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ADOPTION OF OPEN SOURCE SOFTWARE IN LIBRARY MANAGEMENT: AN INSTANCE WITH KOHA

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Abstract

This literature and practical knowledge based opinion paper explored Koha software, bringing to limelight its applicability in the library. The various modules contained in the software (Circulation, Patrons, Advanced Search/OPAC, Cataloguing, Serials, Acquisition, Report and Tools) and the various specific services that they can be used to perform were exhaustively discussed. The paper also briefly discussed library software and open source software (OSS) initiative respectively. It explained the various characteristics including the numerous benefits such as; availability of source code, free redistribution, stability, less expensive, etc, associated with the use of OSS. It concluded by stating that the provision of current, timely and easy access to information even, remotely, is a task which libraries and librarians cannot ignore if they want to remain relevant in today's information environment and therefore recommend that rather than spent futile years waiting for funds to acquire proprietary software, the OSS such as Koha should be embraced as most times, they are more effective and efficient.

Keywords: *Koha Software, Open Source Software, Library Software, Software Application in Libraries.*

Introduction

Libraries in recent times tend to be experiencing some challenges resulting from the increasing demands of achieving higher level of performance in the areas of speed, accuracy, cost and quality. They are confronted with many challenges posed by the modern day environment, most of which stemmed from technological innovations and digital revolution. The present age library users' needs cannot be met with a mere computerized library system or the use of single-module library software which was prevalent in the past. This is because such platforms enable the automation of the Cataloguing function of the library only, resulting in the generation of the locally accessible Online Public Access Catalogue (OPAC). The other library functions such as circulation, acquisition, serials management, etc are never catered for in such software hence information handling and access procedures were slow, tedious and grossly inadequate to meet the ever increasing needs and demands of library patrons who need accurate, timely, adequate and remote access to needed information.

The need to overcome the aforementioned constraints necessitated libraries globally to embrace the Integrated Library System (ILS). Integrated Library System could be defined as the generic name given to a group of software that has modules which cater for the various library functions such as acquisition, cataloguing, circulation, serials management and so on. Muller (2012) opined that "integrated library systems (ILS) are multifunction, adaptable software applications that allow libraries to manage, catalog and circulate their materials to patrons". Taylor (2004) cited by Omeluzor, Olugbenga, Madukoma, Bamidele and Umahi (2012) affirmed that an integrated library system is more than just an OPAC, they are fully integrated computer systems that include various modules to perform different functions. The integration of the modules eliminates duplication of data and waste of time and effort as any information or data keyed into any of the modules is automatically accessed and utilized in the other modules. These library software enable efficient library services delivery hence, Osaniyi (2010) noted that several library management software have thrived with much patronage.

Notwithstanding the patronage enjoyed by some of the software, most of them have failed as a result of problems of scalability, adaptability, high subscription cost, not being MARC supported, unavailability of the updated version as well as not having user-friendly interface. These problems had necessitated libraries globally to go into search for a software that is devoid of these limitations and have resulted into the recent shift in focus towards adopting Koha library software in their library management. Consequent upon this, it becomes necessary to have overview knowledge of what Koha library software is, in addition to its application in the libraries. For a comprehensive discussion of this topic, the paper is subdivided into the following sub-headings:

- Brief discussion on library software
- Open Source Software and characteristics
- Benefits of Using Open Source Software
- General overview of Koha software
- Application of Koha software in libraries

Brief discussion on library software

Library software are programs or collection of data and instruction that direct computers to perform specific library processing activity. According to Aduhika (2007) library software refers to the programs written individually to operate specific, tailor-made procedures and systems such as library house-keeping, words processing, database management, text retrieval, expert systems, etc. These programs give the computer or any other computing device directives on the processing required for a particular library function

needed to be accomplished. Library automation can never be effective in the absence of library software. Hence, the library software could be attributed to be the engine house that enables the achievement of automation goals.

Library software come in two different categories- (a) the Proprietary software and (b) the Open Source Software (OSS). The proprietary software are those software which are acquired through vendors and their use are subject to the payment of annual subscription. Open source software, which is the focus of this paper are computer software that are produced by Programmers and made available to the general public with their source codes and relaxed copyright restriction and also allows modification by users in line with their needs, requirements, and purpose of usage. These software are most often acquired free. Quite a number of software are available for automating the various library functions. For Integrated Library System which is the focal point of this paper, we have such software as; Koha, Evergreen, ABCD, WINISIS (formerly CD/ISIS), New Gen Lib, Emilda, Firefly, Open Bilblio, PMB, Web LIS, PYTHEAS, etc.

Open Source Software and characteristics

The Open Source Initiative (OSI) was founded by Bruce Perens and Eric S. Raymond in February 1998, prompted by Netscape Communications Corporation's publishing of the source code for its flagship Netscape Communicator product. The initiative is focused on ensuring that software are freely distributed alongside their source codes to enable their modification in line with the end users' purpose of use. According to Kamble, Raj, and Sangeeta (2012) Open Source Software (OSS) is computer software which is available free of cost and whose source code is made available to the users under a license which bestow them the right to study, change and improve the software, and to do modification in it as per the need and can distribute its copies to other users to follow a pattern. The software gives the users the freedom to manipulate it into the form that it will suit their specific purposes.

During the era proceeding the advent and development of Open Source Software (OSS), it was universally recognized that very few libraries were able to acquire software (proprietary) as a result of their overall high cost. Libraries at that time spent futile years planning and preparing for the automation of their services as a result of the exorbitant cost of software and hardware, including, the training of library staff and users. The advent of open source software brought positive transformations as libraries can now automate their libraries at a highly reduced cost. According to Ukachi (2012) the advent and development of open source software in the present age, has made the transition from 'traditional' to 'technology based' library services

which gives room for more efficient service provision very easy and cost effective. Libraries, globally, are now adopting them in their technical services, digitization processes, and general library content management.

Open source software in the terms of Engard (2011) refers to an application whose source code is made available for use or modification in line with users' needs and requirements. They are operating system and/or applications software for which the code is open for alteration by the public. Access and acquisition of these software are achieved with little or no fund via the Open Source Software Initiative. These software have some Characteristics which make it distinct from proprietary software. According to gbdirect (2011) the characteristics include:

Source Code: These software come with the source code, and allows distribution of same. Where some form of the product is not distributed with the source code, there is a well-publicized means of obtaining the source code which is usually downloading it via the Internet without charge. The source code is provided in the form in which a programmer would be able to modify the programme. Obscure source codes or Intermediate forms such as the output of a preprocessor or translator are not allowed for OSS.

Free Redistribution: The license does not restrict any party from redistributing or giving away the software as a component of an aggregate software distribution containing programmes from several different sources. The license does not require a royalty or other fee for such distribution.

Derived Works: The license allows modifications and derived works, and also allows them to be distributed under the same terms as the license of the original software.

No Discrimination against Persons, Groups and Fields of Endeavour: The license does not discriminate against any person or group of persons. It does not also restrict anyone from making use of the program in a specific field of endeavor. For example, it does not restrict the program from being used in a business, or from being used for genetic research. It is meant for everyone and, in every field of endeavor.

License Must Not Restrict Other Software: The license does not place restrictions on other software that is distributed along with the licensed software. For example, the license does not insist that all other programmes distributed on the same medium must be open-source software.

License Must Be Technology-Neutral: The provision of the license is never predicated on any individual technology or style of interface.

Benefits of Using Open Source Software

The benefits derivable from the development and use of open source software are numerous. These benefits range from philosophical and ethical reasons to pure practical issues. According to Morgan (2011) cited by Jasimudeen and Kumar (2012) Open Source Software are suitable for libraries due to reasons such as its ability to enable community participation, users to take responsibility for their computing environment, offers greater opportunity for innovation, etc. Generally, Gonzalez-Barahona (2000) summarized the practical benefits of open source software as follows:

Reliability: OSS 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 flexible 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

General overview of Koha software

Koha is the first open source software with full Integrated Library System (ILS) features (Projektlink, 2010). The name Koha comes from a Maori term for a “gift” or “donation”. The development of Koha began in 1999, funded by a group of libraries in rural New Zealand that found proprietary software expensive and lacking some needed features. The full featured Koha was developed initially in New Zealand by Katipo Communications Ltd and first deployed in January, 2000 for Horowhenua Library Trust. Koha is designed to work with a minimum of hardware resources. It runs on the Linux operating system in conjunction with the Apache Web server, uses the popular MySQL open source database management system, and is written in Perl. The Koha ILS can also be installed on Windows operating system but with a series of additional modules. Migration of data from one ILS to Koha can be done easily.

Furthermore, Koha has been adopted by thousands of libraries worldwide, each adding features and functions, deepening the capability of the software since after its initial implementation. With the release of Koha 3.0 version in 2005 and the integration of the powerful Zebra indexing engine, the software developed into a viable, scalable universally acknowledged solution for libraries of all kinds. There are about 47 languages of the world that the software has been translated into for wider accessibility and usage. The continued improvement of the software by the developers with the

collaborating effort of the user community through a superb feedback mechanism has greatly contributed in making the software best among equals. A comparative study by Yang, Hofmann and Weeks (2009) affirm that Koha is an ILS that has state of the art web interface, enriched content, faceted navigation, keyword searching, user contribution and Rich Site Summary (RSS) feeds. Correspondingly, Müller (2012) ranked Koha ILS the most complete Free/Open Source Software because of a number of functions including inventory control, authorities, generation of notices to customers, order tracking, among others.

Some of the key features of Koha listed by EIFL-FOSS (2013) include:

- Web Based Interface
- Copy cataloguing and Z39.50. compliant
- MARC21 and UNIMARC for professional cataloguers
- Manage online and off line resources with the same tool
- RSS feed of new acquisitions
- E-mail and/or txt patron's overdue and other notices
- Print barcodes
- Serials management module
- Full catalogue, circulation and acquisitions system for library stock management
- Web based OPAC system
- Simple, clear search interface for all users
- Simple and comprehensive acquisition options
- Multi-tasking and enables updates of circulation, cataloguing and issues to occur simultaneously.

Biju, Jasimudeen and Vimal (2013) outlined some key features which according to them placed Koha first in priority list of library professionals. These according to them are:

- Full-featured ILS
- Web based interfaces
- Free software (Licensed under GNU General Public License)
- No Vendor Lock in
- Active development process
- Frequent software releases
- Library standards compliant
- Community decides what they want

Application of Koha software in libraries

Koha software is an integrated library system that can be adopted in the management of all the various activities that take place in the library. It has

modules that cater for the various library functions such as acquisition, cataloguing, circulation, Serials management, etc. For a clearer understanding of the design and functionality of this software, the modules that make up the software are sequentially discussed below.

Koha Home Page

The home page indicates and provides a link to all the modules available in the software. The various available module as could be seen on **Figure 1** include: Circulation, Patrons, Advanced search/OPAC, Cataloguing, Serials, Acquisition, Reports, Tools/Administration and Information About Koha.

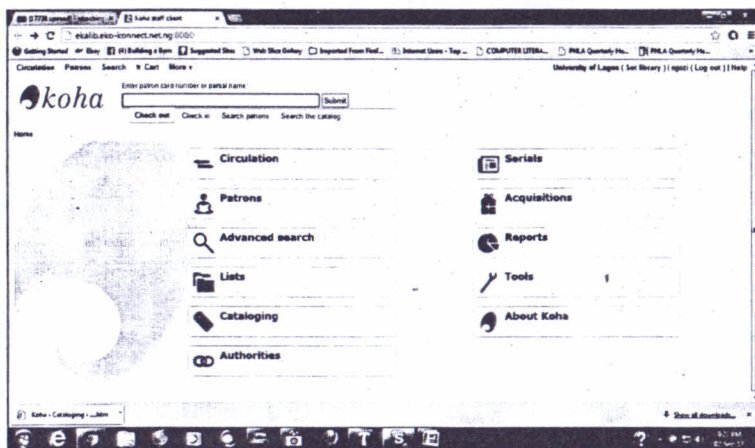


Figure 1: Koha Home Page indicating the various modules

Koha Circulation Module

This module provides a platform for a patron to borrow books or any library material from any branch of the library (especially for the ones that have branch libraries), and return same at any convenient branch notwithstanding the borrower's branch of registration. Reserving of items at any branch can also be made here.

To utilize this module, the patron/borrower does not need the librarian to check-out or check-in materials for him. To borrow a book, the borrower only requires to type his card number to display the page that will give information about his circulation status. If qualified to borrow a book, he clicks on the check-out and then scans the barcode of the book or type the author and title details of the book, fill in the date of issue and then press the issue button.

To return the book, the patron enters his card number, clicks on the check-in button, scan the barcode or enter the author and title details and then press the enter key. See **Figure 2.** for the template.

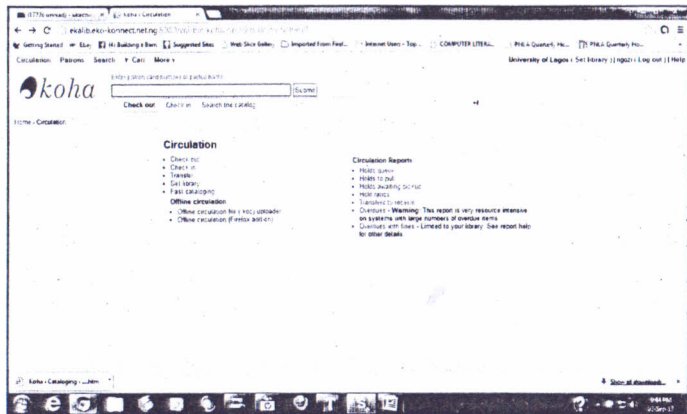


Figure 2- Koha Circulation Module

The circulation module also provides platform for a library material already domiciled in a particular branch library to be transferred to another branch. The transfer button provided on the home page of the circulation module is used to perform this function. See **Figure 3** for the transfer page.

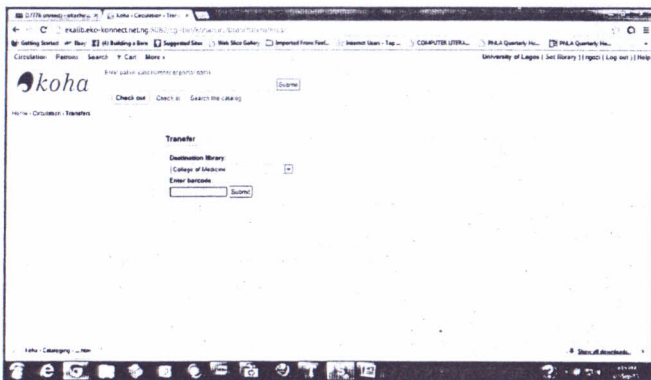


Figure 3- The transfer page

Koha Cataloguing Module

This module provides one with the opportunity to either create new bibliographic records or import records that already exist in other libraries into your own record using the Z39.50 search tool (See **Figure 6.** for the template). It is one of the principal reasons as well as the major area from where Koha has drawn its strength to become generally accepted over and above the other Open Source Software. The records importation ability of the software enables easy and speedy cataloguing as the time and energy that would have been expended in data entry is saved. This module also enables one or more copies record to be attached to each bibliographic record.

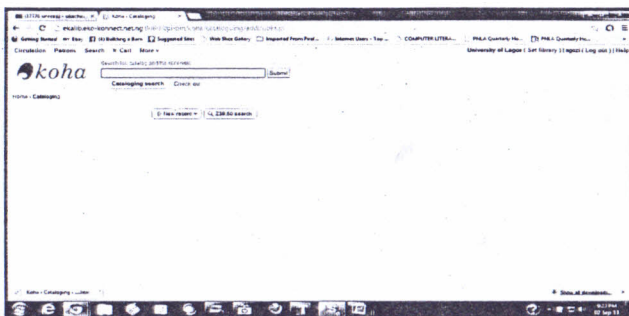


Figure 6. The Cataloguing Module

Koha Serials Module

The serial module is used for the overall management of the serials collection. It enables one to register subscriptions with reviews, and to track the arrival of periodicals. It manages late issues, skipped issues, and claims with the suppliers. See **Figure 7.** for serials template.

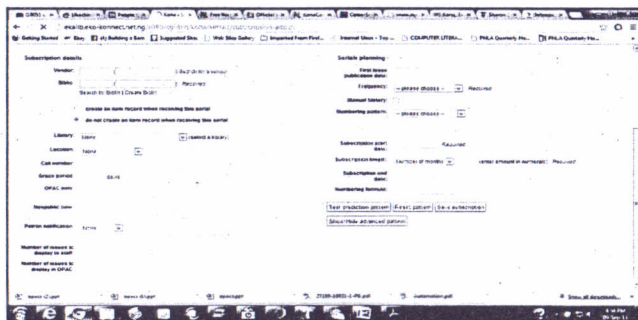


Figure 7- Koha Serials Module

Koha Acquisition Module

This module assists librarians with both acquisition and more generally with budget management. Vendors information, acquisition suggestion, ordering and supply activities with the various Vendors are managed in this module. See **Figure 8.** for the Template.

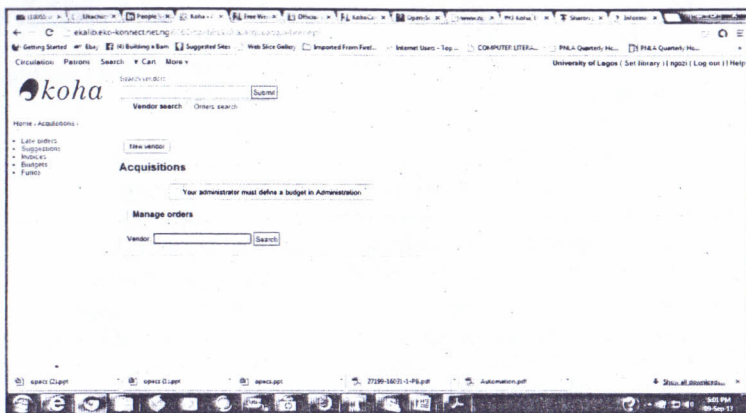


Figure 8- Koha Acquisition Module

Koha Reports Module

This module could be seen as an accounting module to the various other Koha modules. It gives statistical record of the general activities that has taken place in each of the other modules such as acquisition, cataloguing, circulation, etc. It also provides information on the particular patrons that respectively ranked highest and lowest in the checking-out activities for a selected period of time. Information on the most circulated item and items not checked-out at all are also accessed here.

Generally, periodic reports that guide decision making and the overall management of the library resources are generated from this module. See **Figure 9.** for the template.

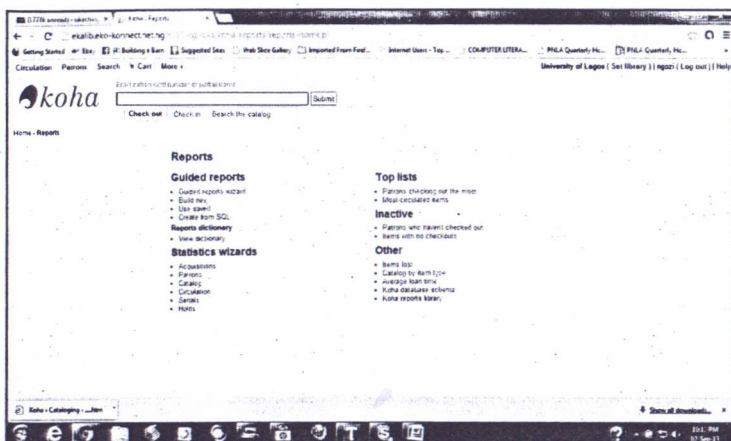


Figure 9- Koha Reports Module

Koha Tools Module

This module is basically an administrative module implying that patrons are not allowed access to it. The modification of the other modules such as acquisition, cataloguing, circulation, etc to suit the specific needs, requirements and purpose of use of a particular library is carried out here. Addition of new fields to any of the modules can be done here while existing fields deemed to be irrelevant can also be deactivated here. The overall functionality and administration of the software is controlled and managed in this module. See **Figure 10.** for the template.

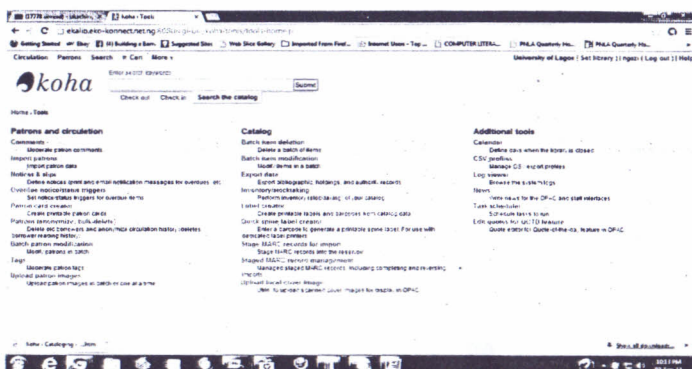


Figure 10- Koha Tools Module

Koha Community Tools and Resources

When talking about open source always remember that the answer is never "can't handle", rather it is "can't handle it yet" Engard (2011). Consequently, listed below are some of Koha community tools that we need to know:

Koha Community: <http://koha-community.org/>

Mailing lists: www.koha-community.org/support/koha-mailing-lists.

IRC chat: www.koha-community.org/get-involved/irc.

Demos: <http://koha-community.org/demo/>.

Video tutorials: <http://www.bywatersolutions.com/section/learning-open-source>

koha wiki: <http://koha.org/wiki>

Conclusion

The provision of current, timely and easy access to information even, remotely, is a task which libraries and librarians cannot ignore if they want to remain relevant in today's information environment. The discussion on the overview and application of Koha software has also shown that the adoption of Open Source Software Integrated Library System such as Koha could enable libraries to provide easy, sufficient and timely services without time, space and cost constraints. It could therefore be concluded that rather than spent futile years waiting for funds to acquire proprietary software, the OSS should be embraced as most times, they are more effective and efficient.

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