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Automation in Nigerian University Libraries: Mirage or Reality?

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ABSTRACT
The trend in IT in the information society is that library automated systems are geared to function in the digital library environment. With this unprecedented success in library automation we would be able to organize and preserve our knowledge without fear of loss of access and maintain a single or central database for all the library subsystems. This paper has analyses the Nigeria's ICT environment, current state of automation in Nigerian university libraries with particular reference to Ahmadu Bello University, Zaria and University of Ibadan Libraries and concludes by proposing a model for achieving automated library system in our universities for effective information access, management and delivery based on enormous benefits accruable to libraries that embraced the system.
Key Words: ICTs, Library Automation, Nigerian Universities, University Libraries

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 21st 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, 1994, 4).

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 documentalist 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.

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 1940s as libraries installed offline batch processing system, but very few of these systems were installed prior to the 1970. 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-1970s 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, 2001,69).

Integrated online system more closely represent 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. Nigeria's ICT Environment

Nigeria is the most populous country in Africa with estimated population of over 140 million people. Nigeria is geographically located on the coast of western Africa. It covers an area of about 924,000 KM^2 and is bordered on the north by the Niger Republic, on the east by Chad and Cameroun, on the south by the Gulf of Guinea, and on the west by the Republic of Benin (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.

Nigeria had in the area of information and communication technology (ICT) recorded modest progress. Internet service is growing as Internet service providers (ISPs) and cyber café operators continued to increase. While the ICT environment in Nigeria 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.

As the sixth largest producer of oil in the world, 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 12 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 (23 ranks up in the use sub-index), with the number of Internet users increasing from 7 per 100 inhabitants in 2007 about 16 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 4% in 2008.

Finally, Nigeria as a developing country with all the potentials for growth and development (i.e. human and material resources) need 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 permeate and pervade every sector of human endeavor. ICTs were used for education, creation of wealth, poverty eradication, job creation and global competitiveness (Diso, 2005,).

3. Automation and Nigerian 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 (1997: 39) 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 (1998:23) 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 1960s. In African continent however, Rosenberg (2005), from a survey of African libraries reported that of the 40 libraries surveyed, majority of them (65%) are yet to complete the process. Most libraries began with cataloguing, but have neither finished that nor moved to other process, 13 (21%) are yet to started while 9 (15%) considered that they are fully automated.

In Nigeria, the first attempt to automate library operation was made in 1970s. Omoniwa (2001) reported a successful efforts of first, the automation of serials records in 1972 and secondly circulation operations in 1976 at Ahmadu Bello University Library. Abolaji (2000:72), wrote that significant and wide spread efforts at computerization of library service started in the 1960s. However, most notable research libraries in Nigeria have gone far in the computerization project. The successful and most comprehensive computerization program of an indigenous Nigerian library was that at the International Institute for Tropical Agriculture (IITA) library Ibadan, which was accomplished in 1984.

There was an effort by academic libraries to catch up with their counterparts in the developed world and this can be seen in the way most university library automation in Nigeria started in the late 1980s and its various stages of development. Such efforts for automation at university level was made through the National Universities Commission (NUC), which introduced project aimed at computerizing services across the country. The pace has been very slow with none of the libraries fully automated. This development is discouraging particularly as the world has become a global village with avalanche of information to share but which may not be accessible without information technology, (Sokoya, 2004:31–38).

However, according to Ani (2007: 115), despite all these benefits, Nigerian universities are still at the crawling stage of the automation of their library services. The present scenario of inadequate funding of our universities and their libraries by both the federal and state Governments which are the proprietors of the institutions leave much to be desired. University funding has continued to dwindle since the mid- 1980s along with the downturn in the economic fortunes of Nigeria. However, based on the fact that automation of library services has been in Nigeria since the last three decades, and it was expected from the onset that, academic libraries would take the lead in the automation race because of their enormous potentials and challenges, experience and various researches have proved it otherwise.

“Most academic and research libraries in Nigeria 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 in Nigeria have yet to transcend the traditional functions “(Aguolu, Haruna,and Aguolu, 2006) as cited by Sharma(2009).

The proceeding table 1 depicts the present situation of library automation in two oldest universities in Nigeria (Ahmadu Bello University, Zaria and University of Ibadan)

Table 1 – Modules Automated by the Two University Libraries

Modules	A.B.U.			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/sub-modules 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 1972. According to Okore (2005:86):

> Attempt by Nigerian libraries to automate their operations in the early 70s and 80s 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 1990s, many university libraries have been automated. For example, University of Ibadan Library has been fully automated. Others whose full computerisation are underway include University of Ilorin Library, Ladoke Akintola University of Technology (LAUTECH) Ogbomosho, University of Agriculture, Abeokuta; University of Nigeria, Nsukka; Tafawa Balewa, Bauchi; Bayero University, Kano; Ahmadu Bello University, Zaria; Federal University of Technology, Minna and Lagos Sate University (LASU) Lagos, etc.

4. Steps Toward Achieving Automated Library System

Library as repository of human knowledge is a system made up of various subsystems that compliment 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
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 (1994,8) 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;

1-bringing the library records (bibliographic, user, and circulation) up to par for use in the system.
2- becoming familiar with and testing the system software and hardware
3- 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.
4- compiling and distributing both systems and library specific documentation prior to the system becoming operational
5- addressing organizational issues that will be brought to the forefront by automation
6- 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 equipments 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 pieces of equipments 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;

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

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

3- 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 have 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?

5. Conclusion

The revolution and transformation brought to the Nigeria's library and information science environment in the last three decades has been tremendous and challenging. For university libraries in Nigeria and other 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.

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