type: none"> <li>• Understanding library automation.</li> </ul>	<ul style="list-style-type: none"> <li>• Meaning and definitions.</li> <li>• Need and purpose.</li> </ul>	<ul style="list-style-type: none"> <li>• Chart out library automation, need and purpose.</li> <li>• Explain importance of library automation.</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Interactive lecture:</b> Library automation, need, purchase and importance.</li> <li>• <b>Activity:</b> Visit to a library and an automated library and ask students to compare the functioning of both the libraries.</li> </ul>
	<ul style="list-style-type: none"> <li>• Library automation planning.</li> </ul>	<ul style="list-style-type: none"> <li>• Identification of functions for automation.</li> <li>• Feasibility study.</li> <li>• System requirements.</li> <li>• Budget.</li> <li>• Training.</li> </ul>	<ul style="list-style-type: none"> <li>• Chart out functions of library.</li> <li>• Identify functions to be automated.</li> <li>• Discuss the feasibility.</li> <li>• Plan for automation including system requirements, budget and training.</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Interactive lecture:</b> Functions of library to be automated, feasibility study &amp; planning process.</li> <li>• <b>Activity:</b> Visit an automated library and make a case study on process of automation planning adopted by the library.</li> </ul>
	<ul style="list-style-type: none"> <li>• Implementing library automation.</li> </ul>	<ul style="list-style-type: none"> <li>• House-keeping operations.</li> <li>• Library services.</li> </ul>	<ul style="list-style-type: none"> <li>• Chart out house-keeping operations like cataloguing, circulation, periodical management, etc.</li> <li>• Chart out service as circulation, reference, OPAC, etc.</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Interactive lecture:</b> Different functions under house-keeping operations and services.</li> <li>• Automating these functions.</li> <li>• <b>Activity:</b> Visit an automated library and make a report on functioning of automated system covering both housekeeping and services.</li> </ul>




	<ul style="list-style-type: none"> <li>• Practical.</li> </ul>	<ul style="list-style-type: none"> <li>• Identification of hardware.</li> <li>• Identification of software.</li> <li>• Identifications of infrastructure.</li> <li>• Case studies.</li> </ul>	<ul style="list-style-type: none"> <li>• Hardware, software and infrastructure required for automation, make their specifications.</li> <li>• Make a proposal for library automation.</li> </ul>	<ul style="list-style-type: none"> <li>• List of hardware, software and other infrastructure required for automation.</li> <li>• Hands on practice in computer laboratory on functioning of different equipments and software.</li> <li>• OPAC search on Internet, Library of Congress Catalogue or others.</li> </ul>
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### 1.1 Understanding Library Automation

The library automation means applications of computer and communication technology in library operations and activities to eliminate/reduce the manual work to serve the library needs of the users. It enhances the access to the library resources and also fosters the routine work. Automation of library operations avoids repetitive jobs, duplication of work; enhance the speed of library functions, and increase the optimal use of library resources. It may apply to all library functions such as acquisition, technical processing, serial control, circulation and reference service. Automation of the functions saves the precious time of both library staff as well as the users.



**Figure 1.1: Automated Library**  
(Source : JNU, New Delhi)



The term automation has derived from the Greek word 'automose' which means, a system having potentiality of spontaneous motion or self-movement. The term 'automation' was first coined by D. S. Harder in 1936, who was then associated with the General Motor Company in the USA. He used the term for handling parts between progressive production processes. Since its inception, the concept has been defined by different sources or scholars differently depending upon the field of application. The definition of the term automation as defined in different reference sources are as given below.

The **Webster's Third New International Dictionary of English Language** defines 'automation' as "the technique of making an apparatus, a process, or a system operate automatically; the state of being operated automatically; automatically controlled operation of an apparatus, processor system by mechanical or electronic devices that takes the place of human labor".

The **Kent's Encyclopedia of Library and Information Science** defines the term as "automation is the technology concerned with the design and development of process and system that minimize the necessity of human intervention in operation".

Likewise, you can find several other definitions of the term in different sources. On the basis of above definitions, we can say that "the automation is a process of making a system based on mechanism and machinery to reduce human intervention in getting the work done".

Now let's understand concept of library automation. The phrase library automation defined in the **Kent's Encyclopedia of Library and Information Science** as "the library automation is the use of automatic and semiautomatic data processing machines to perform acquisition, cataloguing, circulation and other library operations.

Hence, the library automation is a process of developing a library system with the help of a mechanism and machines to get its work done automatically or with less human efforts. The place of mechanism and machines has been taken by information and communication technology.

### **Need and Purpose**

The information is playing a vital role in all walks of human life today. All of us need faster and accurate information to achieve academic, professional or recreational goals. The automated library systems satisfy the expectations of the society better than the manual system hence, automation of the library is the need of the hour. Some of the basic needs of library automation are:

- **Accuracy and Reliability:** It is evident that during the manual processing human can do any sort of error, while the computer performs all set of data processing in error free and reliable manner? Library automation removes the possibility of data error and yields the user a reliable service. Hence improve the efficiency of library staff.
- **Time Saving:** It saves the staff time in doing the manual work and speed up the process of all in-house activities and saves the times of user in finding needed materials within as well as outside the library.

- **Statistics Generation:** Automated in-house activities generate numerous data, which assist to generate multiple statistics. Statistics help us to formulate policies to manage the library and information services.
- **Library Service:** It helps to give better access to resources within library and elsewhere and improve the quality of library services. The automated library can provide bibliographic search facility through OPAC to its users. If the catalogues are made accessible through internet then, the user can search the resources anytime irrespective of location.
- **Resource Sharing:** It makes resource sharing possible as data of the library becomes sharable among libraries.
- **Dissemination of Information:** The wider dissemination of library information with the help of communication technology like internet, telecommunication, etc., becomes possible. The automation provides capability to disseminate information about the resources and services of the library through web. Such dissemination mode saves the time and efforts of the users as they are able to access required information remotely with the help of computer, laptop, smart phone, etc.
- **OPAC:** The Online Public Access Catalogue provides the facility to search bibliographic information of the Library resources which helps in locating her/his desired publication/material.
- **Enhancement of Library Management:** It enhances the library management as reports and statistics become available with the click of mouse. The automated system gives the management input and feedback on various services and also monitors the human resources of the library effectively and efficiently.

### Review Questions

#### A. Fill in the blanks

1. The phrase library automation represents the concept of applications of computer and \_\_\_\_\_ technology in library operations.
2. Library automation assists in accessing the library \_\_\_\_\_ available in the library and fosters the \_\_\_\_\_ works.
3. The term automation has derived from the Greek word \_\_\_\_\_ which means, a system having potentiality of spontaneous motion or self movement.

#### B. Multiple Choice Questions

##### Tick the correct answer

1. Why do we need faster and accurate information?
  - (a) For academic purpose
  - (b) For professional purpose

- (c) For recreational purpose
  - (d) All of the above
2. How does an automated library disseminate library information?
    - (a) By Communication technology
    - (b) By postal service
    - (c) By courier service

**C. Short Answer Questions**

1. What is a library automation?
2. What is the need of library automation?
3. Why do we need integrated library management system?

**Checklist for Assessment Activity**

Use the following checklist to see if you have met all the requirements for Assessment Activities.

**Part-A**

1. Differentiated manual and automated library.
2. Explained the need and purpose of library automation.
3. Identified the benefits of library automation.

**Part-B**

1. What is an automated library system?
2. Why library automation is needed?
3. How an automated library perform better than manual library system?

**Part-C**

**Performance Standards**

The performance standards may include, but not limited to:

Performance Standards	Yes	No
Able to explain library automation.		
Able to identify need and purpose of library automation.		
Able to explain benefits of library automation.		



## 1.2 Library Automation Planning

Planning is an important function of management for successfully achieving the goal with optimum utilization of resources. The Business Dictionary defines the planning as “the planning is a basic management function involving formulation of one or more detailed plans to achieve optimum balance of needs or demands with the available resources. The planning process (1) identifies the goals or objectives to be achieved, (2) formulates strategies to achieve them, (3) arranges or creates the means required, and (4) implements, directs, and monitors all steps in their proper sequence”.


Hence, a team of professionals having expertise in the field of library management and knowledge of available technology should be given the responsibility of planning. The team may include the librarian, experts of information and communication technology and the members of library authority or committee for effective planning and further implementation.

Before initiating the project of library automation, the planning team identifies the needs and the area of the automation. While planning, the planner undertakes a survey of the technology available in the market, needs of the library, special skills required for handling the technology and the initial as well as the running cost of the system. The planner should have awareness of the general advantages and disadvantages of the technology and related machines and equipment available in the market.

In the process of selecting hardware and software, the libraries should first select the software and then procure the hardware accordingly. It helps in identifying the requisite machine and equipments to run the automated system. The criteria to evaluate the advantage and disadvantages, described by Reynolds (1985) in his book on library automation are: (i) Initial cost (ii) Continuous cost (iii) Degree to which software can initially be customized to meet library needs (iv) Level of computer expertise required on the part of the library (v) Control over system performance (vi) Control over hardware upgrade (vii) Control of software enhancement.

While planning the library automation, the planning process should cover following aspects:

- (i) Identification of the library functions to be automated
  - (ii) Feasibility study
  - (iii) System requirements
  - (iv) Budget
  - (v) Training
- (i) **Identification of Functions for Automated:** The identification of the library functions to be automated provides the base to whole process of the automation. All the activities under each functional area should be documented and possible adjudged whether needed to be automated or not. This provides base to select the technology and mechanism for the automation process. For example, to automate the circulation of a library barcode or RFID technology may also be adopted depending upon the need, fund and other factors of the library.

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- (ii) **Feasibility Study:** It is a process of determining the proposed library automation, achievable on the parameters of i.e needs of the library, functions to be automated, and technology to be used, infrastructure required, and whether the library is capable of investing in the process. Once, such study is done it is easier for a library to adopt automation process.
  - (iii) **System Requirements:** System requirements depend upon the technology adopted for the library automation. It covers software, hardware, supporting machines and equipments, and infrastructure required for running the automated system. The Library Automation Software has been discussed in the Chapter-2 of this book. Depending upon the software and the technology adopted for automation hardware are finalized. Minimum hardware required may be listed as (a) Web Server, (b) Desktop Computers, (c) Printer, (d) Scanner, (e) Barcode Printer and Scanner, and Data Collection Unit (incase adopting barcode technology) (f) RFID Tags, RFID Activator and deactivator, RFID Sensor and Gate Reader, etc. (in case of adopting RFID technology) (g) Networking equipments and High Speed Internet Connection to server, etc. It may vary.
  - (iv) **Budget:** It is the most important aspect of Planning As mentioned above, the investment in purchasing hardware, software and other equipments may be high. Creation of bibliographic database of the books and other information resources and database of members also needs finance. Apart from these initial investments, the provision for running cost of the automated system should be made. Otherwise the library may become useless if the running cost is not be provided.
  - (v) **Training:** The functioning of automated library system is different from the manual library system. For running the automated system the staff and members of the library both should be provided training for getting maximum benefits out of this new system.

The training programme for the staff should be based on the operations of software, hardware, machines and equipments for in house functions as well as providing the services to the members.

The members should be provided training on availing the services through the automated library system. Such training to the members would make them self-dependent in getting maximum benefits out of the system.

## Review Questions

### A. Fill in the blanks

1. Planning is an important function of management for successfully achieving the \_\_\_\_\_ goal with optimum \_\_\_\_\_ of resources.
2. Team of professionals having expertise in the field of library management and knowledge of available \_\_\_\_\_ should be given the responsibility of library automation planning.
3. The identification of the \_\_\_\_\_ to be automated provides the basis to whole process of the automation.



## B. Multiple Choice Questions

Tick the correct answer

1. The system requirements of library automation covers:
  - (a) Software
  - (b) Hardware
  - (c) Supporting machines and equipments
  - (d) All of the above
2. RFID stands for:
  - (a) Radio Frequently Identification
  - (b) Radio Fault Identifier
  - (c) Radio Frequency Identification
  - (d) Radio Fast Immobilizer

## C. Short Answer Questions

1. What is library automation planning?
2. Who should plan library automation?
3. What are components of the library automation planning?

### Checklist for Assessment Activity

Use the following checklist to see if you have met all the requirements for assessment activity.

#### Part-A

1. Understood the concept of library automation.
2. Explained steps of library automation planning.
3. Explained aspects to be covered in library automation planning.

#### Part-B

1. What is library automation planning?
2. What are different aspects which should be covered in library automation?

#### Part-C

### Performance Standards

The performance standards may include, but not limited to:

Performance Standards	Yes	No
Able to explain planning process of library automation.		
Able to explain aspects to be covered in library automation planning.		
Able to plan library automation.		





### 1.3 Implementing Library Automation

The implementation of library automation process is converting planning into action. As per planning, the required software, hardware and equipment should be acquired by the library as well as necessary infrastructure for the automated system should also be created. Once the machines and equipments are in place and the required staff is ready the creation of different database may be started. The operations of the library should be automated step by step.

There two different groups of operations in the library may be automated. These are:

- A. House-Keeping operations
- B. Library services

#### A. House-Keeping Operations

The library staff performs many tasks for running a library and providing services to its users. Those tasks include (a) Acquisitions (b) Cataloguing (c) Serials Control (d) Circulation and so on. The scope and the meaning of the term housekeeping and the application of computers have also been discussed in Chapter-2 of this book.

#### (a) Acquisitions

Automation of acquisition systems are developed to facilitate ordering, receiving library materials, and monitoring expenditures. Acquisition is a labour intensive and time consuming process as well as repetitive in nature. Automated acquisition system empowers library staff to reduce the paper work and help to generate various reports to ease their daily acquisition work. The acquisition work starts at a point where decision has been made to order items. For the purpose of acquiring material, an automated acquisition system should manage and distinguish different orders. It could be gifts, free publication, depository items etc., however status of order is also mandatory such as outstanding, shipped, returned, cancelled, claimed, hold on etc.(Reynolds, 1985).It involves selection of vendors, placement of orders, issuing of reminder notices to vendors, processing of documents.

Following works under the acquisition may be automated:

- **Selection, Approval and Ordering:** This process starts with the selection of document by staff or recommended by the members of the library. The recommendations are collected, verified and approval is sought from concerned authority. However, approval authority may be the librarian or subject specialist or book selection committee. After approval, the order for the book or any other library materials is placed to the concerned vendor to supply.
- **Cancellation, Receiving and Payment:** Sometimes the orders of the library materials are needed to be cancelled as per the cancellation clause in the order. After receiving the order, acquisition staff starts the matching with the order and enter in the acquisition system which proceed to the payment to the suppliers but must maintain its ledger and account balance. All this process is automated using the ILMS acquisition module.
- **Budget:** One file must contain the budget detail of all the departments, subjects and expenditure heads. The input to this master file includes the amount allocated to budget heads for each financial year. In the automated budget system, library staff can define the year, department, budget head, allocation etc. to ease the process of budgeting.

- **Currency:** It also needs to define the currency used in price field at the time of indent and invoice receipt. This is needed to mention in case money is other than the national currency. In automated system, acquisition staff has to define the conversion rate and then the automated system automatically converts the money.
- **Subject:** This option is to prepare a list of subjects used in subject field at the time of indent. The subjects are also assigned with equaling class number from the classification scheme used by the library. Controlled vocabulary such as Sears List of Subject Heading, or Library of Congress List of subject heading, etc., may be used for this purpose.
- **Letters:** Various letters are prepared to communicate with users and vendors etc. Staff can field names within the letter content, which will be replaced with relevant values during the time of generation of letter. Various letter may be prepared in acquisition system : (i) supply order, (ii) intimation of approved & unapproved indents, (iii) intimation of document receipts, (iv) sanction letter, (v) contingent bill, (vi) receipt / issue letter, (vii) intimation to vendor, (viii) supply order, (ix) gratis acknowledgement, (x) cancel supply order etc.

#### (b) Cataloguing


Cataloguing is the process of creating bibliographic database of the library resources. Cataloguer adds the bibliographic information of the library holding to the catalogue record. Mainly in this module, creation, storage, retrieval and management of bibliographic record are done. Authority control of author, subject heading etc. is also performed in this module. For this purpose standard bibliographic format is adopted. The standard formats provide facility of sharing the bibliographies with other libraries as well as importing bibliographies from other library's bibliographic database. The MARC and CCF are two popular bibliographic formats.

MARC (Machine Readable Catalogue) standard bibliographic format is used to describe the library materials. It was developed by Library of Congress in 1960s and became an international standard in the year 1973. Each field in the MARC describes the information about the material record such as the author, title, publisher, date, language, media type, etc.



**Figure 1.2: Web OPAC**

(Source: <http://125.19.35.233:8080/jopacv11/html/SearchForm>, accessed on March 1, 2014)



Common Communication Format (CCF) is the format for exchange of bibliographic records. It was developed and promoted by UNESCO for promoting standardized bibliographic formats among the libraries worldwide. It helps to achieve consistency, uniformity and compatibility to transfer record between computer systems. Basically, it is a tag code to facilitate data exchange between two or more systems. The major drawback in CCF is the different codes used for data elements. However, CCF is widely used format in developing countries.

### (c) Serials Control

The automation of serial control includes the process of acquiring periodicals involving selection, order, procurement and other functions. It further, has the provision of selection policy, evaluation, preparation of binding and weeding etc. The serial control system includes following functions:

- **Selection:** It involves the selection of periodicals, magazines, newspapers etc. by periodical section staff with request for purchase for designated selector. The selector may be a collection development team, faculty members, etc.
- **Approval:** Once the request is received regarding periodicals, the concerned staff seeks the approval from authority. Authority could be head of the institution or head of department or a librarian, etc. Most of the libraries order their periodical through single agency but subscription agency often imposes service charges.
- **Ordering:** Many libraries place their periodical orders once in year and often start with the year so that libraries issue start from 1<sup>st</sup> issue. Each supply order is assigned a unique supply order number during a financial year.
- **Receiving:** A serial issue, the title matches to the correct order and must verify the title. In case of multiple subscriptions for the same title which copy has been received and where it is to be sent for shelving.
- **Claiming:** Claiming is an activity to put off due to pressure of other work, however the activity is becoming increasingly important but we must know when to claim and check on title at fixed intervals.
- **Payment:** Once the invoice is verified it normally sent accompanying voucher to pay to the concerned vendor.
- **Binding:** This utility offer the binding of periodicals, binding pattern and instructions to the binder.

### (d) Circulation

Circulation is one of the most important functions of a library. For the circulation purpose, the database of the member is being created and maintained. Automating the circulation system of a library includes following tasks:

- (i) **Check-out and Check-in:** The check-out and check-in is also known as issue and return of library materials to the members. For this purpose, either barcode or RFID technology is being used. In any circulation control system it should ensure that

items are securely checked out to library users. The check in function enables the library to accurately record the return of items loaned to library users. Following are the steps to perform this operation:



**Figure 1.3: Circulation Counter**

(Source: JNU, New Delhi)

- Member's identity card is first scanned to read the barcode which encrypted the detail of user. Thereafter, the users photograph will be pop-up in case it is stored.
  - Read the barcode placed on the item such as books, CD-ROMs etc. Once the item code is identified from the data base then staff can issue the item to the library user. If the library adopts RFID (Radio Frequency Identification) technology then the items and the member's identity card are being put on RFID sensing machine for recording the check-out of the library resources.
  - Check-in function allows the library to enable the return of the document to the library loaned to library members. In the process of check-in function borrower need not be present in the library premises. However, items need to be verified before check-in and slip of check-in may be printed to empower users.
- (ii) **Reservation of Documents:** The library materials can be reserved for a member if the documents are required by him has already been issued to some other member. However, documents can be reserved on first come first serve basis. Reservation of documents can be cancelled of by the same member or the staff of the library if needed.
- (iii) **Circulation Reports:** Following reports can be generated through the circulation module for a period of time:
- Issue list
  - Return list
  - Over-due list

- Books received on ILL
- Reserved documents
- Documents with binders
- Written off documents
- Lost ticket charges
- Cost realized documents
- Fine summary

## B. Library Services

The implementing automation in library services depends mostly on the automation of housekeeping operations of the library. There are a few services which need special provisions of automations but, most of the services are the product of house-keeping operations. For example (a) OPAC or WEB OPAC (b) Current Awareness Services (c) Selective Dissemination of Information (b) Interlibrary Loan and many more. These services have been discussed in Chapter-2 also.

### Review Questions

#### A. Fill in the blanks

1. The implementation of library automation process is \_\_\_\_\_ planning into action.
2. Acquisition is labour intensive and time consuming process as well as \_\_\_\_\_ in nature.
3. Cataloguing is the process of creating \_\_\_\_\_ database of the library resources.

#### B. Multiple Choice Questions

##### Tick the correct answer

1. MARC stands for:
  - (a) Machine Random Catalogue
  - (b) Marks and Result Check
  - (c) Machine Readable Catalogue
2. In which section of library the functions check-in and check-out are performed?
  - (a) Circulation
  - (b) Entry and exit of users
  - (c) Reference
  - (d) Ordering



**C. Short Answer Questions**

1. What do you mean by implementation of library automation?
2. What are two different groups of library operations?
3. What is MARC?
4. What do you mean by CCF?
5. What do you mean by check-in and check out?

**Checklist for Assessment Activity**

Use the following checklist to see if you have met all the requirements for assessment activity.

**Part-A**

1. Understood the process of implementation of library automation plan.
2. Explained the implementation of library automation plan in housekeeping operations.
3. Explained implementation of library automation plan in library service operations.

**Part-B**

1. What do you mean by implementation of library automation?
2. How are different housekeeping operations automated?
3. How are library service operations are automated?

**Part-C**

**Performance Standards**

The performance standards may include, but not limited to:

<b>Performance Standards</b>	<b>Yes</b>	<b>No</b>
Able to explain implementation process of library automation.		
Able to explain implementation of library automation plan in housekeeping operations.		
Able to explain implementation of library automation plan in library service operations.		

**1.4 Summary**

The library automation is a process of using technology to reduce manual work to get the work done of a library in less time more effectively and efficiently. The library automation is dominated by the applications of computer, hence sometime it is also termed as computerization instead of automation.

All manual functions can be automated with the help of information and communication technology. There is an established process of automating a library but, depending upon need and available resources, it may vary from library to library. Whatever would be the level of automation, if a library is going to adopt the automated system then it should follow proper planning and implementation process. The proper planning and implementation will create a sustainable automated library system and hence provide effective and efficient services to the users and society.



### 1.5 Exercise

1. What is the need of library automation?
2. Write a brief note on library automation planning.
3. Write a brief note on system requirement for library automation.
4. How the circulation process gets executed in automated environment?
5. Why the staff and members of the library both should be given training in automation?

### 1.6 Practical

1. Identify different machines and equipments required for library automation.
2. Identify the steps involved in library automation.
3. Make a case study of the automation process of a school library.

### 1.7 Glossary

- CCF (Common Communication Format): A common format for exchange of records between libraries/information centers.
- ILL (Inter Library Loan): A service to borrow documents from other libraries on loan.
- ILMS (Integrated Library Management System) : Library management software for automation of libraries.
- JANET (Joint Academic Network): An organization which provides computer network and allied services to academic and research organizations in United Kingdom.
- MARC (Machine Readable Catalogue): A standard format for description of library catalogued items.
- OPAC: Online Public Access Catalogue.

### Resource Material

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