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# Automation Planning in an Academic Library

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## Abstract

The application of computers to library housekeeping operations and services has brought tremendous changes into the life cycle of information. These changes are obvious in the process of information generation, processing, storing, evaluation of use, dissemination, and disposition. Library automation is the modern method that helps libraries and their users in effective use of library resources. In addition to improvement of services and operations efficiently and effectively, libraries are able to develop effective computer networks, towards optimum utilization of resources and facilities. The benefits of converting routine tasks and repetitive processes into some form of automation have been recognised and such use of automation became a long-term objective of library management. However, many academic libraries are still battling to find their feet in the application of computers to the operations in the library. This paper therefore highlighted some of the steps involved in planning for automation in academic libraries. These will guide those that are yet to automate their libraries in particular and those finding it difficult to have a breakthrough in general to accomplish the mission of automating their libraries. The study established that while the automation of an academic library is indispensable, there is a need for proper planning of library automation in order to harness the benefits of automation. Recommendations on how to have streamline library automation were made.

**Keywords:** Library automation, Information and Communication Technology, Automation planning.

## Introduction

The introduction of computers in managing data and information has changed access to information all over the world. The automation of library functions and activities is an undeniable reality of library development. The desire for librarians to appreciate the

full implications of library service in a modern setting is hardly a new one. The benefits of converting routine and repetitive tasks to some form of automation have been recognised and such use of automation became a long-term objective of library management. The application of computers to library housekeeping operations and services in academic libraries is inevitable. This is due to the vital role being played by these libraries in their institutions. Academic libraries provide services by making their collections available to their patrons. Libraries also provide the services of librarians who are experts at finding and organizing information and at interpreting information needs.

According to Kargbo (2009), the quality of an academic institution is measured by the resources for learning on the campus and the extent to which students become independent and self-directed learners. Libraries are to support teaching, learning and research activities as well as providing up to date information at the right time required by their patrons. Academic library should not be left behind in automation exercise because of the attended benefits. Libraries are increasingly being redefined as places to get unrestricted access to information in many formats and from many sources. Library services are now extended beyond the physical walls of a building, by providing access to library materials through electronic means with the assistance of librarians in navigating and analysing enormous amount of information with a variety of digital tools. With the advent of Information and Communication Technology (ICT), librarians all over the world are increasingly aware of the existence of information technology and they feel that in order to improve and streamline their services, the application of computers and information technology is crucial (McRory and Curry, 2000).

Theja and Wrg (2007) refer to automation as a technological change that replaces people with machines, while INFLIBNET (2004) defines library automation as the use of computers to serve the needs of library users. Computers help to provide fast and reliable access to the resources available in the library and also across the globe. The application of computers in the library operations facilitates the management of physical and financial resources. It also relieves staff from performing repetitive jobs, thus enhancing the productivity of workers. Application of computers improves the quality, speed and effectiveness of library services. Computers are used as a tool for processing, storing and retrieval of data. Planning

for an automated library should be part of a long-term objective of library management. Automation should always be used as a means to achieve overall better patron service. Automation planning is important to guide the process of automation and in determining the sustainability or otherwise of the automation project.

Library automation is the application of computers to perform traditional library housekeeping activities such as acquisition, circulation, cataloguing, and reference and serials control. Automation is replacing man with machine. The goal of library automation is to make the library operations and services and efficient (Aina, 2011).

Faisal and Surenda (2008) opine that automating a school library is the process which restructures its functions and reinvents its services, and this will enable the library to serve the teaching and learning community more effectively. According to Shivaram, (2007), library automation is the general term for ICT that are used to replace manual systems in the library. Library automation is the implementation of information and communication technologies in the libraries and information centers. In other words, it refers to the conversion of manual system into a specific Machine Readable Catalog (MARC) format which makes it suitable for cooperative networking and resource sharing among the libraries and information centers.

Library automation involves the full application of computers in library routines hitherto manually performed. Ajibero (2003) defines automation as the application of computers to library housekeeping operations and services. From the various definitions of library automation, it can be deduced that Library automation is the application of Information and Communication Technologies (ICT) to library operations using a particularly unique Machine Readable Cataloguing (MARC) format which facilitates cooperation and resource sharing among libraries as well as migration to another available library automation systems.

Library automation is an up-to-date method to help libraries and their patrons to effectively use library resources. Besides improving services and operations for better performance, libraries are able to evolve effective computer networks, towards optimum utilization of resources and facilities. The benefits of converting routine and repetitive processes to some form of automation were recognized and such use of automation became a long-term objective

of library management. However, many academic libraries are still battling to find their feet in the application of computer to the operations in the library. Planning is important in library automation. It is therefore necessary to highlight steps that should be taken into account while planning for automation in academic libraries in order to enjoy the benefits that automation brings.

### **History of library automation**

Libraries existed for many centuries without automation. Tasks were performed manually and independently from one another. Selectors ordered materials with ordering slips; cataloguers manually catalogued items and indexed them with the card catalog system which housed all bibliographic data on a single index card. Catalog cards often were handwritten. Users signed books out manually, indicating their name on cue cards which were then kept at the circulation desk. People who wanted to reproduce information out of books or magazines for their own use had to copy in longhand what they wanted in order to take the information out of the library. The only way for patrons to access information was if it was contained on the shelves of their local public, school or academic library. According to Wikipedia, Library automation development began in the 1936 when punch card equipment was implemented for use in library circulation by the University of Texas. This allowed for a more efficient way of tracking of loans, however, library services were not integrated. According to Faisal and Surendran 2008, the library at the University of Texas was the first to use punched cards in 1936 for circulation control.

As technology emerged in the world at large, libraries embraced these tools as a means to avoid some of the menial tasks inherent in managing large collections. The next innovation was the introduction of MEDLARS and MARC standards in the 1960s which coincided with the growth of computer technologies, these led to the advent of library automation. Machine-Readable Cataloguing (MARC) formats are standards used for the representation of bibliographic and related information for books and other library materials in machine-readable form and their communication to and from other computers. The 1970s can be characterized by improvements in computer storage as well as in telecommunications. Integrated library Systems (ILS) appeared. These systems included necessary hardware and software which allowed the connection of

major circulation tasks, including circulation control and overdue notices as well as acquisition, cataloguing, reservation of titles, and monitoring of serials.

The growth of the Internet was witnessed in 1990s to the 2000s. The library manual catalogues are now being replaced by the Online Public Access Catalogues (OPACs). This OPAC through database provides access to a variety of other documents such as periodicals, special files, catalogues of other libraries, reference and information sources, etc.

### **The need for Library Automation**

The adoption of ICT in the library is indispensable. INFLIBNET (2004) is of the view that automation of the library is essential because of the following factors:

- i. Information explosion: There has been a remarkable growth of information and its utilization. This necessitates the need to apply Information and Communication Technology (ICT) in the libraries.
- ii. Collection growth: The tremendous increase in the collection of libraries makes automation of libraries to be inevitable.
- iii. Inability of users to explore the unlimited literature and information of their interest. In an increasingly complex and global information environment, automation of library is of vital importance in enabling end users to search through large quantities of information by providing the assistance of librarians in navigating and analyzing tremendous amounts of information with a variety of digital tools.
- iv. Advancement in the computer and communication technology: Computers and advanced technologies have made it possible to enhance services in diverse ways in libraries, such as provision of CD-ROMs and the Internet to patrons. This made libraries to extend services beyond the physical walls of a building through ICT.
- v. The need to provide timely information without wasting user and staff time in locating the information.
- vi. Provide wide access to resources within the libraries and elsewhere: Users want access to library databases from the comfort of their homes or offices with direct downloading

of information and text on demand. Libraries are increasingly being redefined as places to get unrestricted access to information in different formats and from many sources. Users want to access remote databases across the country and the world, and to download information and text on demand

- vii. Better access
- viii. Quality in service
- ix. Collaborative efforts: The need to network and cooperate to share resources among libraries at both the national and international levels makes the automation of academic libraries indispensable.

### **Meaning of Automation Planning**

Planning is the deliberate process of preparing a set of decisions for action in the future with a view to achieving specific goals (Fabunmi, 2004). Planning is to work out in advance how something is to be done or organized. It can also be referred to as a system for achieving the set objectives, that is, a method of doing something that is worked out in advance. According to Dessler (1998), plans are techniques prepared carefully and in details in advance to accomplish a desired result. Plans specify objectives and the strategy for achieving the set objectives. Automation planning of a library, therefore, is the process of identifying, specifying, selecting and organizing the different activities involved prior to automating; and implementing the project with a view to achieving the set goals at a specific future date. Planning provides basic guidelines to be followed. It gives room for solid decision making; and brings to light future prospects and challenges. It also facilitates control of operations.

### **Benefits of Library Automation that necessitate planning**

As computers and other technologies are used to enhance services provided by a variety of industries, information providers, like libraries, are also automating in-house collections and resources. The following are the benefits that can be derived from library automation:

- a. Improvement in customer service: Automation of library is essential because it will improve the quality, speed, accuracy

and effectiveness of services. Library automation gives room for the provision of wider access to resources within the libraries and across the globe. With automation, users can access library databases from the comfort of their homes or offices with direct downloading of information and text on demand. There is unrestricted access to information in different formats and from many sources. Library patrons have rapid and more user-friendly access to the latest information. Automation has been paramount in enabling libraries to provide broader and convenient access to some very traditional and less traditional forms of information.

- b. Library automation increases operational efficiencies of the library staff. With the help of library automation, automated cataloguing standards help librarians to catalogue materials quickly. A computerized library system offers the advantages of increased speed and accuracy of performing routine functions, thereby reducing errors. Automated cataloguing makes it easier to keep track of library materials. It also helps to quickly identify inventory stock when budgeting for new library materials.
- c. It gives room for interlibrary loan and resource sharing opportunities among other networks. Libraries can collaborate to share automation resources. Automation helps to know the availability of a document in the library through its online catalogue. This gives room for interlibrary loan. It also offers improved services and benefit to users, even though at a cost. Automation of library resources gives room for resource sharing among other library networks; hence it does not give room for duplication of work.
- d. Automation of library is useful in housekeeping operations and networking. With automation, software that can handle all the housekeeping operations such as acquisition, circulation and serial control, thus creating a network within the library. For example, with automation, library Administrators can easily take the stock of the library as well as retrieving a set of books' list purchased from a particular vendor. Library automation makes it easier for a library to know the status of its resources at any given moment.
- e. Automated library facilitates wider access to information for their patrons to improve the quality of teaching and research

in institutions of higher learning through the provision of current books, journals and other library resources which can be accessed online.

- f. Automation improves access to remote users. Library automation removes the barrier of opening and closing time in the library to users. Offsite researchers will have access to library collections. Also, many patrons can access at the same time, thereby enhancing multiple and simultaneous access.

### **Steps Involved in Planning for Library Automation**

Library automation begins with planning, that is deciding which functions to automate. This involves determining needs, cost, time consumption and efficiency improvement (Notowitz, 1987). Without an automation plan, the expected outcome will not be visible. Library automation is the activity of identifying, specifying and selecting the steps to be taken for automation. According to Leff (2001), an automation plan accomplishes the following:

- i. Organizing the process of automation by following the right procedure for the selection of software, hardware, thus saving time and money of the library.
- ii. Making the needs of the institution the most important reason for automation. This is because members of the community which the institution is serving will be well represented in the committee. The paramount objective of any library automation is towards meeting the needs of their users in a better way.
- iii. Enabling decision makers to have confidence in the library in terms of judicious spending of their allocation.

Steps involved in developing an automation plan in an academic library include the following:

**Describing existing library services and technology:** In planning library automation, a thorough analysis of the existing systems as well as the mission and vision of the library is essential in order to enable the environment prepare a good technology plan and proposal. According to Lam (2001), understanding the existing library services and technology is essential in library automation steps. This involves identifying existing services and functions

provided by the library, technology being used presently in the library as well as collecting and organizing basic statistical data.

**Needs Assessment.** The next step in developing an automation plan is to analyze those library functions that might be improved through automation. There is a need to map out the needs of the library. This is essential in planning for automation in the library. A system study should be conducted to assess the library status and needs. Determine those functions you want to automate. Data to gather include data on library operations, staff expertise, capacity of the facilities; which include the wiring of the library, the available space and the existing infrastructure in order to determine the suitability or otherwise of these to the library automation, collections; such as, the strength of the collection in terms of the total number of titles and volumes, the materials to weed, statistics about the number of library patrons by category such as the number of users who are undergraduate, postgraduate, staff, etc. Another need to assess is budget. Throughout the process of automation, budget concerns will always be an issue. Whether you are looking at different types of software or trying to figure out how to purchase new computers, your budget will affect the entire process of automation. However, grants can be solicited for to fund the automation project and it is essential to bear in mind the sustenance of the project. Library management should work towards using automation to support the achievement of the library mission and vision. The best way to serve academic libraries better is to know their needs and potential needs. Interview the stake holders formally and informally in order to define current and future needs, their perceptions and to help express those needs that exist but are often unknown.

**Translate needs and priorities into specifications:** The key to a good bidding document is the specifications. In some institutions, the proposal process is initiated by issuing a Request for Proposal (RFP). It is necessary to design specifications, prepare and distribute the Request for Proposal (RFP). A RFP is a formal request that a library prepares and sends to vendors for information on their automation systems. It is necessary to take a team approach in writing this, so as to have adequate representation of each department in order to cater for the diverse needs. In preparing a request for proposal, the following should be included:

- Background Information about the library
- Mission and vision statements of the Library
- Technology Plan
- Collection size
- Staff strength
- Statistics about the patrons
- Statistics about the available computers, servers
- Information about the infrastructure
- The existing database that you are using for library records that will need to be migrated into the new program etc.

### **Evaluate proposals and select a specific system**

Evaluation of proposals and system selection are done when vendor proposals are received. This should be carried out by forming a project team of people who have knowledge of automation. This is essential because their knowledge of automation will help in the evaluation and selection of the best automation package. System demonstrations should be schedule in order to assess the package. This is important in evaluating the package because it permits more effective cross-comparisons. It is always better to decide on software first before hardware, because software has hardware requirements. Features and capabilities of the products you surveyed should be matched with the mission and needs of the library in order to determine its suitability for your library. Another thing to bear in mind is that there is no library automation software that will serve all of your needs; therefore, there is a need to compromise as little as possible. There is a need to consider cost in the areas of system purchase, site preparation and conversion of the catalogue and users' records as well as maintenance.

Among other criteria for the selection of an automation package are:

1. The package should be user friendly. Users should be able to navigate the software with ease. Retrieval of information should be easily carried out with little or no supervision.
2. Popularity of a package: It is necessary to know those that are already using the software. It is necessary so as not to be alone ranger. If it has so many installations it means that the package is okay and it will be possible to rectify the flaws detected by the users. Various users can come

together and speak with one voice to the software developer on the needed modifications based on their experiences in using the package.

3. Well designed screens, logically arranged functions with extensive help messages: The library automation software must be developed and designed based on the best practices that are internationally adopted in the library profession.
4. The package to be selected should be the one that needs minimal training. It should not be complex to learn.
5. Multi-user and unlimited user access: It should be a package that many users can access at the same time. In a university library, there are many users who will like to access the database at the same time.
6. Multilingual & Multimedia: Many university libraries have collections in different languages and formats. Hence any package being purchased should be able to accommodate these.
7. Support internationally known standards: The best automation package should support internationally adopted library standards which include MARC, AACR2, Dublin core, Z.39.50, ISBD etc). The software should have the facility to import bibliographic data available in ISO2709 format and similarly export of data in this format. In addition, it should have a web interface.
8. Training and Support: Training and guidance after installation should be considered while selecting automation package.

### **Implement the system**

After the library administrator has identified suitable systems and vendors, the next thing to be done is to negotiate a contract for sale, installation, and services. Negotiation will include testing the system and making sure that it serves your needs, system maintenance and training of staff and users in order to prepare them in advance for the system. The contract should also make clear the responsibilities of the library and vendor for record conversion. The keys to successful implementation of an automated system are planning and staff involvement. Staff involvement in the planning process and the acceptance of an automated system is a prerequisite to the fundamental success of any project. Planning for implementation

should occur early and involve staff members to the maximum right from the outset. The contract should specify the mode of training to be provided and the qualifications of the trainer. It may be possible to videotape the vendor training and use this to support subsequent in-house orientation and training programs. Training of personnel that will be responsible for automation on how to use the new system is essential as they will be the people to train other library staff. Nok (2006) is of the view that for implementation and sustenance of the automation of library services, education and training of staff in academic libraries should be done.

### **Retrospective conversion**

The creation of a high-quality machine-readable database provides the cornerstone upon which all present and future automation efforts rest. There is a need to have a well-constructed and well-maintained database of the library holdings. This is necessary because it is the library's transportable and viable link from system to system. Also library users will have access to OPAC of their own library and others, therefore, the quality of respective databases will influence both the outcome of search strategies and the availability of materials. Hence, catalog records must be carefully converted from manual to machine-readable formats; collections must be prepared for conversion through effective weeding and stock taking exercise; converted collections must be updated as titles are added, withdrawn, transferred and re-catalogued; and accepted bibliographic standards should be adhered to for smooth transfer of data.

### **Conclusion**

This paper has established the benefits of library automation which necessitate planning and the steps involved. Automation in the libraries has changed the way resources are organised, managed, accessed and retrieved. These provide several benefits for libraries and their patrons. Library automation begins with planning. Without an automation plan, the benefits of library automation may not be reaped. Library automation is the process which needs proper planning, timely implementation and periodical evaluation. The mission of the library in providing excellent information service to patrons has not changed, but technology has added many new dimensions to the accomplishment of this task, and libraries should

be prepared for this rapid change. An academic library is being referred to as the heart of an academic institution because it is saddled with the responsibility of supporting the functions of their parent institutions by making available information for teaching, learning and research. An academic library is central to all academic activities and in order to be relevant at the ICT age, the basic steps involved in developing an automation plan in an academic library is indispensable.

### **Recommendations**

In order for academic library automation to succeed, the following recommendations are made:

Financial issues needs to be planned for. Automation should be budgeted for. With the shortened life of most new technology, it is essential that you plan on annual reinvesting in library ICT. Library management should provide the needed funds to carry out the library automation project. Library automation needs a huge initial investment. The fund for this should be earmarked in the annual budget and extracted from the library allocation.

Strong administrative support is essential for library automation success. The support will go a long way in making library automation a success. With administrative support, the need resources and motivation will be provided.

There is need to back up the records in the database regularly. This will guide against starting all over when the unexpected happens such as system crashing and data loss. With adequate and reliable back up put in place, the library will have something to fall back to. Provision should be made for the maintenance of the systems. For the successful implementation of library automation, infrastructure such as hardware, software, network, etc should be maintained.

Library management should organize staff training and user education. Library staff should be well trained in the overall management and maintenance of the automated system. The initial training will be organized by the software vendor and has to continuously update it according to the changing user needs and technology. Training sessions on the automated library system (mainly, OPAC search, finding the book, circulation, etc.) should be conducted for the users. Employee training is necessary in automation. If workers are not adequately trained in system

operation, the automation project will not be successful. An essential key to automation success for libraries is to establish a quality education program for employees, and to set up a framework in which workers can provide input on the positive and negative aspects of new automation technology.

The system should be evaluated for its currency and effectiveness periodically. User studies can be conducted to assess the effectiveness of services. This is essential in order to identify the shortcomings and take necessary measures to correct them. A suggestion box may be kept in the library to express user's views.

Above all, library management should take into account the initial as well as long-term operating costs on staffing, training, database development, down-time, lost data and back-ups there is the need to plan for the future. The librarian with the administrators should bear in mind the future requirements of Library automation. Library is a growing organism. As the technology changes in the field of information storage and retrieval, the user needs are also changing.

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