

## **STRATEGIES FOR MANAGING LIBRARY TECHNOLOGIES IN THE NIGERIAN FEDERAL UNIVERSITY LIBRARIES OF NORTH WEST STATES IN NIGERIA.**

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### **ABSTRACT**

*The study investigated the Strategies for Managing Library Technologies in Federal University Libraries of North West States of Nigeria, The objectives of the study includes to identify the technologies available in the Federal University Libraries of North West States in Nigeria, to discover the strategies used to manage technologies in the Federal University Libraries of North West States in Nigeria. The study adopted qualitative methodology using Case study approach. The population of the study comprised of all the staff in the university libraries studied. The sample was selected using purposive sampling techniques. Check list was used as an instrument for data collection. The data collected were studied analyzed accordingly, using tables. The findings revealed that the available technologies in the Federal Universities Libraries in the North West States of Nigerian are: desktop computer, laptop computer, CD-ROMS/DVDB ROM, Internet, Intranet/Local Area Network, institutional repository, online-database, microfilm, microfiche, video Tape, audio digital recorder, projectors, printer, software, mobile phones, television, scanner, barcode scanner, server, router/switches, inverters. It was also revealed that selection by the university librarian was the major strategy use for selection of technologies in the university libraries, after the selection the technologies are acquired either through direct purchase, contract or donations. Preventive, predictive and corrective, were the maintenance strategies used. The study concluded that, technologies such as desktop computer, laptop computer, CD-ROMS/DVD ROM, Internet, Intranet/Local Area Network, institutional repository, online-database, microfilm, microfiche etc are available but majority of the management strategies were not deployed. In view of this a number of recommendations were made including, technologies such as CCTV, teleconferencing facilities and digital camera should also be available. Other selection Strategies such as selection based on preliminary system analysis study, based on selection criteria, cost, compatibility and based on vendor selection method should be encourage by all the Federal University Library in the North Western Nigeria.*

**Keyword: Availability: Library: Technologies: Federal: University: Nigeria: Northwest**

### **Introduction**

The emergence of Information Technology (IT) has brought rapid changes in library operations, functions and services. For example, the use of Online Public Access Catalogue (OPAC) for locating reading materials and remote access to information. All the in house activities of the library that were done manually (acquisition, cataloguing, and preservation of resources)

can now be done automatically among others (Rasul, Haryana & Sahu 2011). These developments coupled with information environment of the 21st century which is a key factor in determining how university libraries support their parent institution's goals and objectives. Implementation of IT has changed the structure of libraries. Earlier libraries were using printed catalogue to locate books and other reading materials, printed accessing register, card system for

circulation of books, manual stock taking of reading materials, photocopies of all requested articles etc. The above mentioned library activities were time consuming. Now the majority of libraries are using Online Public Access Catalogue (OPAC) to find out the location of reading materials. Library has converted their printed material into digital format with metadata searching and browsing. Libraries are using barcode technology for stock verification and automatic circulation of reading materials (Modi, 2015).

Library technology include all information and communication technologies available and used in carrying out library operations. According to Issa, Ayodele, Abubakar, and Aliyu (2011), library technology comprises all the electronic infrastructure and facilities employed by libraries to improve and provide efficient services. In addition Vijayakumar and Vijayan (2011) opined that the technologies are good use in the following library environments such as Library Management, library automation, library networking and Audio-Video Technology. They further identified Public Access Computers, CD-ROM, Scanner, Facsimile, Photocopier, Printing technology, Barcode reader as types of the technologies that are used in the library.

### **Statement of the Problem**

Technologies are deployed in libraries in order to effectively accomplish library operations, functions and services. For example, library acquire computer hardware as workstations for their staff and patrons use, Library Management Software (LMS) are deployed to manage the library physical information resources and facilitate access to Local Area Network (LAN) and Internet connectivity to facilitate access to information resources within and outside the physical boundary of the library 24/7. However the researcher observed that after acquiring and deployment of these technologies they are abandoned. This could

be as a result of lack of strategies for managing these technologies. Managing these technologies is critical because scholars have advocated that managing technologies help keep them in constant use and good working conditions (Onah 2012; Window 2015; Garrido 2017). In addition, Moore's law stipulates that technology doubles after every eighteen months, and so there is the need for constant sustenance, maintenance, upgrading and in most cases replacement.

### **Objectives of the Study**

1. To identify the library technologies available in the Federal University Libraries of North West States in Nigeria libraries.
2. To discover the strategies used to managing technologies in the Federal University Libraries of North West States in Nigeria.

### **Research Questions**

1. What library technologies are available in the Federal University Libraries of North West States in Nigeria?
2. What strategies are used to managing library technologies in the Federal University Libraries of North West States in Nigeria?

### **Review of the Related Literature**

#### **Availability of Library Technology in University Libraries**

Library technologies are the technologies that are available in libraries for the purpose of providing timely, accurate and efficient services to diverse information seekers. The availability of technology in libraries is no longer strange; this is because it has changed the work of librarianship. Rowlands and Nicholas (2008), cited by Ramzan (2010) stated that libraries have undergone some changes due to the application of technology in automated acquisitions, machine readable cataloguing, circulation controls, online information retrieval, selective dissemination of information (SDI), resource

sharing, electronic document delivery, CD-ROM/DVD databases, online journals and electronic databases.

### **Types Of Library Technologies**

There are many types of technology used in the libraries some of which according to (Kumar (2017), Vijayakumar and Vijayan (2011), Gakibayo, Ikoja-Odongo and Okello-Obura (2013)) includes the following

#### **Computer**

Computer has a great efficiency, performance and ability to handle large volumes of documents that is why is gaining popularity in the field of librarianship and information services. Many library and information routines are being performed proficiently by computers. The computer is widely used in the fields of library acquisition, cataloguing, classification, circulation, serials control, and information storage and retrieval activities

**Fax** (short for facsimile): A facsimile is a machine that is used to copy or duplicate an oldbook, manuscript, map, art, or other item of historical value that is as true to the original source as possible. It differs from other forms of reproduction by attempting to replicate the source as accurately as possible in terms of scale, color, condition, and other material qualities.

**Internet:** This is the most important component of ICT. It is basically a network of networksthat performs the connectivity among the computers. Internet provides the *medium for communication using different online tools* (Kumar 2017). The Internet has provided a wider access to universal information resources such as online databases, e-journals e-prints and other sources of digital information

**Online databases:** The most effective method to provide access to electronic books/journalsin University libraries is through subscription to online databases which can be accessed through the internet.

Online databases are a collection of electronic information sources (e-journals/e-books) by publishers from various fields and disciplines

**Closed-Circuit Television (CCTV):** is a technology that is use for library security, it playsan important role in the library management. Through the help of CCTV librarian can supervise the whole activities of libraries. It helps to look after the staff as well as the users of the library.

Adeniji and Oguniyi (2011) as cited by Whong (2014) in their study on availability and use of ICT in Olabisi Onabanjo University Library stressed the fact that almost all the libraries for the study had computers, printers, scanners, and Internet for the use of their patrons. However, it was observed that none of the libraries had CD-ROM Technology and Fax Machine in their domain.

#### **Strategies used to Manage Technologies in Universities Libraries**

Managing library technology has to do with the methods or ways deploy by libraries to ensure that the technology are functional and effective. Technopedia (2017) defines Information technology management as the process whereby all resources related to information technology are managed according to the library's priorities and needs. Because the nature of technology is dynamic and unpredictable, managing technology has become an important thing for any library (Aluri and Babu 2013). Therefore, it is essential for libraries to manage their technology strategically in order to avoid loss of resources and meet up with their user's need.

Technology management in this study includes the process of technology selection, acquisition and maintenance. Namdeo, Ansarie and Bhatnagar (2016) defined technology selection as the process of selecting the appropriate technology in carrying out operations and services of the

library. In selecting a particular technology to acquire according to Johnson, Evensen, Gelfand, Lammers, Sipe and Zilper (2012) consultation with staff responsible for technical systems and services, acquisitions, resource discovery (cataloguing and access), contracts and licensing, and service delivery is of great importance for every library to consider.

Technology acquisition is the process of bringing in new technology into the library operations and services either through direct purchase, subscription, grants writing, consortium or free from there source Koehn and Hawamdeh (2010). Acquiring technology implies a series of activities and decisions that range from the definition of the technology needs to the implementation of the acquired technology knowledge into current operations or new product Daim and Kocaoglu (2008). Rather than just buying any technology Window (2017) suggested that for better efficiency or effectiveness libraries should manage their acquisitions of technology. That is, they should know and understand the reason for acquiring a particular technology and plan their acquisition to ensure successful implementation. Benny (2015) on selection and acquisition of e-resources (IT) in academic libraries in Mumbai revealed that subscription to e-resource is the commonly used method by a large number of libraries while acquiring e-resources.

### Findings

**Table: 1: Available Library Technologies in University Libraries**

Types of ICT	KIL	BU LK	FUL D	FULD m	FULB K	FUL G	UDU LS	T o t a l
Facilities Available	(ABUZ)							
Desktop	√	√	√		√	√	√	7

Many authors have identified different strategies to hardware technology maintenance, Garrido (2017) traditionally identified corrective, preventive, predictive, zero hours (overhaul) and periodic strategies, while Garg and Deshmukh (2006) as cited by Mkalaf (2015) identified preventive, corrective, predictive, condition-based maintenance and mixed maintenance strategies. Karyotakis (2011) also identified proactive (divided into preventive and predictive or condition-based maintenance) and the corrective maintenance as the two main types of maintenance strategies. While software maintenance according to Thakur, (2017), identified four types of software maintenance, namely, corrective, adaptive, perfective, and preventive.

### Research Methodology

The study adopted qualitative methodology is a method that its findings are not attained by means of statistical procedures or other means of qualification, using Case study approach, this approach was considered appropriate because it aims at analyzing particular issues within the boundaries of a particular organization. The population of the study comprised of all the staff in the university libraries studied. The sample was selected using purposive sampling techniques. Check list was used as an instrument for data collection.

<b>Computer</b>				√					
<b>Laptop Computer</b>	√	√	√	√	√	√	√	√	7
<b>CD-ROMS/DVDB ROM</b>	√	√	√	√	√	X	√	√	6
<b>Internet</b>	√	√	√	√	√	√	√	√	7
<b>Intranet/Local Area Network</b>	√	√	√	√	√	√	√	√	7
<b>Institutional Repository</b>	√	√	√	√	X	X	√	√	5
<b>Online-Database</b>	√	√	X	√	√	√	√	√	6
<b>E-granary</b>	√	√	X	√	√	X	X	X	4
<b>Microfilm</b>	√	√	√	X	X	X	X	X	3
<b>Microfiche</b>	√	√	X	X	X	X	X	X	2
<b>Video</b>			X	X	X	X		√	3
<b>Tape/camcorder</b>	√	√							
<b>Audio digital recorder</b>	√	√	X	X	X	X		√	3
<b>Projector</b>	√	√	X	√	√	X		√	5
<b>Printer</b>	√	√	√	√	√	√	√	√	7
<b>Software</b>	√	√	√	√	√	√	√	√	7

<b>Mobile phone</b>	√	√	√	√	√	√	√	7
<b>tablet</b>								
<b>OPAC</b>	√	√	√	√	√	√	√	7
<b>Scanner</b>	√	√	√	√	√	√	√	7
<b>Television</b>	√	√	X	√	√	√	√	6
<b>Barcode Scanner</b>	√	√	√	√		X	√	X 5
<b>Server</b>	√	√	√	√		X	√	√ 6
<b>Router/switches</b>	√	√	√	√	√		√	√ 7
<b>Inverter</b>	√	√	√	√		X	√	√ 6
<b>CCTV</b>	X	√	X	√		X	X	- √ 3
<b>Teleconferencing</b>	X	X	X	X		√	X	X 1
<b>Facilities</b>								
<b>Digital Camera</b>	X	X	X	X		X	X	√ 1

Table 2.1 presented the available technologies in the Federal University Libraries in the North Western States of Nigeria. The data collected revealed that BULK and KIL (ABUZ) had the highest number of technology facilities available, while FULBK, FULD library, and FULG had the least number of technology facilities in their libraries. This could be attributed from the fact that FULBK, FULG and FULD are relatively very young university library established in 20's compared to BULK and

KIL (ABUZ) created in the 90's. The technology facilities that are not available in most of the libraries are CCTV, teleconferencing facilities, digital camera and microfiche. The unavailability of teleconferencing facilities could be because the libraries are not involved in reference services beyond their remote location, while microfiche is relatively very old technology which many libraries are unwilling to use. Yet, proving CCTV technology and making good use of it is very important for the

security of library resources against theft and any other physical mishandling of the library resources, the absence of the CCTV technology can lead to continues loss of library materials available in the library. But, most importantly is the fact that none of university libraries studied is without a single technology. The implication of this finding is that the relatively new Universities are most likely able to provide quality library services

to their patrons because of the availability of current technology they have deployed. Solarin (2013) and Adetoro (2014) also agreed on the availability of Internet, electronic databases, Online Public Access Catalogue (OPAC), computers, photocopier, Laminator, scanner, binding machine and printer, and audio visuals in Academic Libraries in Nigeria.

**Table 2: Strategies Used for Managing Library Technologies**

Strategies	KIL	BULK	FULD	FULDm	FULG	FULBK	UDULS	TOTAL
used in Managing Technologies	(ABUZ)							
1 Selection by the university management	X	X	√	√	X	√	√	4
2 Done by university librarian	√	√	√	√	√	√	√	7
3 Base on system analysis study	√	√	√	X	X	X	X	3
4 Based on function	√	√	√	X	X	X	X	3
5 Base on selection criteria	√	X	√	X	X	X	√	3
6 Base on previous experience	X	√	X	X	√	X	X	2

7	Base on cost	X	X	X	X	X	X	X	0
8	Base on security	√	X	√	X	X	X	X	2
9	Base on ease of use	X	X	√	X	X	X	X	1
10	Base on compatibility	X	X	√	X	X	X	X	1
11	Selection base on portability	X	X	√	X	X	X	X	1
12	Selection base on flexibility	X	X	√	X	X	X	X	1
13	Selection based on software	X	X	√	X	X	X	X	1
14	Selection is accidentally done	X	X	X	X	X	X	X	0
15	Vendor selection method	X	X	X	X	X	X	X	0

**Strategies used in Acquiring Library Technologies**

Acquisition Strategies	KIL (ABUZ)	BULK	FULD	FULDm	FULBK	FULG	UDULS	Total
1. Through Direct Purchase	√	√		√	√	√	√	7

2. Through Contract	√	√	√	√	√	√	√	7
3. Donation	X	√	√	X	√	X	X	3

Table. 3 presented analyses on acquisition strategies used in acquiring technologies in the University Libraries in the North Western States in Nigeria. From the table it can be clearly seen that acquisition of technology through direct purchase and contract were the popular strategy used by all the libraries studied. This finding does not tally with Adam (2015) who found out that not all academic libraries in Kaduna state acquire

their technologies through direct purchase by management of the institution or library. It can also be seen that some libraries such as BULK, FULBK and FULD also acquired their technologies through donations. The implication of this is that, the value for money is not achieved as technology are overpriced when contracted out while direct purchase will save the library a huge amount of money.

**Table. 4 Strategies adopted in Maintaining Library Technologies**

Maintenance Strategies	KIL (ABUZ)	BULK	FULD	FULDm	FULBK	FULG	UDULS	Total
1. Preventive	√	√	√	√	√	√	√	7
2. Predictive	√	X	√	X	√	X	√	4
3. Corrective	X	X	√	X	√	X	X	2
4. Adaptive	X	X	X	X	X	X	X	0
5. Perfective	X	X	X	X	X	X	X	0
6. Mixed	√	X	√	X	X	X	√	3

Table 4. presented analyses on maintenance strategies used in managing technologies in the university libraries. The table indicated

that all the university libraries studied indicated that they are using preventive maintenance, as the strategy is applicable to

both hardware and software. This finding agrees with Singh and Goel (2007) who believed that preventive maintenance is applicable to both hardware and software. In addition, KIL(ABU), FULD, FULBK and UDULS also consider predictive maintenance as other alternative to technology maintenance. It can also be seen from the table that only KIL(ABU), FULD and UDULS in addition to the other strategies consider mixed maintenance strategy. The table also revealed that, none of the university libraries consider adaptive and perfective maintenance strategies. This is because these particular strategies requires technicality as is use for software technology, as reported by Thakur, (2017), adaptive and perfective maintenance strategies are used on software technology. The implication of this finding is that libraries at no point will the technology adopted for use breakdown completely. Also, for library software to meet all the requirement of a particular library there is need for adjustment that is why adaptive and perfective maintenance are available, failure to make used of these maintenance strategies will lead to constant change of technology.

### **Conclusion**

Based on the findings of this study, it is deduced that a number of technologies such as desktop computer, laptop computer, CD-ROMS/DVD ROM, Internet, Intranet/Local Area Network, institutional repository, online-database, microfilm, microfiche etc are available in the university libraries studied, but in managing of their technologies majority of the management strategies were not deployed which result to technology malfunctioning and abandoning. Yet managing technologies from the stage of selection, acquisition and maintenance is very important.

### **Recommendation**

Recommendations were based on the study outcome.

These are:

1. The University Libraries in North West States of Nigeria should consider proving CCTV technology in order to secure their technologies against theft and other physical mishandling of the technologies.
2. The University Libraries in North West States of Nigeria should apply other important strategies such as selection base on security, cost, ease of use, compatibility, portability, and system analysis study, acquisition of technologies through donations, and lastly, maintenance strategies such as perfective and adaptive should also be used in combination with the other maintenance strategies for effective management of their technologies.

### **Summary of Findings**

1. The available library technologies in the Federal Universities Libraries in the North West States of Nigerian Libraries are as below: desktop computer, laptop computer, CD-ROMS/DVDB ROM, Internet, Intranet/Local Area Network, institutional repository, online-database, microfilm, microfiche, Video Tape/camcorder, audio digital recorder, projectors, printer, software, mobile phones, television, scanner, barcode scanner, server, router/switches, inverters.
2. The strategies used to manage library technologies in the Federal University Libraries of North West States in Nigeria are: The most frequent strategy used in the selection of technologies in the selected libraries is the selection by university librarian. Direct purchase and contract were the strategies used in acquiring technology in the sampled libraries. A preventive strategy is the strategy adopted in maintaining library technologies.

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