KOHA INTEGRATED LIBRARY SYSTEM (ILS) IMPLEMENTATION: THE EXPERIENCE OF ADMIRALTY UNIVERSITY OF NIGERIA, LIBRARY, IBUSA

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Abstract
The influx of information resources and the need to process and render speedy and efficient services to patrons has given rise to the use of software that could aid the library and librarians. This study investigated Koha Integrated Library Management System (ILMS) implementation in Admiralty University of Nigeria (ADUN) Library. It covered the planning, acquisition and how the software is used. It enumerated the benefits, features and implementation of Koha ILMS at ADUN Library, and further discussed the problems encountered throughout the implementation procedure. The research recommended that: Librarians are encouraged to consider making functional the other modules of KOHA ILS for complete library automation; sustainable power infrastructure, like Solar Systems or a dedicated power generating set should be available so that library servers can keep running; librarians should go beyond just being trained on how to use Koha ILS but start learning about Koha installation, programing and database management skills, which will help to reduce majority of the setbacks faced by libraries in maintaining their ILS.

KEYWORDS: Koha; Library Automation; Library Software; Integrated Library Management System; Admiralty University of Nigeria;

Introduction

The increasing need for timely information is forcing libraries and information centers to evolve from the conventional library operations to leveraging on various technological solutions such as Integrated Library Management Software (ILMS). Academic libraries by design are established to support the learning, research and teaching activities of students, researchers, and the general staff. Hence, the library provides an enabling environment that is not just conducive but equipped with resources to meet the myriad needs of the user community. One among the behaviors that characterized the modern day information consumer is 'impatience'. Every library

user would want to search and retrieve useful information easily, quickly and conveniently. This can only be made possible with the deployment of Integrated Library Management Systems. these are software/programs designed to deal with library routines and help librarians conduct their daily operations rapidly and more efficiently.

According to Pratheepan (2012) Library Management Systems (LMS) are computer-based systems that automates one or all functional areas of a library. It is also called Integrated Library Management System (ILMS). It is used to refer to a system in which all library operations such as acquisitions, circulation, cataloguing, serial control, budgeting and OPAC are processed against a single master bibliographic database. An effective integrated library system enables university libraries to offer users timely access to various library materials and reduces the amount of time spent on material acquisition (Sanuaullah & Uddin,2021). An example of ILMS is KOHA.

Library management software not only helps librarians to effectively manage their library collection, gives users self-service opportunity to navigate and access a library's collection independently; but also provides libraries with a user-friendly device to accommodate the evolving needs of library patrons. This study tends to look into the benefits, plannings, implementation, uses and challenges of Koha ILMS at Admiralty University of Nigeria (ADUN) Library.

Objectives

The general objective of this work is to report the success story of Koha installation at ADUN. Specific objective is to:

1. Narrate the planning, acquisition and execution procedures of Koha at ADUN.
2. Report the advantages of using Koha in ADUN.
3. State the challenges facing the utilization of Koha at ADUN.

A brief Background of KOHA

Koha is the first open-source Integrated Library System (ILS), and it is employed globally by different libraries, which includes special, academic and school libraries. Koha, a free library software can also be described as a "web-based ILS, with a Structured Query Language database (SQL - MariaDB or MySQL preferred) and a back-end that stores cataloguing data in MARC and accessible via Z39.50 or SRU. Koha ILS was created by Katipo Communications for the Horowhenua Library Trust in New Zealand in 1999, and in January 2000 the first installation went live (Evler, 2003). *Beginning in 2000, companies began offering Koha commercial assistance; today, there are more than 50 Koha LIS* . Koha provides tutorials and training materials in its website (www.koha-community.org). Libraries can subscribe to their mailing list and participate in their real time chat channel (IRC). Koha is one of the open source software that is most frequently used currently in academic libraries in Nigeria this is probably because of the following reasons among others; its user interface is very easy to adapt and configure.

A study conducted by Kari & Baro(2014) revealed that "university libraries in Nigeria widely use library software such as KOHA, SLAM and VIRTUA for their library operations." Koha ILS enables librarians to better perform library routine works and other vital services that were before now handled traditionally.

Key Features of KOHA Library Management System

After the successful installation of Koha ILS , the following are the features of Koha ILS

a. Customizable Web-based Interfaces: The Web Interfaces can be customized to suit your library's needs;
b. Full MARC support (MARC21 and UNIMARC);
c. It contains Core Modules like cataloguing, acquisitions, circulations, reporting and serials;
d. It includes Z39.50 server and client for data interchange;
e. it gives multilingual and multi-user support;
f. Online reservation option is available;
g. It also provide Web based OPAC that allows the public to search the catalogue from any location within the institution and
h. Export and import of records is possible.

KOHA in Admiralty University of Nigeria (ADUN) Library, Delta State

ADUN, which was founded in 2017 commenced academic activities officially in January 2019. ADUN Library is centrally located at the North-East angle of the University's main campus and directly opposite the Faculty of Science complex. Activities kick started in the 'almost empty Library Complex' in 28th January, 2023 with a total of 1,527 books and journals alongside the members staff that formed the library nucleus. From that time until now, the Library continued to provide the University community with useful and timely information services. She has volumes of information resources (print and non-print) in all the courses offered in the University and other areas of human and societal knowledge.

In its effort to mitigate the challenges of information explosion, facilitate easy and quick access and retrieval of information and effective management of users and resources in the Library, ADUN Library adopted the Koha Integrated Library System Version 19.05 in December 2019. Koha was the first and only ILMS that had been adopted and it is still in use by ADUN Library with the availability of two Online Public Access Catalogue (OPAC) stations at the circulation area, which allow students and staff to search through the library's catalogue. Also, the e-section of ADUN Library is equipped with over 40 computers which provide patrons with access to electronic resources (online databases, books, journals, etc.) and reliable access to the internet. The successful execution of Koha ILMS system in ADUN Library passed through three stages, namely: Planning, Acquisition and Implementation.

1. **Planning Phase:** ADUN Library, like other academic libraries globally needed the adoption of technology in the best possible way to satiate their users' needs

in the twenty-first century through the provision of efficient and effective services with the aid of technology. At the planning Phase, the Library management held meetings and answered questions bothering on the reason for automation, decision on ILMS to be adopted based on their functionalities and how the preferred ILMS would be acquired and installed. Having identified the need for an Integrated Library Management Software, the Library Management started the adoption process of ILMS by conducting a feasibility study on a variety of ILMS such as NewGen Lib, Alice, Alexander, SLAM, Koha, among others. As a result of the study, the library management decided to adopt Koha as it was considered suitable for the activities and services of ADUN Library due to its numerous features, online community support, flexibility and wide usage in academic libraries in Nigeria. Having taken the decision to adopt Koha, it was recommended to the Management of the University for Approval.

2. Acquisition Phase: The University received proposals from different vendors/programmers. The Library management in collaboration with the ICT department scrutinized the proposals and evaluated the vendors based on their offers. The University management after due consideration on effectiveness and cost, approved the acquisition and installation to one among the vendors. The Koha ILMS was acquired/ configured in December 2019 by ADDJIM Global Consult following signing of an agreement document of the software expectations.

3. Implementation: The Vendor started deployment in December, 2019, However the project and data entry (population of the OPAC) was completed in June 2020. The Koha version installed in ADUN Library was 19.05.07.0000, which ran on Linux Operating System. After the installation, the vendor further trained all staff of ADUN Library on its usage and navigation. The installation and training process lasted for two weeks. Worksheets were created for all the information bearing materials held by ADUN library. This was done to ensure seamless population of the OPAC interface of the software. As asserted by Riley (2013) during the installation process, the following were recommended:

> A better than average level of skill with the command line, Apache, and MySQL tools (Preferably a Systems Librarian/Programmer; Internet Connection (High speed Internet); Stable power supply (Supported by an Uninterruptible Power Supply - UPS); A Linux server, Webserver – Apache; Database – MariaDB or MySQL; Programming Language – Perl; Root access to the server; Koha (download latest stable version); Drop Box Account (for cloud storage and backup); Team viewer (proprietary) for remote controlling; At least two PCs (OPAC workstations) for the Circulation Section; Barcode Printer and Scanner and Laserjet printer; and external storage for backup

The Koha ILMS installation procedure also requires two tools which as stated by the vendor are: Web installer and On-boarding tool.

- ✓ **Web Installer:** This tool actually puts in place database tables to store all data required for interaction within Koha, e.g. the branches of the library, items and patrons. It usually begins with a login-screen for the user to key-in the database administrator's account details/credentials. The installer proceeds to create the tables and enter data into the tables.
- ✓ **Onboarding tool:** This device assists in making sure there is at least one (1) library, patron category, item type and circulation rule before going ahead to use the Koha in the first place. If you go ahead and install the library's sample data, patron category and/or item type then the screens to create these will be skipped. However, there will always be a patron and a circulation regulation that you must create.

In general, the following guides as recommended by Riley (2013) were used to successfully install Koha in a Linux/Ubuntu System.

Step 1: Access to your Server
Step 2: Koha Repositories is added to Ubuntu sources list
Step 3: Install Koha
Step 4: Configure Koha for Web Access with an IP address
Step 5: Setup the Database and Apache
Step 6: Secure Mysql
Step 7: Enable the Site and Apache Mods
Step 8: Configure Koha from the Web

After the installation was completed, the administrative rights and permission were all configured and details given to the head of the library who acts as the Super Librarian. This was done to ensure that only those permitted to register other users such as staff and students and those to make sensitive changes and adjustments where necessary were given the administrative password. However, there were issues with the installations as it was not customized to reflect the specific needs of ADUN Library. Therefore, the system was reconfigured by the acting Librarian with the use of html to re-design the user Interface, especially the OPAC. After re-designing, the cataloguing and populating the OPAC using the already created worksheets, this was followed by linking the databases subscribed to by ADUN Library to the OPAC for easy access by the users. It was until the Koha was well populated and minor challenges experienced with the installations resolved that users were able to search via the OPAC interface to access the collection of the library. This process lasted for 6 months.

Use of Koha in Adun Library

The use of the Koha ILMS in ADUN Library started with library staff interface (Back End) where library staff that were saddled with the responsibility of cataloguing/classification, populating the OPAC and registration of university staff/students were all given the opportunity to start their works and to put the Koha

system to use. Next was Users' Interface where users had the opportunity to search the OPAC and borrow information resources of their choice for use.

Staff Interface: The Staff Interface (Figure 1) is the part of the software where the major modules of Koha are operated from; it is made accessible only to library staff. The staff interface consists of the following modules: Circulation; Patrons; Advanced Search; Lists; Authorities; Cataloguing; Serials; Acquisition; Reports; Tools; Koha Administration and About Koha. However, ADUN Library had different categories of staff; Librarians who were heads of the various units of the library fell under the professional category, and they were given username and access codes to manage the respective modules which they head. Other staff (non- professionals and para-professional staff) were given limited access for minor tasks on the interface. The lists, authorities, reports, tools and Koha administration modules were only accessible to staff who owned the administrative password to utilize the lists. They authorize some actions and services, generate reports and administration of both Staff Interface and the Patrons' Interface. In most cases, the University Librarian and E-Librarian fall under this category.

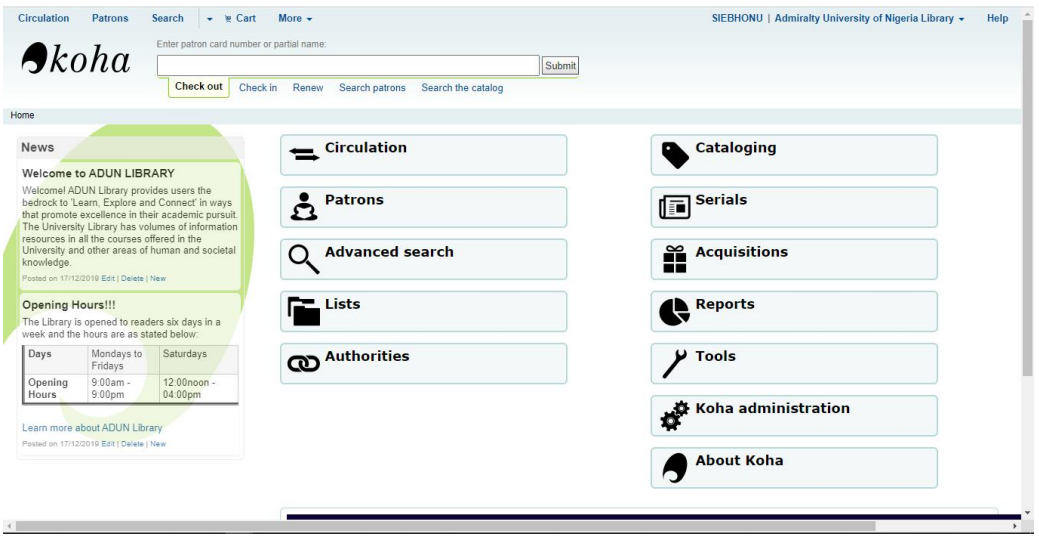

Figure 1: *Staff Interface*

Users' Interface (OPAC): Once Koha is installed on a Local Area Network (LAN), users with the correct IP address are able to access the OPAC remotely. In the case of ADUN, the OPAC was embedded in the library website, which when clicked redirects visitors/users to the OPAC. According to the laid down policy, the library serviced 3 categories of users namely: Academic Staff (AS), Non –Academic Staff (NAS), and Undergraduate Students (UGS) Users were able to carry out searches using Keyword, Subject, Title, Class, Barcode, author, publisher, etc. Online Public Access Catalog users who were logged-in members were able to make reservations on library items, select records, search and retrieve needed information resources regardless of their

location within the University premises. OPAC users could also submit suggestions for acquisition.

Figure 2: Users' Interface (OPAC)

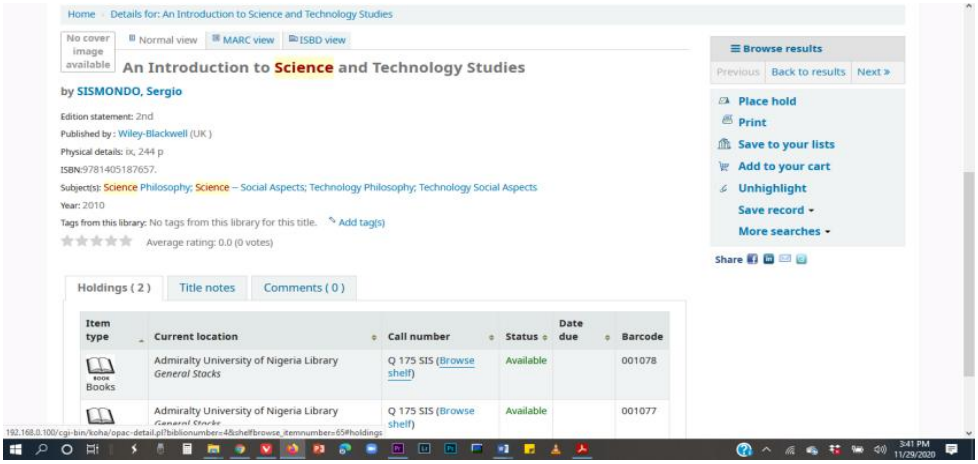

Figure 3: An example of a user searching the ADUN Library OPAC for a text on *"An Introduction to Science and Technology Studies*."

Description of the use of the other modules in ADUN Library Koha ILS is discussed below:

i. **Circulation Module:** The circulation module of ADUN Library Koha was handled by the circulation librarians for the registration of new users, i.e. staff and students, charging (check-in) and discharging (check-out) of library books, sending overdue notices, placing holds, overseeing renewals among others. Users' registration was one of the basic functions of this module. All members of the Admiralty University community as defined in the Statutes are qualified to register using a Google form that is made available on the Library blog. The university students, academic staff, and non-academic

personnel made up the three primary categories of the library users. Library users do not need to visit the library hall to register because library staff can get the data from the Google sheet of submitted forms and process users' registration on the Koha platform. In ADUN Library, unique barcodes were generated for all the information resources held by the library especially the hard copies. Each book and journals held by the library carries two barcodes; i.e. the original ISBN barcode and the ones created with the accession number to uniquely identify the books. Therefore, when a user (student/staff) approached the circulation desk to borrow a book, the book was scanned using the unique barcode created for it and all the bibliographic information will be displayed on the computer and then the circulation librarian will check out the book for the user. The circulation librarian is also able to view that patron's activities through the Staff-Patrons' Interface.

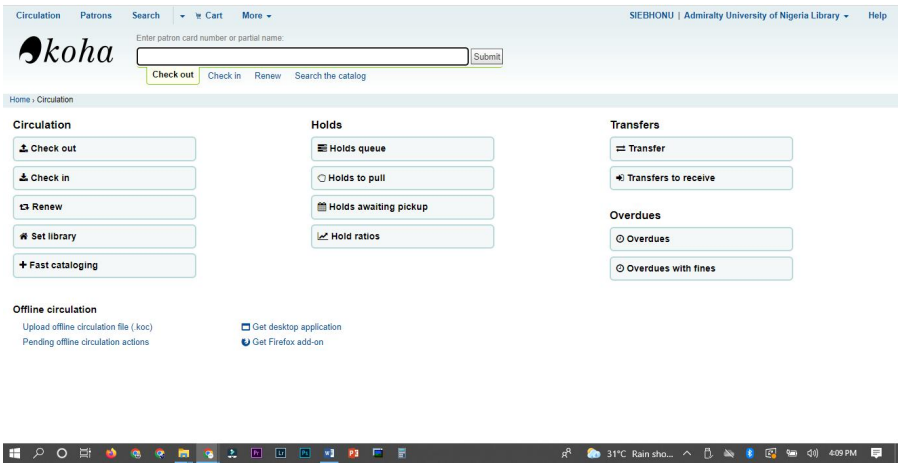

Figure 4: *Koha Circulation Module*

Staff-Patrons' Interface: This is an interface under the circulation module where the librarian is able to manage the borrowers/patrons individually, this makes up the library's membership. Each member of the university fits into a particular category of user and the category defines; the maximum and minimum age requirements for each category, the implication for making reservation for an item and the general regulations of circulation. What is expected is for the staff to enter the borrower's ID Card No. into the staff-client interface, the librarian will be able to see; the financial standing of the borrower (if there are outstanding dues/fines), the reservations made by the borrower, and his outstanding loans, and set permission flags.

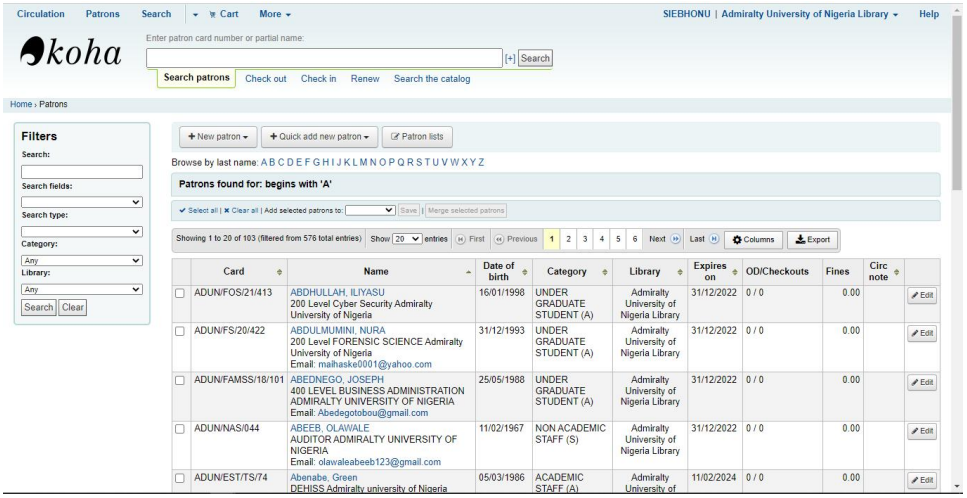

Figure 5: *Koha Circulation Module*

ii. **Cataloguing Module:** The cataloguing module was one of the most crucial modules of the Koha ILMS because data entry and records were maintained using this module. The cataloguing and populating of the OPAC in the ADUN library was done with the use of the worksheets already created for all the resources of the library. Each worksheet was directly entered into various fields of the cataloguing module through the MARC framework. These frameworks included all the tags and sub-fields of MARC-21 which had been re-configured to meet the local requirements of ADUN library (for example, ISBN, Book Title, Imprints, etc.).

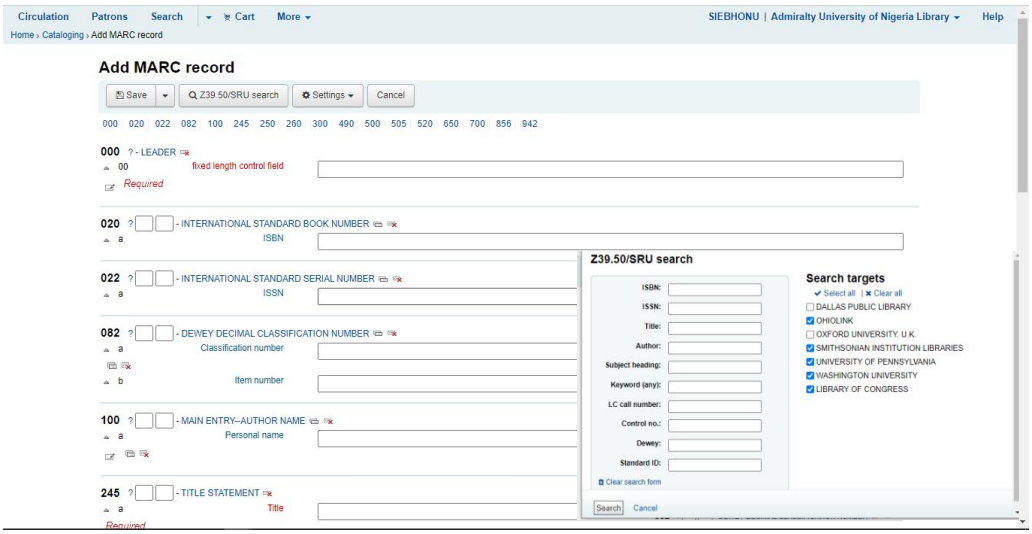

Figure 6: *Koha Cataloguing Module showing the MARC fields and Z.39.50 interface*

iii. **Serials Module:** The Serial Control Module could also be used to subscribe to journals. Librarians in ADUN would Login with Koha User ID and Password and select the Serial Control Module. However, the serials control module had not been put into active use at ADUN library as the serial publications were still being subscribed to manually.

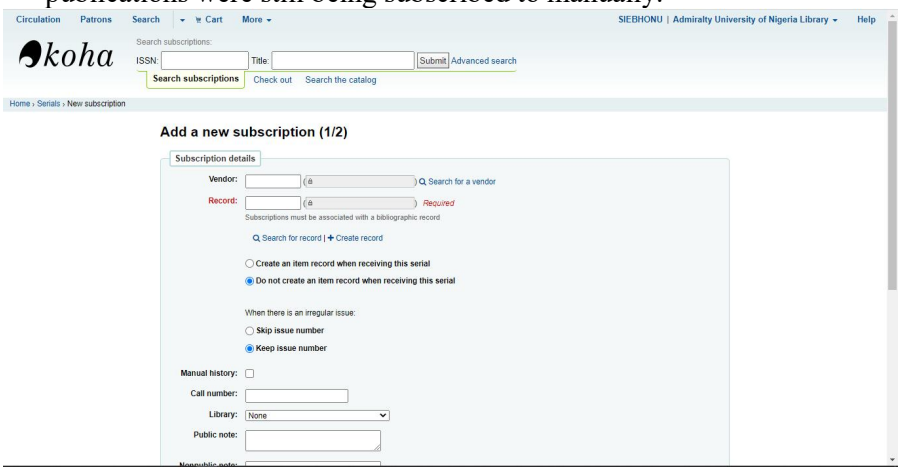

Figure 7: *Serials Module*

iv. **Acquisition Module:** Just like the serials module, the acquisition module of the ADUN Library Koha ILMS had not been put into full use as the library's acquisitions were done offline. Although, the acquisitions module made available tools for the acquisition librarian to place and record orders with vendors and also manage all transactions and the library's budget. With it, one could cancel an order, process receipts, fund accounts, claims, currency control, statistics and report compilation, etc.

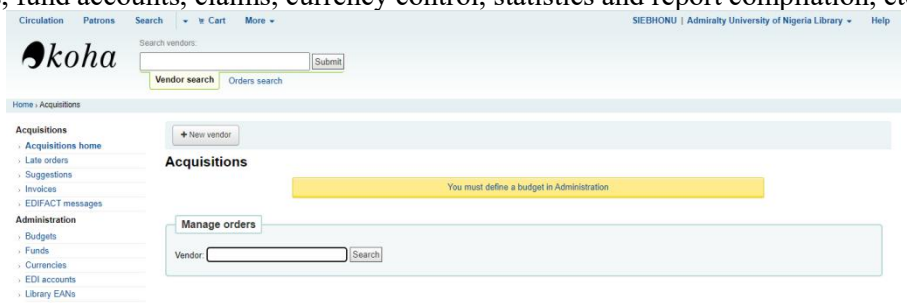

Figure 8: *Acquisition Module*

Benefits of the Use of KOHA Library Management Software in ADUN Library

Adopting and using Koha library management software at the ADUN library had been of tremendous advantage to the librarians and the entire university community. Some of the major benefits of its usage are highlighted below:

1. **Improved Patron Service**: Automation had helped to take some of the workload off from library staff, especially in the areas of cataloguing and circulation services, giving them more time to serve their patrons and invest in developing the library. Patrons were able to reserve books remotely. For example, as a registered user, regardless of your location within the Institution, you are able to login to the OPAC, search for a book and in the list of retrieved results you select a particular book of interest, you are able to see the option to 'place hold on that book'. Once you have placed hold, the Librarian is notified of your interest in that book for easy check out.

2. **Faster Cataloguing:** Taking advantage of the automated cataloguing standards such as Machine Readable Catalogue (MARC), and copy cataloguing in Koha, library staff were able to import ready-made bibliographic data from numerous high quality sources like the Library of Congress or the British Public Library. With Koha, a book could be catalogued in less than two minutes. If a librarian is to catalogue a book, he/she could click on the Z.39.50 option and in the dialog box that displays type in the ISBN or title of the book, if that book exists in any of the libraries that is included in the Koha database, the bibliographic information will be displayed and the librarian is able to import and complete other missing details.

3. **Easier Access:** Patrons found it easy to find library books, e-resources and other information materials using the Online Public Access Catalog (OPAC). This is because scanning through bulk books on shelves physically could be cumbersome. With their hand-held devices or computers, they could easily make a search and know the location of a book.

4. **It Saves Time:** With the use of Koha, all library routines were done within the shortest possible time compared to the traditional means of carrying out the library routine jobs and services. Users could easily locate the position of a book on the shelf using the OPAC interface as opposed to the time taken conduction of manual search on the catalogue.

5. **Cost-effective:** Paying licensing fees for proprietary solutions, users of open-source software could often deploy the product using in-house resources. In the case of ADUN Library, payment were made only for needed support (installation, configuration and training). Koha is very economical especially when considering alternatives to commercially available Software you could rely on. Adoption and usage of Koha saves money as it reduces the need to hire more

library personnel. One of the reasons for the adoption of Koha in ADUN library is that it is cheaper compared to the cost of developing a new ILMS from scratch, which may take a long getting a license, higher cost of maintenance and upgrading, etc. amongst other issues. However, Koha does not need the initial cost like commercial software.

6. **Innovation:** The source code of Koha is open, Users can work on improving on the software to meet their peculiar needs. This would consequently lead to a faster development cycle compared to other proprietary software

7. **Compatibility:** While the software is a full featured modern integrated library software (ILS) that supports operating system like Linux, UNIX, and Mac, it was also easily integrated with the ADUN university's website and the Library QR Code technology for access to library resources.

Problems Encountered with the Use of KOHA in ADUN

Like every other open source software implementation, KOHA ILS implementation at ADUN wasn't a completely flawless process. The following were some of the problems that was encountered with the implementation and use of Koha ILMS in ADUN:

1. **Inadequate power supply:** It is a common knowledge that power (electricity) is needed for round the clock functioning of the Koha ILMS. Though, the power situation in ADUN is fairly available, the library was unable to provide round the clock OPAC services and other relevant services to its users.

2. **Compatibility with hardware devices e.g. RFID, barcode printer, etc.:** Configuration of Koha LMS to cooperate with hardware devices such as RFID and Barcode printer among others is highly technical, and was difficult to set up.

3. **Inadequate technical knowledge of Library Staff:** Koha usage necessitates a certain level of technical proficiency, including knowledge of fundamental html from librarians. Navigating the different modules of software for some librarians were very complex because they lacked the necessary ICT skills and technical knowhow.

4. **Poor training and re-training for staff:** The training conducted during the installation by the vendor was not extensive enough as they held the believe that most librarians will learn on the job. The Covid-19 Lockdown and restrictions of movement also posed a challenge in delivering quality training, as most of the training sessions where conducted via video calls. This however had implications on the actual use of the ILMS as most staff left their duty post in most cases to seek advices from other librarians who were administrators to get clarifications on how to proceed from the spot where they were stock or on how to carry out a

specific task on the system. Also, in actual case, librarians needed to be trained and re-trained on the use of Koha so that they could acquire all the necessary skills required for the maximum use of the system.

5. **Software Installation/Failure Issues:** Koha's installation and settings were a little difficult technically and require more than just rudimentary coding expertise. The vendors experienced challenges in configuration and meeting the project specification requirement of the library management. Should there be any issue with the configuration such as system crash and backup/recovery issues, the library would have to consult the vendor if there are no capable hands to handle such level of software problems, which in a real sense should be expected.

6. **Apathy on the part of Library Staff:** Some librarians of the library were indifferent to the idea of adoption and usage of ILMS (Koha) for routine jobs and services delivery. Some of these behaviors were caused by the phobia for technology as they preferred in most cases, the manual library system to the automated system.

Conclusions

Koha ILMS is browser-based and cost-effective, it can perform the basic tasks and operations in libraries. Multiple tasks can be carried out simultaneously. There is no doubt that its usage is widely accepted and this is because it meets the diverse needs of users. The use of Koha ILS in Admiralty University of Nigeria Library has greatly impacted the operations of the library. Though not all the modules are being maximized, the basic modules which includes: circulation and cataloguing are being used to the fullest, which helps to save the time of patrons and meet the overall objectives of ADUN Library. Librarians due to constant use and continuous self-development are now able to configure and manipulate most complex settings and operations of the software.

Recommendations

1. To enable library users enjoy uninterrupted OPAC and related library services, library server(s) must always be running. Sustainable power infrastructure, like Solar Systems or a dedicated power generating set should be installed
2. Libraries should consider upgrading to latest versions of their LMS as they are more compactable to external devices such as barcode readers/printers. In the case of ADUN Library, Library staff resulted to use of HP LaserJet in printing of barcodes generated for processed books.
3. Most Integrated Library Management Systems have modules to completely automate the different departments and operations of Libraries. Librarians are encouraged to consider making other modules functional like acquisition and serials module for complete library automation.

4. Librarians should engage in impactful trainings and continuous retraining to enable them maximize the use of the software.
5. Due to the many setbacks mentioned above including some librarians' lack of technical skills inability to successfully install and configure the Koha ILS themselves; librarians are strongly encouraged to go beyond just being trained on the use of Koha but start learning programing and database management. This will help to reduce majority of the setbacks faced by libraries in maintaining or implementing their preferred choice of ILS.
6. Library staff should be properly sensitized to appreciate the advantages of automating library operations. This would help to build confidence, reduce technology phobia and discouragement experienced by some librarians as they use the software.

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