# ISSUES AND CHALLENGES OF LIBRARY AUTOMATION IN NIGERIA: REMEDIES FROM THE NEW YORK CITY SITUATION

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## Abstract

*This paper discusses the issues and challenges of library automation in Nigeria: remedies from the New York City situation. The paper defines libraries as a notorious for collecting and storing information in society. The paper also examines the problem raised in library automation as lack of proper planning, lack of fund/economical resources, lack of resources and technology, lack of competent and willing manpower, lack of skilled and trained staff/professional, and other problems encountered such as absence of committee consultants and computer experts in libraries automation, lack of infrastructure facilities (community facilities and irregular power supply, the poor library). In conclusion, the revolution and transformation brought to the library and information science environment in the last three decades has been tremendous and challenging. So for university libraries in developing nations to fully explore these enviable technologies, requisite infrastructures need to be put in place in order for them to thrive and participate actively in the global information superhighway. Based on the focus of this paper it was recommended among others that in order to cope with the anticipated changes, there is a need for capacity building; a change in the over all attitude and outlook of the staff would affect every aspect of the way they work in their respective libraries. Only through this will academic libraries be able to provide effective and functional services and thereby maintaining their edge as leading libraries in the country.*

**KEYWORDS: Issues, Challenges, Library, Library Automation, Remedies**

## INTRODUCTION: -

It is obvious that library is Heart of any academic institution. Also it is soul of any learning and research institution, which is pivot of teaching-learning process. Now in these day's we have just entered in new millennium or new technological era. The ICT make lots of changes in every field also in Library Information Services. In recent decades we have witnessed the establishment of automation industries and library information networks and services around the world through use of ICT. The use of Information Technology tools facilitates a vast flow of information to end user via information services. ICT makes several changes in the area of library information services such as book acquisition, cataloguing Serial -control, Web-Opac, CAS and SDI etc. And change the traditional library into the e-library or information centre. Library information Officers are save budget, time manpower in routine jobs and able to provide effective library information services without any geographical limitation.

In the ancient times people worked by hand. They made every task, every works without any help. Later they began to do some simple (and later more complicated) machines, eg. water wheels for lifting water from channels, mills (water and wind mills) for milling corns, etc. They began to use animals to give their force, their power to get work machines, vehicles, etc.

In the XIXth century the machines were able to do many tasks. Steam engines gave the mechanical energy to machines, but the man had to control every machine and computer control all the data processing and retrieval process. "The term automation is used in automatic manufacturing, control system, computing machinery or equipment that reduces the participation of human labour in production or services" New Encyclopedia Britannica "Any work which has been done with help of automatic machine like computer without any human interface is called automation. The biggest benefit of automation is that it saves labor, however, it is also used to save energy and materials and to improve quality, accuracy and precision". On the basis of the definitions of automation the following may be considered to be its essential characteristics: -

- The operations of processes are carried out automatically
- Avoids or reduces human actions and thus save labour
- Increases accuracy and quality of work
- Increases efficiency and speed- up the operations

## LIBRARY AUTOMATION:

The Phenomena of mechanization of traditional library activities, such as acquisition, serial control, cataloguing, circulation control etc., was called library automation.

"Library automation refers to use of computers, associated peripheral media such as magnetic tapes, disks, optical media etc. and utilization of computer based products and services in the performance of all type of library functions and operation. Computers are capable of introducing a great degree of automation in operation, function since they are electronic, programmable and are control over the processes being performed". Library automation is the general term for Information communication technologies that are used to replace manual system in the library.

## AUTOMATION: ISSUES, CHALLENGES AND REMEDIES: -

Libraries are notorious for collecting and storing information in society. An endless supply of information is continuously generated in these institutions and anyone can readily access it regardless of time and space, thanks to the rapid advancement of computer technology in contemporary society. But the successful process of library automation has many issues and challenges are: need a proper planning, sound budget, lack of awareness of standard format, skilled or trained manpower etc.

There are some problems raised in library automation as bellows:

## LACK OF PROPER PLANNING: -

Planning of library automation will involve proper feasibility study of the project to avoid waste of time, money, energy and to ensure the success of the project. In spite of its inherent benefits, library automation is a capital-intensive venture. This is because of the high cost associated with computer hardware and software. No project can succeed without a prior feasibility study. The adoption of any automation system in the library should be based on a wide range feasibility study, which will determine the adequacy of the programme. In light of the fact that there are now new hardwares and softwares used for library automation it becomes imperative for institutions to determine whether they have adequate sources of resources to operate library automation. Unless this is done, there are bound to be problems here and there.



A proper planning for library automation must include the following points: -

- Objective of library
- Library finance and budget
- System analysis

- Identification of main area of library automation
- Sources of data/Standard format ZIIIM.XO, MARC, RDF etc.
- Hardware requirement
- Software for library automation: commercial or open source software
- Skilled professionals
- Maintenance and development
- Services via automation

## LACK OF FUND/ECONOMICAL RESOURCES

The most crucial hurdle for a library in pursuit of automation is to obtain the necessary funds. The major obstacle for any innovations in developing countries is the lack of resources. The initial cost of establishing a computer system is beyond the reach of most organizations and institutions. Generally, any successful and running operation required a sound financial aid for purchasing of hardware, software and other associate peripherals of ICT. The library automation committee must keep in the mind expenditure for library automation and also for further maintenance and development cost for a successful automation process. A year wise development plan for library automation and service must add in the library automation plan.

## LACK OF RESOURCES AND TECHNOLOGY

Most of the library encountered that the library automation work affected due to problem of un sufficient awareness of current technology like hardware, software issues. The library defined clearly the goal and objective of the library automation and computerisation which is to provide wide access to digitized library collections, using computer based skills to dispense library services to the end-users. Library management decides on application software that could support integrated library management system. The application software to select must be assessed to determine its scope and capacity that will be suitable to achieve library goal. There are long lists of application software packages in the market. Few of these softwares are UNESCO micro CDS/ISIS, TINLIB, Konlib pro-library manager, X-lib, Alice for window, Integrated Library Software Koha, Greenstone, Glass e.t.c. Using a well-drawn parameters as given by Adekanye (IIOII) the software packages were assessed.

According to Adekanye (IIOII) the suitability of a package could be assessed based on the following:

- Producer/vendor reputation and reliability base on the performance of previous installations
- Software functional flexibility and expandability
- Indexing and searching capabilities
- Interactivity of input and output interfaces
- System security provisions
- Good system documentation and manuals
- Cost
- Scope of customer training
- Possibility of system upgrading
- Compliance with the Internet

## LACK OF COMPETENT AND WILLING MANPOWER

Emphasis in library education had previously been on traditional librarianship. The building up of a collection and its organization and administration dominated the curricula. Information science information technology failed to find appropriate representation in the courses. This resulted in a scarcity of librarians who could plan, design, program and implement various information projects. It is also true that the vast majority of the present generation of librarians have inadequate knowledge about computers and their potential in library and information work. The efforts made to redress the situation have not helped very much. Three successive revisions of curricula and two reports on the subject have failed to find support from library schools, with regard to incorporation of information science courses into their curriculum. What made them oblivious to implementation? Of the many reasons, two are of particular importance: the lack of training laboratories with adequate information technology equipment, and the non-existence of a competent faculty with adequate qualifications in information technology.

## LACK OF SKILLED OR TRAINED STAFF /PROFESSIONAL

Another problem is associated to dearth of professionally trained and unskilled staff. The level of short staffing is apparent while the little on ground are so little or no computer knowledge. This posed a lot of technical problems to the automation exercise. In moreover cases it was found that one or two Professionals are saddled with the responsibility of managing the system unit there by limiting the outcome of service delivering to clients.

## OTHER PROBLEMS

Other problems encountered include the absence of committee consultants and Computer experts in library automation, a lack of infrastructure facilities poor (communication facilities and irregular power supply, the poor library) environment and the small amount of information contained in libraries.

## Automation in University Libraries: Mirage or Reality?

### 1. Introduction

Library automation and its attendant digital technologies present new opportunities and challenges to libraries to enhance their services. Some of the cultural functions of libraries are changing in the digital age and providing promising opportunities for the acquisition, organization and bibliographic control of the available vast knowledge. However, automation is the reality of IIIst century and any library that ignores its capability in transforming the information environment is at risk of losing ground. Libraries, the repositories of human knowledge have been striving to improve their productivity through the use of computers (Fauty, IMMV). The library is the heart of the educational enterprise and also the reservoir of knowledge communicated through information resources. Information is fast becoming a vital national resource that determines the direction of any nation. Therefore, librarians and documentarist must be conversant with development in information and its communication technologies for the organization and dissemination of information in order to increase knowledge and improve scholarship.

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Significant improvement for recording information began to be realized with the advent of online batch processing systems. Automation of library activities began to take place in IMVOS as libraries installed offline batch processing system, but very few of these systems were installed prior to the IMCO. The few that were installed during these three decades used either key punch machines to produce machine readable cards or key to-tape technology to produce machine readable tapes. The mid-IMCOS ushered in a major boom in automation, as a result of development in computer hardware and software that could support time □shared interactive online activities. As a result of this technological innovation, online real-time systems (the earlier prototype developed by libraries) began to replace batch processing systems. Over the past decade or two, online systems have evolved simplistic single function systems that provided information from only one set of library function (e.g. circulation,

acquisition etc) to complex integrated system that deliver a well routed view within one system of the inter-relatedness of all functions (Adesida and Fatuyi, 2001).
Integrated online system more closely represents the activities of the library, where one unit's processing of library may impact materials availability and the function of another. Integrated systems group a number of activities, (e.g. Acquisition, Serials control, Circulation and course reserves, the public catalogue, bindery and interlibrary loan) in one system using common command and sharing common patron and items record base.

## 2. ICT Environment

According to Encyclopedia Britannica, (2002) information and communication technology incorporates a range of technologies used to support communication and information. ICT include both network and applications. Networks include fixed, wireless and satellite telecommunications, broadcasting networks. Well- known applications are the Internet, database management systems and multimedia tools. By and large, the components of ICT include;
a- computer technology
b- Telecommunication technology
c- Broadcasting technology d- Microelectronic/ micrographic technology
e- Reprographic technology.
The proliferation and development in information and communication technologies (ICTs) have brought about unprecedented transformation in the way we communicate, receive and send messages to the near and distant destinations. It has also enabled us to transmit data in any forms concurrently such as text, audio, visual in what is referred as convergence technology or multimedia presentation. Many countries had in the area of information and communication technology (ICT) recorded modest progress. Internet service is growing as Internet service providers (ISPs) and cyber caf operators continued to increase. While the ICT environment has great potential for more rapid expansion, the recent transition from the popular dial-up and radio frequency technology to the broadband Internet access based on the Very Small Aperture Terminal (VSAT) technology, there has been increased interest in Internet connectivity among individuals, corporate organizations, higher institutions of learning, research institutes, and media organizations.

New York and other countries including Nigeria's quest to joint global information superhighway was further boomed with the introduction of the Global System for Mobile communication (GSM) in 2001, although relatively expensive then, the affordability continued to improve till date. The paradigm shift recorded in the Nigeria's broadcasting industry where by Radio and Television stations are switching from analogue to digital transmission system, was also another success story worth mention.
These claims were further ratified by the International Telecommunication Union in its 2010 ICT development index report (ITU, IDI, Report 2010). According to the report, Nigeria's IDI value increased by more than 20 percent, jumping up 21 places to 122nd in the 2008 IDI. While the overall rank is still low, it represents a significant improvement for such a large country. This improvement is mainly due to an increase in ICT use (2222 ranks up in the use sub-index), with the number of Internet users increasing from 6 per 100 inhabitants in 2006 about 12 in 2008. The report further acknowledged that, while this is substantially lower than Internet penetration levels in advanced ICT countries, it is much higher than the African average of 5% in 2008.

New York is a developed city but Nigeria is a developing country with all the potentials for growth and development (i.e. human and material resources) and needs to adequately explore the numerous opportunities offered by ICT in order to square up its socio-economic problems. Countries like Malaysia, Singapore, China, India and lots of others have adequately harnessed these opportunities and this led them to the mainstream of ICT infrastructure development, design and implementation circle. Most of these countries recognized that ICT can be a development enabler, if applied and used appropriately and it is critical to countries that are moving towards information or knowledge based societies. ICTs' role and influence has become so

pervasive on our lives as it permeates and pervade every sector of human endeavor. ICTs were used for education, creation of wealth, poverty eradication, job creation and global competitiveness Disco ıı00x

## 3. Automation and University Libraries

The use of computer is applicable to a wide range of operations in library services and its application has brought maximum efficiency to services of libraries through increased reductions of mistakes, increase in convenience, adequate statistical data keeping, control literature growths, labor saving and easy exchange of documentation. The influence of the computer on library operations was explained further by Molholt (ıMMc) thus:

> We no longer type cards, the system supplies them, patron do not need to copy down call numbers before going to the shelves, the online catalogues system prints them out. Patron don't sign for books, a light pen reads, their identification card and the system charges the book out to them.

University libraries are committed to the provision of up-to-date materials for the support of teaching, learning and research in their universities. Therefore, university libraries must be automated to the level of being connected to the Internet. By so doing, the tremendous amount of information that can be acquired from the "electronic libraries" of the world will be actualized. The Internet is largest reservoir of all type of information (research, scholarly publications of all fields) as well as other multimedia capabilities

According to Okiy (ıMMD) the application of computer technology to university libraries has transformed the pattern of information handling, provision of services and the perception in library cooperation worldwide. It is known fact that, computerization of library activities has been functioning effectively in developed societies since ıMLOs. In African continent however, Rosenberg (ıı00x), from a survey of African libraries reported that of the vo libraries surveyed, majority of them (Lx%) are yet to complete the process. Most libraries began with cataloguing, but have neither finished that nor moved to other process, ıIII (III%) are yet to started while M (Ix%) considered that they are fully automated. "Most academic and research libraries in some countries have not computerized any of their functions. The public card catalog and the visible index are still finding tools for books and journals. In most libraries, likewise, indexes and abstracts are compiled manually. Library and information services have yet to transcend the traditional functions "(Aguolu, Haruna,and Aguolu, ıı00L) as cited by Sharma(ıı00M).

The proceeding table ı depicts the present situation of library automation in two oldest universities

**Table 1**
**Modules Automated by the Two University Libraries**

| Modules | A.B.U. Proposed | | | U.I. | | |
|---|---|---|---|---|---|---|
| | Proposed | Partially | Completed | Proposed | Partially | Completed |
| Acquisition | | √ | - | - | √ | |
| Cataloguing | | √ | - | - | - | √ |
| Reference | | √ | - | √ | - | |
| Circulation | | √ | - | √ | - | |
| Serials | | √ | - | - | √ | |

**Key:**
√ = Yes
— = No

Table 1 shows the level at which the two universities reached in automating their library services. It revealed that **ABU** has not completed any of the modules, while **U.I.** completed one module (i.e. cataloguing). The data also revealed that all the modules were partially implemented in **ABU**. This means that in each module not all the parameters/sub-modules were in operation.

While in the **UI** only one module (i.e cataloguing) was implemented to the fullest because all the parameters/submodules were currently in operation. Two modules (i.e acquisition and serials) were partially implemented and the remaining two (i.e reference and circulation) are still at proposal stage. This means that none of the parameters/sub-modules has been implemented or even used for information services and delivery. The data contradicted various literature reviewed by the researcher in the course of the research where most of the literature claimed that University of Ibadan has completed its automation program since last two decades, while another literature claimed that **ABU** has completed automation of its serials module in IMCII. According to Okore (IIOOX:DL): Attempt by libraries to automate their operations in the early COS and DOS were unsuccessful. Only some foreign owned or sponsored libraries like **IITA** library, British Council Library, United States Information Services **(USIS)** library and few others recorded some success stories. However, from the early IMMOS, many university libraries have been automated.

## 4. Steps Toward Achieving Automated Library System

Library as repository of human knowledge is a system made up of various subsystems that compliments the role of one another for information generation and delivery in an appropriate manner. Such library subsystems include;

- Collection Development/ Acquisition
- Cataloging
- Reference
- Circulation
- Serials Control
- Interlibrary Loans

In automating all the above subsystems, the following processes are involved:

a- Planning and managing the implementation project
b- Infrastructure Development
c- System Configuration
i- Automation Software
ii- Determine the Hardware components
d- Ensure the System integration/compatibility Dr. Okon P. Eno & Dr. Thompson A. Luke
e- Staff Trainings
f- Retrospective Conversion of Library records.

### 4.1 Planning and Managing the Implementation Project

Implementing the online system is the culmination of the processes that analyzes library needs, resulting in the selection of the system hardware and software. The implementation project will focus on the installation and activation of the system, the public relation and training programs that must be developed and delivered to library staff and users, and the evaluation of the system after it become operational. This is an extremely critical phase of the automation process, and the success of the system, no matter how fine it is, is largely dependent on how well the implementation project is handled by the library. It is based on the notion that 'failure to plan is a plan to fail'.

According to Fauty (IMMV,D) the process of taking the library through the implementation of new system can be overwhelming if not properly planned and the tasks that need attention during the implementation project include;

I-bringing the library records (bibliographic, user, and circulation) up to par for use in the system.

II- becoming familiar with and testing the system software and hardware

III- evaluation of the library policies and procedures with respect to the new system, and prior to the system becoming operational, revising and adjusting them if necessary.

V- compiling and distributing both systems and library specific documentation prior to the system becoming operational

X- addressing organizational issues that will be brought to the forefront by automation

L- formalizing liaison activities between units within the library and between the library and other agencies or offices external to the library.

## 4.2 Infrastructure Development

In order to automate the various library subsystems, the necessary infrastructure need to be put in place which include the following;

i- electrical wiring

To operate the system equipment and access the automated system, the necessary electrical wiring and telecommunication connections must be in place.

Naturally, the libraries will have some electrical wiring in place prior to implementing the automated system. The important tasks here will be to make sure there are enough receptacles to handle all the piece of equipment that require outlets and that they match the electrical requirement of the system.

ii- telecommunication wiring

Connection workstations to the computer running the automated system software can be accomplished by a direct cable connection (the most reliable method), a private or leased telephone line where a modem provides the connection to the system, or local area network (LAN).

## 4.3 System Configuration

i- determine the hardware components

The system hardware for the new library automated subsystem will consist of three major components;

I- the computer on which the system software will be installed and run.

II- the workstations that will be used to access the automated subsystem

III- the wiring that will connect the workstations to the main system computer (server)

ii- automation software

The most important decision to be taken in the computerization a library (like any other computerized system) is the application software to use. The application software is a sequence of operation which performs some user specified tasks.



## 4.4 Ensure the System Integration

Integration denotes a situation where the property of different components working well together through sharing data and accessing each other's functions. Integrated

library system is an automation system in which the various applications share one bibliographic database.

### 4.5 Staff Training

Staff training program is an essential part of the over-arching implementation plan or process for the automated library system. Staff will learn more in training session than simply how to operate the new automated system. A program must be developed, trainers identified, facilities set up and scheduled, training script written, hand out and manuals prepared, as schedule of training session publicized and attendance of session participant coordinated.

### 4.6 Retrospective Conversion of Library Records

It is critical that much thought and planning undergird whatever method is selected for the conversion process, since 'there are no panaceas, no cheap shortcuts, and no ways to finesse the problem'. The bibliographic record conversion project will be, potentially, one of the most complex and demanding task required prior to implementing the new automated library system. At the outset of any project to create or convert record that will be used by the new automated system, study the literature, talk to other librarians, and visit other libraries where similar project has been undertaking. This will help determine what strategy is most appropriate for the situation in your own library. Ask for copies of procedures and manuals used in other libraries' conversion project, and ask the staff in these libraries what errors are possible and how they can be avoided. Some of the guiding principles for records conversion include require answers on the following:

a- what does the library own and how many of these items are likely to require machine readable records in the database?

b- - what is the current format of records for individual items within the library collection?

c- how complete are the current records?

d- how accurate are the current records?

e- what is the optimal number of records that should be in the database by system start up?

## Automation in University Libraries

### Historical survey of automation libraries

According to Nok (1100L), automation is the automatic, as opposed to human, operation of process, equipment, or system, or the techniques and equipment used to achieve this. In libraries, automation refers to functions such as circulation, cataloguing, or acquisitions. Nwalo (11000111) posited that library automation involves the full application of computers in library routines hitherto manually performed. He goes further to state that Olanlokun and Salisu (1MM111) have cited Mathews (1MD0) as adducing the following criteria for automating library services:

I. It will help to improve the library services.

II. Automation of the library processes can enhance its reputation.

III. It can provide the Liberians with management information.

V. It can help the librarian in reporting on the various operations of the library.

X. Tasks can be completed more accurately and quickly with increased control.

L. Increased demands for services can be counter balanced with improved productivity especially with either static or declining budget resources.

C. It can facilitate co-operation between libraries.

D. It can provide the means to offer new improved services to patrons.

M. It may obviate the need to hire additional staff with increased demand for services.

Library automation was come a long way, over an often uncertain and unpredictable path, since the 1M111Os when a few libraries began to incorporate IBM equipment into the circulation procedures. The evolution of technology is defined by developments in science and technology that create new modes of application. The convergence of information technology and communication technology in libraries has led to technological, organizational, and social change (Shepherd, 11000). Rosenberg (1MMC) surveyed African libraries and reported that IT exploitation by universities for

information organization and access has become prevalent. A number of studies have reported on the application of information technology in university libraries. Ogunleye (1MMC) Agboola (11000), and Ajala (11001) Nok (1100L). All of these studies have agreed that serious application of information technology to library processes started well in university libraries in the early 1MM0s. Individual efforts at library automation such as the one by the University of Lagos, University of Ibadan, and Ahmadu Bello University, Zaria, in the mid-1MC0s and 1MD0s, failed largely because of lack of technical knowhow relating to software development and maintenance of hardware (Alabi 1MDC). Agboola (11000) states that the greatest impetus to library automation in university libraries so far has come from a World Bank project. The World Bank gave automation in the university libraries as one of its conditions for support. As a result, the National University Commission (NUC) presented one microcomputer and a four-user local area network version of the TINLIB (The information Navigator) software to each of the 110 participating libraries in 1MM11. This was after an agreement had been reached between the NUC and the University Librarians that all Federal Universities (Ogunleye 1MMC) use common software. Recent surveys carried out by Ogunleye (1MMC) and Idowu and Mabawonku (1MMM) showed that application of IT is gradually taking firm root in our society university libraries. The University of Ibadan Library is so far the most advance in the society. It has fully automated its cataloguing and circulation process using the network version of the TINLIB software capable of driving 110 workstations. Some federal universities and one state university use the four-workstation network version of the same software mostly for cataloguing. As computers become cheaper and more librarians acquire computer literacy, it is hoped that more of the manual processes will be automated.

## CONCLUSION

The revolution and transformation brought to the library and information science environment in the last three decades has been tremendous and challenging. For university libraries in developing nations to fully explore these enviable technologies, requisite infrastructures need to be put in place in order for them to thrive and participate actively in the global information superhighway.

## RECOMMENDATIONS

The challenges discussed above should be born in mind by program implementers if they are to succeed. Any attempt at automating academic libraries should be one of trial and error and should be collectively done. Because automation will bring about tremendous impact on these libraries, it is essential that the authorities scout around for adequate funds to expedite the program. In order to cope with the anticipated changes, there is a need for capacity building; a change in the overall attitude and outlook of the staff would affect every aspect of the way they work in their respective libraries. Only through this will academic libraries be able to provide effective and functional services and thereby maintaining their edge as leading libraries in the country.

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