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Emeka C. Uzomba Mr.
Federal University,Oye-Ekiti, Ekiti State, remedy4sure@yahoo.com

OLUWATOFUNMI JESUDUNNI OYEBOLA Mrs.
Federal University Oye-Ekiti, Nigeria, oluwatofunmi.oyewole@fuoye.edu.ng

ANTHONY CHUKWUMA IZUCHUKWU Mr.
University of Nigeria, Nsukka, anthony.izuchukwu@unn.edu.ng

THE USE AND APPLICATION OF OPEN SOURCE INTEGRATED LIBRARY SYSTEM IN ACADEMIC LIBRARIES IN NIGERIA: KOHA EXAMPLE

BY
EMEKA CHRISTIAN UZOMBA
Federal University Oye-Ekiti
(Corresponding Author)
Phone: +2348036996747
P.M.B.2273 Oye-Ekiti, Ekiti State, Nigeria.
emeka.uzomba@fuoye.edu.ng,   remedy4sure@yahoo.com,

OLUWATOFUNMI JESUDUNNI OYEBOLA
Federal University Oye-Ekiti
(Co-Author)
Phone: +2348030617819
P.M.B.2273 Oye-Ekiti, Ekiti State, Nigeria.
oluwatofunmi.oyewole@fuoye.edu.ng, oluwatoseyifunmi@gmail.com

ANTHONY CHUKWUMA IZUCHUKWU
Department of Library and Information Science, University of Nigeria, Nsukka
(Co-Author)
Phone: +2348067699821
anthony.izuchukwu@unn.edu.ng

ABSTRACT

This study examined the use of open source integrated library system in academic libraries in Nigeria, with the aim of highlighting the capabilities and potentials of open source software (Koha) and its practical importance to academic libraries across the globe. The study was guided by five objectives and five research questions. A descriptive survey design was adopted in this research, with population of twenty-five (25) staff selected randomly from 25 different higher institutions that uses open source software in Nigeria: 19 universities (federal, state and private), 4 polytechnics (federal and state) and 2 colleges of education. The instrument used to generate data is questionnaire and the data generated was analyzed using frequency tables and percentages. It was found that many libraries in Nigeria and across the globe have turned more and more to free and open source software. The major challenges confronting the libraries include: inadequate funding, inadequate managerial support, inadequate power supply, etc. The findings of this study will serve a very useful purpose for academic libraries in Nigeria in particular, and their counterparts across the globe in general. The flexibility and friendly nature of the software will also enable users maximize their gains in the search for information.

Introduction

The importance of integrated systems in library activities such as cataloguing, circulation, acquisition and serials management, etc is no longer debatable as libraries all over the world have realized the need to move from their manual practices into integrated systems and networked operations. Prior to computerization, library 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 (in which all bibliographic data was kept on a single index card), and users signed books out manually, indicating their name on cue cards which were then kept at the circulation desk. With the advent of computers, academic libraries in Nigeria are shifting from their isolated past into integrated systems and networked operations. The application of ICT to almost all spheres of life is no longer a new phenomenon. As Khalid (2000) observes, "networked and integrated functions draw on the experiences of the evolution of libraries in developed countries." Academic libraries in Nigeria are trying their best to catch up with their counterparts in the developed world. Omeluzor, Adara, Ezinwayi, Bamidele, and Umahi (2012) stated that "the pursuit for excellence in all aspects of a university educational system made it imperative for universities around the world to rise up to their responsibilities". If a librarian is to deliver prompt and adequate services to the clients, he/she must adapt to the changing environment and the use of current software to manage library routine activities.

An integrated library system (ILS), also known as a library management system (LMS), is an enterprise resource planning system for a library, used to track items owned, orders made, bills paid, and patrons who have borrowed. An ILS usually comprises a relational database, software to interact with that database, and two graphical user interfaces (one for patrons, one for staff). (Wikipedia, 2012) Most integrated library separate software functions into discrete programs called modules, each of them integrated with a unified interface. Muller (2011) stated that "integrated library systems (ILS) are multifunction, adaptable software applications that allow libraries to manage, catalog and circulate their materials to patrons". In choosing ILS software, libraries must base their decision not only on the performance and efficiency of the system, but also on its fundamental flexibility to readily adapt to the future demands and needs of their patrons. There are different types of integrated library system software that have been adopted by

various academic libraries in Nigeria. Agboola (2000) stated that "the greatest impetus to library automation in Nigerian 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 20 participating libraries in 1992. With this, some of the first generation universities in Nigeria started with TINLIB software. However, they could not continue with this particular software due to some technical problems. Experience has shown that very many libraries in Nigeria run into one problem or the other due to the wrong choice of library software. Obajemu, Osagie, Akinade, and Ekere (2013) stated that "some of the first generation universities in Nigeria started with TINLIB software but they could not continue due to some technical difficulties, maintenance problem, poor revision policy and the prohibitive cost of processing and maintaining it". Therefore, the reports highlighted above coupled with the experiences academic libraries in Nigeria faced in the wrong choice of library software necessitated the adoption of Koha open source integrated system by the researchers in this current study.

According to Projektlink (2010) and Wikipedia (2012), "Koha is the first open-source integrated library software (ILS) in use worldwide by public, school and special libraries which its development was steered by a growing community of libraries and users collaborating to achieve their technological goal". Koha sets the standard for open-source integrated library automation systems. In use worldwide, its development is steered by a growing community of libraries collaborating to achieve their technology goals. Koha user's interface is very configurable and adaptable which has been translated into many languages. It has most of the features that would be expected in an ILS, including simple clear interface for librarians and members (patrons), union catalog facility, customizable search, circulation and borrower management, serials system for magazines or newspapers among others (Wikipedia, 2012). Since the original implementation, Koha has been adopted by thousands of libraries worldwide, each adding features and functions, deepening the capability of the software. Omeluzor, et al (2012) stated that "since the original implementation, Koha has been adopted by thousands of libraries worldwide, each adding features and functions, deepening the capability of the software". Therefore, this study will serve a very useful purpose for academic libraries in Nigeria in particular, and their counterparts across the globe in general. This current study will serve as a

viable, scalable solution for libraries of all kinds. The flexibility and friendly nature of the software will enable users maximize their gains in the search for information. Koha's impressive feature set will continue to evolve to meet the needs of its user-base.

Statement of the problem

It is not surprising that today; the discussion of ICT plays dominant roles in library activities. Integrated library system has become imperative due to the evolution of information technologies. In today's world of a highly connected public, the capabilities of the integrated library system determine the library's ability to deliver relevant services. Open source ILS products are making great strides in adoption in libraries across the globe, including Nigerian University libraries. Many literatures have existed on open source integrated library system such as: "Open Source Integrated Library Systems" (Breeding, 2009), "How to Choose a Free and Open Source Integrated Library System" (Muller, 2011), "Library Automation and Use of Open Source Software to Maximize Library Effectiveness" (Ukachi, Nwachukwu and Onuoha, 2014), etc. However, the use and application of Koha integrated library system in academic libraries has been found wanting. The importance and viability of this Koha library software makes it very imperative to be adopted by libraries that strives to better serve the interest of their users. Hence, this gave rise to the study. This work will guide the libraries, especially academic libraries to make the right choice in adopting open source library of their choice. Koha has been proven to be the most reliable open source alternative for libraries. The work will also guide the librarians to better serve the interest of their teeming users in the pursuit for information. The open and friendly nature of the software will help the users to navigate and maximize their search for information.

Objectives of the Study

The general objective of the study is to look at the use and application of open source integrated system in academic libraries in Nigeria, using Koha as a case study.

The specific objectives of the study are as follows:

1. To find out the justifications for the adoption of open source software.

2. To determine the extent of use of Koha integrated software in the libraries

3. To ascertain the number of I.C.T facilities put in place in the libraries studied.

4. To find out the problems encountered with the use of open source software in the libraries.

5. To recommend possible solutions to these problems.

Research Questions

The study is guided by the following research questions:

1. What are the justifications for the adoption of open source software?

2. What is the extent of use of Koha integrated software in your library?

3. What are the I.C.T facilities put in place in your library?

4. What are the problems encountered with the use of Open source software in your library?

5. What are the possible solutions to these problems?

Literature Review

The term Integrated Library System (ILS), also known as Library Management System (LMS) can be used to describe the software that automates the many activities in the library. It is an enterprise resource planning system for a library, used to track items owned, orders made, bills paid, and patrons who have borrowed items in the library (Wikipedia, 2012). This common application is tied together with data residing in common databases (as much as possible) that are related to many different tasks. Muller (2011) stated that "integrated library systems (ILS) are multifunction, adaptable software applications that allow libraries to manage, catalog and circulate their materials to patrons". In choosing ILS software, libraries must base their decision not only on the performance and efficiency of the system, but also on its fundamental flexibility to readily adapt to the future demands and needs of their patrons. According to Breeding (2012), "The Integrated Library System, or ILS, provides computer automation for all aspects of the operation of a library. These products are generally organized into modules that address specific functional areas". Standard modules include cataloging for creating bibliographic records that represent works in the library's collection, circulation that automates tasks related to loaning items to patrons, serials control for managing periodicals and serials, acquisitions to handle the procurement process for new items added to the collection, and the online public access catalog to allow library users to search or browse through the library's collection. Each of these modules offers a very detailed suite of features to accommodate the complex and nuanced routines involved in the library work. Integrated library systems rely on databases shared among the functional modules. The bibliographic database stores descriptive information about each work in the collection, ideally consistent with the MARC21 standard. A database of authority records ensures consistent forms of names and subject terms and provides references to related terms. Another database tracks information about each item, linking each record for a copy to the appropriate bibliographic record. A patron database manages data for each registered library user. The acquisitions module relies on multiple databases in support of procurement related functions such as vendors, orders, invoices, and funds. The circulation module involves transactions linking patron and item records when an item is checked out and unlinking them when it is returned. A set of configuration tables, built according to the library's policies on the loan period for each type of material and category of borrower, controls the behavior of the circulation module. The online catalog draws from almost all of the databases and policy tables

to provide an interface for library users that enable them to locate items in the library's collections and take advantage of other services offered by the library. An ILS automates many library tasks that would otherwise be repetitive, labor intensive, and inefficient.

The acquisition and maintenance of an ILS is a major investment for a library. These systems are not inexpensive, either in the up-front costs involved or in the ongoing budgetary requirements. The hardware, software, and personnel costs associated with the library's automation effort can represent a substantial portion of its annual budget.

Omeluzor, et al (2012) opined that "integrated library management software is designed to enhance all library routine activities as expected by the library users". A good and reliable ILS enhances management, control and easy access to information resources that are physical in a library and outside, for example, books, CD ROM, e-journal, e-books, e-databases, and repositories, among others. It also helps to reduce time wastage in the delivery of services to the library users.

Larger libraries such as academic libraries use an integrated library system to order and acquire, receive and invoice, catalog, circulate, track and shelve materials. In order to maximize the benefits of ILS, there is the need, however, for quality and reliable software that can effectively run on the operating systems of computers in Nigerian libraries. Obajemu, et al (2013) stated that "it is the expectation of every organization that software run on the operating systems of their computers will perform effectively with little or no hiccups". Experience has shown that very many libraries in Nigeria run into one problem or the other due to the wrong choice of library software. Software according to Concise English Dictionary (1999) "is a collection of computer programs and related data that provide the instructions to a computer or tell it what to do". It also refers to one or more computer programs and data held in the storage of computer for some purpose. According to Müller (2011), "In choosing ILS software, libraries must base their decision not only on the performance and efficiency of the system, but also on its fundamental flexibility to readily adapt to the future demands and needs of their patrons". Ukachi, Nwachukwu, and Onuoha (2014) stated that "library software come in two different models- the Proprietary software (those that require the payment of subscription fee) and the Open Source Software (OSS)".

Some of the major proprietary ILS products according to Breeding (2012) that are currently available include Symphony from SirsiDynix, Millennium from Innovative Interfaces, Aleph

from Ex Libris Group, Voyager from Ex Libris Group, Polaris from Polaris Library Systems, Library Solution from The Library Corporation, Carl.X from The Library Corporation, Spydus from Civica, and many others. The proprietary products have been available for many years, have reached a high level of maturity, and remain the dominant approach used for library automation. Open source software which is the focus of this study is free software developed for the enhancement of library routine activities. It's not necessarily cost-free, but is free to use, free to modify, and free to share. It is software that presents an alternative to the commercial licensing that imposes many layers of restrictions. Muller (2011) pointed that "with the advent of the Internet, the World Wide Web and open source technologies, developers, contributors and open source software users have turned more and more to free and open source software (FOSS) library solutions". Since the emergence of such technology ten years ago, developers have continuously increased the offerings of fast, freely-available ILS software.

In the same vein, Breeding (2012) stated that "open source software movement is one of the major alternatives for professionals who work with computer software". On one level, it involves a specific set of software license terms that specify who gets access to the source code that underlies programs, who can change them, what can or must be done with changed versions of the software, and other issues related to modifying the program. But open source also stands for a broader philosophical approach to software that aims to give its users more freedom and allow them to break free from constraints associated with the traditional proprietary model. With the advent of the Internet, the World Wide Web and open source technologies, developers, contributors and open source software users have turned more and more to free and open source software (FOSS) library solutions (Muller, 2011). Since the emergence of such technology ten years ago, developers have continuously increased the offerings of fast, freely-available ILS software. Most software that we all use every day is known as **"proprietary",** which in a nutshell means that it costs money and that the actual code of the software is restricted, in that the code of the software cannot be modified, copied, or changed from its original construction. The code is "unreadable" and pretty much is what it is.

Open source software, on the other hand, is quite the opposite. The open source mentality revolves around sharing and collaboration, and these two important elements describe open source software perfectly. First and foremost, open source software is free for anyone to have; more importantly, not only is the software free, but it is also free for anyone to copy, hack,

modify, etc. This increases the possibilities of a software program's potential because of this free-thinking model. Many large groups of programmers have customized basic open source programs into whatever they deemed necessary, and have in turn given these modifications back to the open source community for free where others can continue to build on their work. Samuels and Griffy (2012) provided two primary considerations in favor of open source integrated library system approach: The first, and most obvious, consideration is economic. In contrast to commercial solutions, the initial starting costs of open source solutions are low because the software is free. Thus, there can be good economic reasons to prefer open source software to commercial alternatives. The second main consideration in favor of open source solutions according to them concerns issues of institutional autonomy. Specifically, open source software enables a degree of autonomy for libraries not possible with commercial software since, more-or-less by definition; open source software can be supported and maintained by the end-user. Bugs can be fixed and additional features can be developed without assistance from the original developers.

There are many different kinds of open source library software solutions out there today that could be embraced by the library. Some of the open source software in today's market includes: Emilda, EspaBiblio, Evergreen, Gnuteca, InfoCID, Jayuya, Koha, NewGenLib. oBiblio, OPALS, OpenAmapthèque, OpenBiblio, PhpMyLibrary, PMB, Senayan etc. Of all the open source software available in the market, Koha and Evergreen have gained major extensions in functionality not present in their counterparts. Muller (2011) stated that "Koha and Evergreen are considered sustainable communities because they both have obtained a critical mass of interested developers, contributors and users". Both communities have managed to put in place a very solid collaborative infrastructure made of development tools to help manage goals, function, architecture and design, outlining the responsibilities of developers and contributors - concurrent versioning system (CVS), bug tracking, translation, development planning, etc. These procedures, methods, practices and tools help to reinforce sustainability While Evergreen and OPALS have not yet found wide adoption outside the United States and Canada, Koha finds use in libraries worldwide. In the United States and Canada, three open source ILS products dominate – Koha, OPALS and Evergreen. Koha, while it attracts far more public libraries than other types, serves the most diverse audience. . Evergreen has proven itself capable of providing automation support for consortia with large numbers of participating libraries. Yet the absence of

components such as acquisitions, serials control, multilingual support and course reserves in Evergreen has prevented its adoption by large academic libraries (Breeding, 2012). Thus, Koha have gained more usability, stability and acceptability in academic libraries. It's because of this attractiveness, acceptability, flexibility, reliability and sustainability etc; inherent in Koha that made the researchers to embark on the current study.

Koha Open Source Library Management Software: An Analysis

Koha is an open source integrated library system adopted by libraries to enhance management, control and easy access to information resources. Koha is an "open source", which according to Boss (2008) is free software that includes the original source code used to create it so that users can modify to make it work better for them. According to Projektlink (2010) and Wikipedia (2012), "Koha is the first open-source integrated library software (ILS) in use worldwide by public, school and special libraries which its development was steered by a growing community of libraries and users collaborating to achieve their technological goal". The name *koha* comes from a Mãori term for a "*gift*" or "*donation*".

It is web-based ILS, with a SQL database (MySQL preferred) backend with cataloguing data stored in MARC and accessible via Z39.50 or SRU (Wikipedia, 2012). The user interface is very configurable and adaptable and has been translated into many languages.

Koha has most of the features that would be expected in an ILS, including various Web 2.0 facilities like tagging, comment, social sharing and RSS feeds, union catalog facility, customizable search, circulation and borrower management, full acquisitions system including budgets and pricing information (including supplier and currency conversion), simple acquisitions system for the smaller library, ability to cope with any number of branches, patrons, patron categories, item categories, items, currencies and other data, Serials system for magazines or newspapers among others (Wikipedia, 2012)

Koha software according to Projektlink (2010) was initially developed in New Zealand by Katipo Communications Limited and first deployed in January of 2000 for Horowhenua Library Trust. Since the original implementation, Koha has been adopted by thousands of libraries worldwide, each adding features and functions, deepening the capability of the software. With the release of Koha 3.0 version in 2005 and the integration of the powerful Zebra indexing

engine. The software became a viable, scalable solution for libraries of all kinds (http://www.koha.org).

According to Omeluzor, et al (2012), there are about 47 languages of the world that the software is accessible to. The developers have always improved its features with the collaborating effort of the user community through a superb feedback mechanism. This method makes the software best among equals".

From 2000, companies started providing commercial support for koha, building to more than 20 today. In 2001, Paul Poulain (of Marseille, France) began adding many new features to Koha, most significantly support for multiple languages. By 2010, Koha has been translated from its original English into French, Chinese, Arabic and several other languages. Support for the cataloguing and search standards MARC and Z39.50 was added in 2002 and later sponsored by the Athens County Public Libraries. In France Paul Poulain co-founded BibLibre in 2007.

In 2005, an Ohio-based company, Metavore, Inc., trading as LibLime, was established to support Koha and added many new features, including support for Zebra sponsored by the Crawford County Federated Library System. Zebra support increased the speed of searches as well as improving scalability to support tens of millions of bibliographic records.

In 2007 a group of libraries in Vermont began testing the use of Koha for Vermont libraries. At first a separate implementation was created for each library. Then the Vermont Organization of Koha Automated Libraries (VOKAL) was organized to create one database to be used by libraries. This database was rolled out in 2011. Thirty-seven libraries have chosen to adopt Koha and moved to the shared production environment hosted and supported by ByWater Solutions. Previously Vermont used software from Follett (Wikipedia, 2012)

Muller (2012) ranked Koha ILS the most complete FOSS ILS because of a number of functions including routing periodicals, inventory control, authorities, generation of notices to customers, order tracking, among others. According to Cohn, Kelsey and Fiels (2001), users' expectations which are in line with what Koha offer include quick response time to complex queries across myriad of databases, graphical interface through which they access resources; access to same resources in the library that can be accessed from remote locations, such as their homes and offices; 24/7 access to library resources; and systems that allow maximum opportunity for "self-service" features and user-initiated manipulation of the system, among others.

In general, Koha integrated library management software has among others, basic features needed to run a library. It has the following features:

* Online public access catalogue (OPAC) of the library holdings: the OPAC is web based and there is no need to install any software on user's machine.

* Web-based circulation interface: can handle issues, returns, transfer, etc. There is no need to install any special software on staff computers once there is intranet in place.

* Patrons' records management: It allows management of detailed information about each patron that registered in the library.

* Online renewals and reservation of item by users: library patron can self renew their checkouts and make reservations. This has reduced the traffic at the circulation desk/ counter and freed some circulation staff for other duties.

* Branches relationship: this can be done easily without any problem. Since the software is web based it is easy to borrow a book in one branch and return it in another branch.

* Borrower history, comments and tags: patrons can comment/review books, tag them and view their reading history. They can also view their records and make purchase suggestion.

* Customisable search: it allows a library to choose the field they want on their search form. For example a search by author, title, subject, and keywords. There is also an advance search option.

* Full acquisitions: this includes orders from vendors, budgets and pricing information.

* Serials modules: it allows easy cataloguing of journals and patron can view the catalogue through OPAC.

* Book bag and virtual shelves: patrons can have a virtual library where they keep books specific to their needs.

* Multi-language OPAC support: Koha allows patrons to view OPAC in different languages depending on the language chosen by the library.

* Overdue Fines and overdue Notices: it manages overdue fines and overdue notices. This can be sent to patrons via their e mail address.

* Security: Koha provides an effective security measure to protect unauthorized person from accessing the system. For example registered patrons are required to sign in with their user name and password to perform certain functions on the library database.

The Application of Open Source Software in Academic Libraries in Nigeria

Various libraries in Nigeria have made attempts in adopting integrated library system in their library activities, with some encountering many problems. According to Ibrahim (2012), "the first attempt to computerize Nigerian university libraries in the 1970s failed". Ehikamenor (1990) and Ifebuzor (1977) attributed the failure of this first attempt to manpower problem, funding, poor maintenance of equipments, epileptic power supply system and of course, the software packages available then. Almost a decade after the first attempt at activation by the university libraries, the International Institute for Tropical Agriculture (IITA) announced its large-scale automation success story using software called Battelle Automated Search Information System (BASIS). (Ibrahim, 2012).

Lawani, Azubuike and Ibekwe (1992) had reported the automation success story with BASIS (foreign software) hung on a VAX 750 minicomputer.

The second attempt at the university libraries using TINLIB (The Information Navigator Library Management) also failed. The National Universities Commission (NUC), the body saddled with the responsibility of managing universities in the country introduced TINLIB, another foreign software into the university libraries. The NUC has donated one 386 ICL computer systems and TINLIB software to some federal university libraries in 1994. Many other libraries like Ladoke Akintola University of Technology (a State University), Development Policy Centre library at Ibadan had also adopted this software. (Idowu and Mabawonku, 1999). Because of the highlighted problems inherent in this software, academic libraries in Nigeria began to look for open source alternative. Many libraries at this period adopted the Computer Documentation System Integrated Set of Information Systems (CDS/ISIS). For instance, the SS Peter & Paul Seminary Library and the Raw Materials Research Development Council (RMRDC) adopted the CDS/ISIS until the RMRDC developed its own software called XLIB. XLIB is now at its third

update called LibPlus. However, the TINLIB (developed by Information Management Engineering Limited) and CDS/ISIS (freely distributed by UNESCO) were short-lived. Various reasons were adduced for these failures and eventual discontinuation at the University of Ibadan for instance where TINLIB was discontinued, and where TINLIB replaced CDS/ISIS.

Adeyemi (2002) referred to the vendors' inability to respond quickly to problems emanating from the use of the software. Similarly, Ola (2010) adduced the discontinuation to the need for change from DOS to Windows. The University of Benin was not even prepared when TINLIB software was introduced and installed (Sanni & Idiodi, 2004). Thus, another attempt by libraries, most especially university libraries to automate their libraries using TINLIB has failed again.

The failure brought more challenges and another effort to start automation afresh. Some of the libraries went for Graphical Library Automation System (GLAS); while others opted for Alice for Windows. Most of these third attempts are also facing some setbacks. Apart from the fact that the performances of these software leave much to be desired, GLAS has crashed at University of Agriculture, Abeokuta, The SS Peter & Paul Major Seminary at Ibadan at its first attempt at automation, its CDS/ISIS crashed shortly after it was installed. At the University of Ibadan, Alice for Windows has also been discontinued. Clinkenbeard (2002) mentioned some disadvantages of Alice for Windows which he also called Softlink Alice which can affect its adoption. Most importantly, he made reference to its primary focus, which are schools rather than academic libraries and the fact that it has no inter-library loan module. At this stage, Nigerian libraries most especially university libraries began to explore avenue where they can install a viable and enduring software. Quite a number of different software are making in-roads into the Nigerian market. For example, The University of Benin, Federal University of Technology, Akure and some others have installed the Strategic Library Automation and Management (SLAM) (Sanni and Idiodi, 2004). Among various library software which have found their way into Nigerian market today, Koha has gained more popularity and acceptability in Nigerian libraries, especially academic libraries. For instance, Bowen University at Iwo, which is one of the private universities in the country established by Nigerian Baptist Convention in 2002, has installed KOHA (Otunla & Akanmu-Adeyemo, 2010). Nnamdi Azikiwe Library, University of Nigeria, Nsukka has successfully integrated their vast information resources into

Koha library management. One of the new federal universities in Nigeria established in 2011, Federal University Oye-Ekiti adopted the use of KOHA in its first month of 2013.

In the case of Adeyemi College of Education, which was established in 1962, migrating to Koha, the institution was able to purchase equipment and begin installing Koha and manually migrating their data to Koha. Initially, there were some initial problems, such as phobia of the staff in automation, erratic power supplies (which is a very common problem in Nigeria). Today, they are very excited in presenting their story and Koha to other college community members in Nigeria and help them spread and install Koha. According to Redeemers University Library online newsletter (2012), Redeemers University which is one of the nation's private universities owned by the Redeemed Christian Church, migrates its bibliographic records from the former Portal systems to Koha Integrated Library systems in August, 2011. RUN Library was attracted to the system because of its wide adoption amongst Nigerian library community. This was considered a major plus because the library would have opportunity to compare notes with other libraries using the software. Another attraction to the system is its seamless integration of the modules. With this attribute, data would only be entered once and viewed in all other modules. All library records are now accessible through the new library management system. Users are enjoined to access the records at http:/10.16.7.3/opac to view the library catalog. The catalog supports both basic and advanced searching, using parameters like title, author and publishers to mention but a few. Likewise, it is possible to search by format of information and storage medium. Presently, there are about 483 e-books in various disciplines uploaded to the system that can be read in full text.

Another story of successful migration to Koha was shared by Babcock University, another private university in the country. Omeluzor, et al. (2012) stated that "Babcock University Library has evolved through the years from 1959 to date serving as a College Library, Seminary Library and now University Library". According to them, prior to the implementation of Koha at Babcock University Library, X-Lib was used for almost six years, from 2003 - 2008, but after the installation of Koha, it became necessary to migrate usable data from X-Lib into Koha in order to populate the database and also to enhance access to the collections in the library.

Migration of data from X-Lib to Koha posed some challenges, this was because, X-Lib is a proprietary software which did not provide any means to export out its data either as a comma

separated values (CSV) or as machine readable catalog (MARC) data. Either format would have presented a much easier conversion from X-Lib to Koha (Omeluzor, et al. 2012). The major challenge was then how to get the data in the proprietary X-Lib system out in a format useful to import into Koha.

Careful analysis of the X-Lib files revealed a database system of files based on Foxpro. The key files containing relevant tables were identified. After identifying these files, the next step was to find ways to merge the files and extract the data into CSV format. Several efforts were made to use the open source programmes – "open office" and "libre office" to open and massage the data into a format that can easily be exported to CSV without success. However Goggling for Database file (DBF) to CSV converter (Foxpro files are dbf format) turned up DBFTOCSV, a perl script that did a wonderful job of converting the Xlib dbf files into a comma separated value (CSV) file. After generating the CSV file, the next challenge was to convert the CSV file into a format that can be imported into Koha. The format for data import that Koha support is MARC. To convert the CSV into MARC, the very efficient utility "MarcEdit" was used. MarcEdit is a free programme, which can do all sorts of cool stuffs with your Marc data. The X-Llib data were cleaned up to reduce error in the catalogue. These were mainly in the area of spelling mistakes and duplicate accession numbers. Koha can only import data in the MARC format. This can be any flavor but must match the configured MARC flavor in a particular Koha installation. Babcock University Koha uses MARC21 flavour. In order to get the CSV into MARC21, the Marc Edit delimited text translator utility was used. The delimited text translator allows you to convert data in CSV into Marc Edit's (mrk) format. The "mrk" format, which is a text file with the appropriate mark fields given to records, was then compiled into a binary Marc file. After the conversion into MARC using Marc Edit, the generated MARC file was imported into Koha using the bulk marc import script. At the end of the conversion, a total of 23,274 records were imported into the Koha database from X-Lib for Babcock University Library. This process gave the University library ILS a boost, because it became populated with more data which helps to reduce the amount of time that would have been used to key-in those data back into the software. (Omeluzor, et al 2012).

Other academic libraries in Nigeria that have successfully migrated to Koha integrated system includes: Osun State University, Osogbo, Federal University of Agriculture, Abeokuta, Ladoke

Akintola University of Technology, College of Education, Ikere-Ekiti, Federal Polytechnic, Ado-Ekiti, Afe Babalola University, Ado-Ekiti, Elizade University, Ebonyi State, and many others.

Justifications for the Adoption of Open Source Software in Libraries

In the current library automation process, news of libraries adopting open source integrated system is on the increase. Open source software has found wide adoption and acceptability in many libraries of the world, including developing country like Nigeria. Apart from the fact that it requires little or no cost to operate, it has also proved to be more reliable and effective. The open source mentality revolves around sharing and collaboration. On this, Wheeler (2007) stated that "open source software gives users the freedom to run the program for any purpose, to study and modify the program, and to redistribute copies of either the original or modified program without having to pay royalties to previous developers". It offers more flexibility and freedom than software purchased with license restrictions. Both the open source software programmers and the user community share and promote open standards and believe in sharing. Ukachi (2012) stressed that "the major reason to choose an OSS application is the freedom it confers to change the source code for individual requirements. It gives room for alteration of the program to suit your purpose". This is the reason why software can be utilized for varying services once it is modified to suit those purposes.

Gonzalez-Barahona (2000) enumerated the following benefits/justifications for open source software:

Reliability: Open source software could be said to be reliable because it does not manifest defects which can cause incorrect operation, data loss, sudden failures, or failure to meet specification or appropriate published standards which is generally termed as 'bug'. This is not to say that problems are never encountered with the use of OSS but, each problem is usually addressed with speedy fixes, a process which is undoubtedly assisted by the availability of the source code. Hence, open source advocates claim very rapid time-to-fix characteristics for software. The pattern with closed-source software is typically that a defect report needs to be filed and then there will be a delay before the vendor determines when or whether to issue an updated release. Users of the closed source software are much more at the mercy of the vendor's internal processes than with the Open Source arrangement.

Stability: Proprietary Software vendors can apply a number of tactics to persuade their customers to upgrade more or less willingly. Typical tactics include moving to allegedly new and improved file formats (which require the new and improved software to read them) or to withdraw support and bug fixes for older versions after a short period. The problem for users of such software is that they rarely have much control over that process and are left isolated if they choose to remain with the older versions. This has cost and control implications for the business whereas with OSS, the worst effects of vendor-push can be mitigated. Having access to the source code can allow a business to choose to support itself on an old version where necessary thereby giving more options and choice to the users.

Auditability: A rarely-understood benefit of open source software (any software where the source code is published) is its auditability. Closed-source software forces its users to trust the vendor when claims are made for qualities such as security, freedom from backdoors, adherence to standards and flexibility in the face of future changes. If the source code is not available, those claims remain simply claims. By publishing the source code, authors make it possible for users of the software to have confidence that there is a basis for those claims. Without access to the source, third party inspection is impossible.

Cost: Most Open Source software are provided free of royalties and fees. Administrative overhead cost is drastically minimal as there is no cost attached to number of copies in use, unlike when proprietary software is used. There is also lower management cost as no upgrade fees are incurred. Near-zero vulnerability to viruses eliminating need for virus checking, data loss and downtime

Flexibility and Freedom: This software is flexibility as it gives users opportunity to be able to choose solutions suitable for their needs. Open source software offers its users greater freedom to purchase other products, avoiding lock-in to particular manufacturers, freedom from a single vendor and freedom to modify your software.

Problems of Open Source Software in Libraries

Though open source software are considered to be best option for libraries, available literature have shown that there are some issues that are related to its adoption and usage. Some of these problems are highlighted below:

Lack of Support: There is basically lack of support for open source software. This is owing to the fact that open source software is freely distributed. Vendors often lose interest in venturing into it. There is lack of commitment from the vendors. Chawner (2004) stated that "with no vendor responsible for the software, support for F/OS applications can vary, and often depends on the user/developer community's commitment to the project". Library vendors charge an incredible amount of money to support the software they license, typically in the form of yearly maintenance fees. . Qualified support essentially does not exist. The available support for open source software is predominantly self-motivated discussions found on the Internet, and since the software is constantly being changed, no manuals or instructions are made.

Lack of Technical Knowledge from the Staff: Some libraries, especially in developing countries lack technical knowledge on the installation and operation of open source software. Clarke (2000) acknowledged that "some libraries choose proprietary software because they lack the necessary technical skills to support F/OS in-house". The structure of the open source community requires that individuals have programming expertise in order to engage in open code modification and exchange. Librarians may not be equipped to take on this new responsibility of technologies. This poses a great concern for libraries trying to adopt open source software.

Lack of Quality Documentation: With no vendor responsible for the software, detailed and up-to-date documentation is a setback for libraries using open source software. Kumar (2007) stated that "proper documentation gives information of software installation in various operating systems, software architecture, database structure, history of bug fixes, changes in new release, road map (wish list) of future releases", etc. This lack of proper documentation inherent in open source software makes it very difficult to attend to end-users' questions and problems.

Poor funding: Many libraries, especially in developing countries are poorly funded. For an efficient running of any library, there is need for adequate funding of it. There is little or no

funds needed to acquire modern facilities for the smooth running of the library. Libraries always complain of inadequate funds to train their staff on how best to develop and handle modern facilities needed for the open source initiative. This poses a great danger for libraries trying to adopt an open source practices.

Inadequate Power Supply: This is also another major setback to libraries, especially in the developing country like Nigeria. The electric supply to libraries is not stable. Any software whether "Open" or "Proprietary" requires servers and network infrastructure to function. Poor power supply hinders this movement.

Data Migration: Available records have shown that most libraries insists on using proprietary software because of the inability to migrate to open source. There is always this fear of losing data in the process of migrating from their existing practice to open source option. Moreover, many open source software are genuinely developed for Linux environment. Libraries without in-house computer professionals will find it very difficult to operate on Linux environment because of its perceived technicalities.

Other setback to open source movement includes: Cost of procurement of the hardware/software, lack of consortium, lack of training and re-training of staff, crashing problem, maintenance cost, etc.

Methodology

This study adopted the descriptive survey design. Questionnaire which was the main instrument used for data collection was administered during a National workshop organized by Librarians' Registration Council of Nigeria on E-Library services held at University of Ibadan in November, 2014. The choice of this venue as a place for questionnaire administration was made following the fact that this workshop draws participants from various libraries across the country. A questionnaire which was tagged "The Use and Application of Open Source Integrated Library System in Academic Libraries in Nigeria: Koha Example was divided into six sections. Section A elicited information on the background of the respondents with questions such as name of institution, gender, department, highest educational qualification, position and working experience. Section B explored information on the justifications for the adoption of open source software, while section C concentrated on the extent of use of KOHA software in the library.

Section D concentrated on the availability of ICT facilities deployed for the application of KOHA open source integrated system in the library. Section E concentrated on the challenges encountered with the use of open source software while Section F sought responses on the possible solutions to the problems. The population which was randomly selected includes library staff and information managers from different Universities, Polytechnics and Colleges of Education. Out of total of thirty (35) questionnaires that were distributed, thirty-two (32) were returned. Of the thirty-two (32) returned questionnaires, 25 were found usable. On examination, it was found out that the twenty-five returned questionnaires were representing nineteen (19) universities (federal, state and private), four (4) polytechnics (federal and state) and two (2) colleges of education. Data collected were analyzed using frequency distribution tables and percentages. Data were analyzed in line with research questions.

Findings

Section A: Background Information

Table 1: Gender Distribution

Gender	Frequency	Percentage (%)
Male	16	64
Female	9	36
Total	**25**	**100**

The researchers surveyed 25 institutions: 19 universities (federal, state and private), 4 polytechnics (federal and state) and 2 colleges of education. The gender distribution shows 16 males (64%) out of 25 respondents, while there were 9 females (36%).

Table 2: Official Position of Respondents

Position	Frequency	Percentage (%)
Library Officer	1	4
Higher Library Officer	4	16
Senior Library Officer	2	8
Principal Library Officer I	2	8
Librarian II	3	12
Librarian I	5	20
Senior Librarian	5	20
Principal Librarian	3	12
Total	**25**	**100**

Out of the 25 respondents, 1 (4%) is library officer, 4 (16%) are higher library officers, 2 (8%) are senior library officers, 2 (8%) are principal library officers, 3 (12%) are librarian II, 5 (20%) are librarian I, 5 (20%) are senior librarians while 3 (12%) are principal librarians.

Section B

Table 3: Justifications for the adoption of open source software

	Justifications	Frequency	Percentage (%)
A	User – friendliness	20	80
B	Flexibility	23	92
C	Re-usability	18	72
D	Adaptability	19	76
E	Robustness	18	72
F	Low cost of purchase	16	64
G	Low cost of maintenance	19	76
H	Efficiency	21	84
I	Unified management	20	80
J	Stability	19	76
K	Reliability	22	88
L	Support and support model	9	36
M	Ability to manage privileges and permissions	18	72
N	Availability of search options	20	80

O	Web based OPAC	18	72

Data in table 3 shows the justifications for the adoption of open source software. One of the justifications as shown in the table above is user-friendliness which has the frequency of 20 (80%). Flexibility has the frequency of 23 (92%). Re-usability has the frequency of 18 (72%). 19 (76%) for adaptability, 18 (72%) for robustness, 16 (64%) for low cost of purchase, 19 (76) for low cost of maintenance, 21 (84%) for efficiency, 20 (80%) for unified management, 19 (76%) for stability, 22 (88%) for reliability, support and support model recorded low frequency of 9 (36%) which shows one of the arguments against open source software. Others that showed high frequency are: ability to manage privileges with the frequency of 18 (72%), availability of search options with the frequency of 20 (80%) and web based OPAC with the frequency of 18 (72%).

SECTION C
Table 4: The extent of use of KOHA software in the library

	Extent	VH	H	L	VL	Total
A	Users can use KOHA to search for books and library materials	15 60%	5 20%	3 12%	2 8%	25 **100%**
B	Staff can use KOHA to do cataloguing and classification of books	16 64%	6 24%	2 8%	1 4%	25 **100%**
C	Staff can use KOHA to order for books and library materials	4 16%	6 24%	6 24%	9 36%	25 **100%**
D	Staff can use KOHA to charge & discharge books and library materials to users	14 56%	7 28%	3 12%	1 4%	25 **100%**
E	Staff can use KOHA to register users or patrons	10 40%	12 48%	3 12%	1 4%	25 **100%**
F	Staff can use KOHA to calculate date due for books and library materials	8 32%	9 36%	5 20%	3 12%	25 **100%**
G	Staff can use KOHA to E-mail and/or text patron's overdue and other notices	3 12%	5 20%	6 24%	11 44%	25 **100%**
H	Staff can use KOHA to access its Web based OPAC system	14 56%	6 24%	3 12%	2 8%	25 **100%**
I	Staff can use KOHA to print barcodes	3 12%	5 20%	6 24%	11 44%	25 **100%**
J	Staff can use KOHA for library stock management	15 60%	4 16%	4 16%	2 8%	25 **100%**

Note: VH –Very high   H – High   L – Low   VL - Very low

From table 4 above, the respondents indicated the extent of use of Koha software in the library. Out of the 25 respondents, 15 constituting (60%) said that the users can use Koha to search for books and other library materials to a very high extent. 5 (20%) said that they can use it to a high extent, 3 (12%) said that they can use it to a low extent, while 2 (8%) said that they can use it to a very low extent. Also, 16 (64%) respondents indicated that staff can use Koha to do cataloguing and classification of books to a very high extent, 6 (24%) said that they can use it to a high extent, 2 (8%) said that they can use it to a low extent, while 1 (4%) indicated that they can use it to a very low extent. On the use of Koha for ordering of books and other library materials, 4 (16%) answered that they can use it to a very high extent, 6 (24%) said that they can use it to a high extent, 6 (24%) also said that they can use it to a low extent, while a larger part of the respondents indicated that they can use it to a very low extent as can be seen in the frequency of 9 (36%). From their response also, 14 (56%) respondents can use Koha to charge and discharge books and other library materials to a very high extent, 7 (28%) can use it to a high extent, 3 (12%) can use it to a very low extent, while only 1 (4%) can use it to a very low extent.

From the same table, it is evident that 10 (40%) can use Koha to register users or patrons to a very high extent, 12 (48%) can use it to a high extent, 3 (12%) can use it to a low extent, while only 1 (4%) can use it to a very low extent. It is also evident from the table that 8 (32%) of the staff can use Koha to calculate date due for books and library materials to a very high extent, 9 (36%) can use it to a high extent, 5 (20%) can use it to a very low extent, while 3 (12%) can use it to a very low extent. On the use of Koha to E-mail and/or text patrons overdue and other notices, it can be found that 3 (12%) can use it to a very high extent, 5 (20%) can use it to a high extent, 6 (24%) can use it to a low extent, while a larger part of the respondents 11 (44%) can use it to a very low extent. Also, 14 (56%) of the respondents answered that they can use Koha to access its Web based OPAC system to a very high extent, 6 (24%) said that they can use it to a high extent, 3 (12%) indicated that they can use it to a low extent, while 2 (8%) said that they can use it to a very low extent.

3 (12%) of the respondents also said that they can use KOHA to print barcodes to a very high extent, 5 (20%) said that they can use it to a high extent, 6 (24%) answered that they can use it to a low extent, while a larger part of the respondents 11 (44%) can use it to a very low extent.

Finally, on the use of Koha for library stock management, 15 (60%) of the respondents said that they can use it to a very high extent, 4 (16%) said that they can use it to a high extent, Also, 4 (16%) answered that they can use it to a low extent, while 2 (8%) indicated that they can use it to a very low extent

SECTION D

Table 5: The availability of ICT facilities deployed for the application of KOHA open source integrated system in the library

	ICT Facilities	Frequency	Percentage (%)
A	Computer systems	20	80
B	Computer printers	21	84
C	Scanning machine	17	68
D	Telephone	19	76
E	Internet	16	64
F	Digital camera	17	68
G	Multimedia	13	52
H	Bar code reader	14	56
I	Bandwidth	14	56
J	Projector	13	52
K	Photocopying machine	12	48
L	Public address system (Speakers, Microphone, Amplifier etc.)	19	76
M	UPS	18	72
	Others? *Please specify*		

On the availability of ICT facilities deployed for the application of KOHA open source integrated system in the table 5 above, the larger part of the respondents responded that they have computer systems 20 (80%), computer printers 21 (84%), scanning machine 17 (68%), telephone 19 (76%), internet 16 (64%), digital camera 17 (68%), multimedia 13 (52%), bar code reader 14 (56%), bandwidth 14 (56%) projector 13 (52%), photocopying machine 12 (48%), Public address system like speakers, microphone, amplifier 19 (76%) and UPS 18 (72%).

SECTION E

Table 6: The problems encountered with the use of open source software

	Problems	Frequency	Percentage (%)
A	Insufficient manpower	15	60
B	Lack of supervision	17	68
C	Inadequate managerial support	21	84
D	Inadequate power supply	20	80
E	Cost of Procurement of the hardware/software	18	72
F	Maintenance Cost	20	80
G	Vendor's insincerity	15	60
H	Lack of Consortium	17	68
I	Apathy on the part of Library Staff	14	56
J	Inadequate Funding	23	92
K	Lack of training and re-training of staff	19	76
L	Compatibility with hardware devices	15	60
M	Piracy	14	56
N	Proximity to Virus	16	64
O	Crashing Problem	15	60
P	Lack of technical knowledge from the Staff	13	52
	Others? *Please specify*		

In table 6 above, all the challenges enumerated were accepted by the respondents as can be seen in insufficient manpower 15 (60%), lack of supervision 17 (68%), inadequate managerial support 21 (84%), Erratic power supply 20 (80%), cost of procurement of the hardware/software 18 (72%), maintenance cost 20 (80%), vendor's insincerity 15 (60%), lack of consortium 17 (68%), Apathy on the part of library staff 14 (56%), inadequate funding 23 (92%), lack of training and re-training of staff 19 (76%), compatibility with hardware devices 15 (60%), piracy 14 (56%), proximity to virus 16 (64%), crashing problem 15 (60%) and lack of technical knowledge from the staff 13 (52%).

SECTION F

Table 7: Possible solutions to the problems

		Frequency	Percentage (%)
A	The library should employ capable manpower	22	88
B	There should be proper supervision of staff and users of LMS	21	84
C	There should be adequate managerial support	23	92
D	There should be uninterrupted power supply i.e. generators	25	100
E	More fund should be provided for maintenance of the library	25	100
F	Grants should be provided for training and re-training of library staff	24	96
G	Libraries should form consortium with each other so as to discuss possible challenges and solutions encountered in the use of the software	24	96
H	Library staff and users should be given proper orientation on the benefits and use of open source software	24	96
I	Software should be made flexible enough	21	84
J	Software should be user-friendly	24	96
K	Software should be made more compatible with hardware devices	23	92
L	Software should be fortified against virus attack	24	96
M	Others? *Please specify*		

Results obtained from table 7 above shows that all the solutions made were accepted by the respondents. These includes: The library should employ capable manpower 22 (88%), there should be proper supervision of staff and users of LMS 21 (84%), there should be adequate managerial support 23 (92%), there should be uninterrupted power supply i.e. generators 25 (100%), more fund should be provided for maintenance of the library 25 (100%), grants should be provided for training and re-training of library staff 24 (96%), libraries should form consortium with each other so as to discuss possible challenges and solutions encountered in the use of the software 24 (96%), library staff and users should be given proper orientation on the benefits and use of open source software 24 (96%), software should be made flexible enough 21

(84%), software should be user-friendly 24 (96%), Software should be made more compatible with hardware devices 23 (92%) and software should be fortified against virus attack 24 (96%).

Discussion of Findings

From the data collected on the background information of the respondents, the gender distribution shows 16 males (64%) out of 25 respondents, while there were 9 females (36%).

On the official position of the respondents, it is very clear that academic staff are more in number than other categories of staff as can be seen in the frequency of 3 (12%) for principal librarian, 5 (20%) for senior librarian, 5 (20%) for librarian I and librarian II recorded frequency of 3 (12%). Other categories of staff includes: Principal library officer I who recorded frequency of 2 (8%), senior library officer 2 (8%), higher library officer 4 (16%) and library officer 1 (4%). This is due to high knowledge that academic staff possess in the subject matter.

The findings in table 3 revealed that there are various justifications for the adoption of open source software. These includes: User-friendliness, flexibility, re-usability, adaptability, robustness, low cost of purchase, low cost of maintenance, efficiency, unified management, stability, reliability, ability to manage privileges, availability of search options and web based OPAC. The only justification that recorded low frequency of 9 (36%) is support and support model which shows one of the arguments against open source software. In support of these justifications, Gonzalez-Barahona (2000) stated that open source software could be said to be reliable because it does not manifest defects which can cause incorrect operation, data loss, sudden failures, or failure to meet specification or appropriate published standards which is generally termed as 'bug'. On the flexibility and freedom, Ukachi (2012) stressed that "the major reason to choose an open source software application is the freedom it confers to change the source code for individual requirements". It gives room for alteration of the program to suit your purpose. This is the reason why software can be utilized for varying services once it is modified to suit those purposes. Emphasizing the cost effectiveness of OSS, Clark (2008) affirmed the advantage of open source in terms of saving money on a library system and for support costs. However, the major setback gathered from the respondents in trying to ascertain the justifications for the adoption of open source software is the level of support available for open source software. In connection with this, Bretthauer (2001) stated that "with no vendor responsible for

the software, technical support which relies on someone responding to a listserv request for help is also a potential limitation".

On the extent of use of Koha software, it was observed that users can use Koha to search for books and library materials, staff can use KOHA to do cataloguing and classification of books, charge & discharge books and library materials to users, register users or patrons, calculate date due for books and library materials, access its Web based OPAC system and take library stock management.

However, it was observed that staff cannot maximally utilize Koha to order for library materials, e-mail and /or text patron's overdue and other notices and print barcodes. Staff must understand the new features inherent in Koha in order to better serve the interest of their users. On this Muller (2012) ranked Koha ILS the most complete FOSS ILS because of a number of functions including routing periodicals, inventory control, authorities, generation of notices to customers, order tracking, among others.

On the ICT facilities deployed for the application of Koha open source integrated system, the information generated from the libraries studied revealed that various ICT facilities exists. These includes: Computer systems, computer printers, scanning machines, telephone, internet, digital camera, multimedia, bar code reader, bandwidth, projector, photocopying machines, public address system (speakers, microphone, amplifier etc.) and UPS.

The results found based on the problems encountered with the use of open source software are enormous, but the major challenges as witnessed from the findings include: Inadequate funding, inadequate managerial support, inadequate power supply, maintenance cost, lack of training and re-training of staff, cost of procurement of the hardware/software lack of consortium, lack of supervision, proximity to virus, crashing problem, insufficient manpower and compatibility with hardware devices. In line with inadequate funding for libraries, Mittal (1997) wrote that, "not only were the funds allocated for library development meager as compared with needs of the country, but also these funds have not been utilized to an appreciable extent". Chawner (2012) writing on inadequate managerial support stated that "with no vendor responsible for the software, support for F/OS applications can vary, and often depends on the user/developer community's commitment to the project". Also, Clarke (2000) acknowledged that "some libraries choose proprietary software because they lack the necessary technical skills to support

F/OS in-house". The structure of the open source community requires that individuals have programming expertise in order to engage in open code modification and exchange.

However, the solution for the above mentioned problems as indicated by the respondents includes: uninterrupted power supply, provision of funds for the maintenance of the library, forming a consortium with each other so as to discuss possible challenges and solutions encountered in the use of the software, software should be fortified against virus attack, software should be user-friendly, library staff and users should be given proper orientation on the benefits and use of open source software, provision of grants for the training and re-training of library staff, adequate managerial support, software should be made more compatible with hardware, devices capable manpower, software should be made flexible enough and proper supervision of staff and users of LMS.

CONCLUSION AND RECOMMENDATIONS

This study has been on the use and application of open source integrated library system in academic libraries in Nigeria using Koha as an example. From the above analysis, it must be realized that academic libraries in Nigeria have adopted different kinds of library software with many running into one problem or the other due to the wrong choice of library software. However, with the restricted access and cost of purchasing proprietary software, many libraries have shifted their attention to free and open software. Apart from the fact that it requires little or no cost to operate, it has also proved to be more reliable and effective. Today, open source software has found wide adoption and acceptability in many libraries of the world, including developing country like Nigeria. Among all the open software available in Nigerian market, Koha have gained more usability, stability and acceptability in academic libraries. Koha has most of the features that would be expected in an ILS, including various Web 2.0 facilities like tagging, comment, social sharing and RSS feeds, union catalog facility, customizable search, circulation and borrower management, full acquisitions system including budgets and pricing information (including supplier and currency conversion), simple acquisitions system for the smaller library, ability to cope with any number of branches, patrons, patron categories, item categories, items, currencies and other data, Serials system for magazines or newspapers among others (Wikipedia, 2012)

With the use of this software, the roles of libraries are changing at a pace never experienced before. A good library is well positioned to cater for the information needs of their users. Based on the findings, the following recommendations were made:

1. Libraries should be supported financially, to enable them acquire these necessary ICT facilities. Also, with these funds, adequate training should be provided for the library staff in order to render quality services to the users.

2. Libraries should form consortium with each other so as to discuss possible challenges and solutions encountered in the use of the software. Through this forum, they can be able to manage the problems that may arise in the use of the software.

3. Academic libraries should employ adequate number of library staff with appropriate computer skills needed in meeting with the challenges of providing the necessary services to the users.

4. There should be provision for uninterrupted power supply such as generators, solar system etc.

5. Software should be made more compatible with hardware devices. (Sisler 2002) stated that "free and open software functions better in Linux operating system, and does not need regular re-booting. Therefore, libraries need to migrate to Linux operating system in order to use this open source initiative very well".

6. There should be adequate quality documentation: various literatures have revealed that there is basically poor documentation for open source software. With no vendor responsible for the software, detailed and up-to-date documentation is a setback for libraries using open source software.
Kumar (2012) stated that proper documentation gives information of software installation in various operating systems, software architecture, database structure, history of bug fixes, changes in new release, road map (wish list) of future releases, etc. detailed and up-to-date documentation is a prerequisite for successful installation and maintenance.

7. There should be adequate managerial support. There is basically lack of support for open source software. This is owing to the fact that open source software is freely distributed. Vendors often lose interest in venturing into it. Chawner (2012) stated that "with no vendor responsible

for the software, support for F/OS applications can vary, and often depends on the user/developer community's commitment to the project. This support is very essential for any library using open source software".

8. Finally, software should be fortified against virus attack. There should be a strong back as against any unwanted threat to the system.

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