EVALUATION OF THE FUNCTIONALITY OF KOHA, NEWGENLIB AND SLIMS FREE AND OPEN SOURCE LIBRARY MANAGEMENT SOFTWARE (FOSLMS) FOR LIBRARY AUTOMATION

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ABSTRACT

Open Source Software (OSS) are increasingly gaining greater prominence in library automation as library utilizes these technologies to optimize efficiency in their operations and service delivery. This study presents an evaluation of the functionalities of Koha, NewGenLib and SLiMS. The study used evaluative method and available information about the software product is studied through available documents, resources and their web sites. The study adopted Qualification and Selection of Open Source Software (QSOS) to evaluate the functionality aspect of the software. The study revealed that Koha and NewGenLib provide required circulation and OPAC related functionality such as membership management, transaction management, stock verification process, fine management. Basic search, advanced search, relevancy sorting, self check out, RFID and SMS/Email. The presence of these functionalities enhanced and transformed library operations and service, thus, Koha and NewGenLib are recommended for library automation.

INTRODUCTION

Open source software are increasingly gaining greater prominence in library automation and this could be attributed to power of openness. Automating library operations makes routine activities easy for prompt service delivery to users. Traditionally, library automation refers to mechanization of traditional library operations - circulation, cataloguing, serial control and public catalogue (Chouhan, 2010). The term has gone beyond mechanization to computerization using advanced technologies. Library automation is the use of computers, associated peripheral media (such as optical media, disks and network) and the utilization of computer based products and services in the performance of library functions.

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Library utilizes technologies to optimize efficiency in library operations and service delivery. Muller, Chandrashekara & Talwar (2010) asserted that computer technology was introduced to libraries to increase efficiency and effectiveness of library operations and services. Automation of libraries and their networking have become very important for effective day to day functioning of library routines and most importantly giving access to information. Library automation enables libraries' to improve services, increase productivity, efficiency and accuracy in performing various library operations. It also has the ability to monitor and report library operation in a way that no manual system ever can do. Library Software is the key to library automation. Software is a program or sequence of instructions which a computer executes to accomplish a given task. It is the major component that makes the computer to manipulate data and is responsible for processing either numerical or logical data. A number of software are available for library applications. Some of them concentrate on specific function that include cataloguing or/and circulation activities (for instance, CD/ISIS). Recent library management software are integrated packages based on relational database architecture covering functions such as online OPAC, selective dissemination of information, resource sharing (Machine-Readable Cataloguing, Z39.50 standard support) and reports in addition to basic library functions (Chaudhry, 2012).

Therefore, Library Management Software (LMS) are multi task and adaptable software applications that allow libraries to manage, catalogue, circulate their materials to users. An Integrated Library Management Software (ILMS) exist in discrete (distinct) programs called modules, each of them integrate with a unified interface (Uzomba, Oyebola, & Izuchukwu, 2015) to perform library operation. Library Management Software (LMS) comes in two forms. These are the Open Source Software (OSS) and the proprietary or commercial Library management software. Breeding (2008) asserted that many libraries are shifting from proprietary library management software to the open source software for managing library functions. OSS is software whose code public is and made available to the public enabling interested users to copy, modify and redistribute the source code without any cost (Marshall, 2017). Thus, users can run

the program for any purpose, study how the program works and change it to suit their purpose (with access to source code), improve and distribute or redistribute the modify version to other users. The power of collaboration has made it possible for librarians to participate in the development process which has contributed to wide acceptance of OSS.

Since the development of the first Free and Open Source Software (FOSS) Koha in 1999, other OSS such as Biblios, NewGenLib, Evergreen, SLiMS and ABCD have been developed for managing different activities in the library. These systems are reliable and credible options for small and large libraries due to sustained development of features and significant innovation as well as being customized to meet the needs of users. Chouhan (2010) posited that FOSS has given librarians opportunity to participate in the development of library system with pertinent services (technical and user service features) that will meet the specific needs of all types of library.

The suitability and superiority of any LMS depend on the available functionality which enables effective services of library operations. This makes selection of LMS interesting and imperative. According to Zaidan, Zaidan, Al-Haiqi, Kiah, Hussain and Abdulnabi (2015), selecting appropriate software is complex due to difficulties in accessing the applicability of the software for users needs given that a large number of software packages are available in the market, incompatibility between various hardware and software systems, lack f knowledge and experience of decision makers and ongoing improvements in information.

Many libraries are now acquiring more electronic materials. Kickhuk (2010) reported a remarkable growth in the number of electronic resources in libraries, and the need to manage them. This means that libraries need software that can handle both print and electronic materials. In view of the above need, Tonkery (2007) asserted that the next generation of software should include searching applications such as federated searching systems and integrated library systems to help libraries manage their journals and e-resources.

Statement of Problem

The increase in demand for open source library management software with features and functionalities that will meet the needs and requirement of libraries has made librarians to change from one software to another. From the majority of the open source software available, Muller (2011) noted that only few of these software are useful and can meet the requirements of libraries. Therefore, there is need to evaluate open source library management software for selection of suitable application for library operations. This will be useful to library managers, policy makers and decision makers. It will guide them in the selection and acquisition of OSS for their libraries and also improve library efficiency.

Evaluation of Software Functionality

Evaluation is the systematic assessment of the worth of an object. The term object refers to a program, policy, technology, person or activity. Londhe (2015) describe evaluation as the systematic assessment of the operation and or outcome of a program or a policy, compared to a set of standards as a means of contributing to the improvement of the program or policy. Evaluating LMS in librarianship is a process of determining FOSS that will meet the needs of the library. The increase in demand for FOSS as against proprietary software as well as the improvement in the new systems with more and additional new features in the systems calls for the need to evaluate FOSS functional features.

Functionality is the ability of the software to provide features that meet the user's requirements when using the software. Bandor (2006) posited that in evaluating software, organizations should consider the ability of the product to meet their functional requirements besides other criteria. Software functionality should consider the modules available and values addition to existing functions (Reddy and Kumar, 2013). Thus, functionality is used to measure the extent to which an LMS satisfies the (functional) requirements of library operations. The functionality include criteria like modules (acquisition, cataloguing, OPAC etc) and elements like documentation, support, training, usability, utility, longevity, release activity, roadmap project website, installed base, license, quality performance scalability, security and satisfaction. Since LMS are meant to

support library functions, evaluating the functionality of FOSS becomes very important. This will help libraries and decision makers select appropriate FOSS that will meet their requirements. The study seeks to evaluate the functionality of Koha, NewGenLib and SLiMS open source software for library automation.

METHODOLOGY

This study used evaluative method. Available information about the software product is studied through available documents, resources and their web sites. The study adopted Qualification and Selection of Open Source Software (QSOS) model developed by Origin (2013) to evaluate the functionality aspect of the software. The model consists of the following steps: define element (software), evaluating of software based on functional features or and maturity of project, assign weight and compare based on the previous data. In this model the functional criteria are assigned discrete score from $0 - 2$, thus: 0 for functionality not fully covered, 1 for functionality partially covered and 2 for functionality fully covered. The scores were converted to percentages.

RESULTS AND DISCUSSION

Results of the study are presented in tables and charts below.

Functionality of Circulation module by score.

Table 1: Evaluation of Circulation module

Functionality of circulation	Koha	NewGenLib	SLiMS
Membership management: add, modify, block, cancel, delete, duplicate, renew patron	2	2	1
Transaction management: reserve, issue, return, recall, inter library loan	2	2	1
Facility for creating patron cards	2	1	2
Stock verification process	2	2	2
Transaction enquiry on patron's collection and overdue notices	2	2	1
Management of fine collection	2	1	1
Batch export/ import patron data	2	1	2
Self checkout patron	1	2	0
Barcode reader / RFID support	1	1	0
CAS/ SDI service(s)	1	2	0
Facility for sending SMS/ email after transaction by patron	2	1	1
Binding management such as add binder, binding type and price	0	2	0
Offline circulation	2	0	0
Administrative setting for circulation (Administration member category, circulation fine rules etc)	2	2	1
Total	23	21	12

Table 1 reveals that Koha provides all required circulation related functionality such as membership management, transaction management, stock verification process, batch export/import patron data, facility for creating patron and fine management. Self checkout, CAS/SDI service, barcode reader/RFID and sending SMS and emails are partially supported and covered. Offline circulation and all required administrative setting are also covered. However, Koha does not offer binding management. Singh and Sanaman (2012) and Londhe (2015) reported similar observations on functional features of koha and NewGenLib. This could be attributed t the similar method used for the study although the study did not adopt the same model.

The Table also shows that, the circulation module of NewGenLib fully covers membership management related functions such as add, modify, delete, duplicate and renew patrons. The transaction management functions such as issue, return, recall, reserve, renew as well as inter library loan are well supported. The circulation module of NewGenLib also support stock verification process but creation of patron card, fine management, RFID/barcode reader and SMS/ email are partially covered. Self checkout as well as binding management and CAS/SDI are well supported and covered. NewGenLib covers almost all required functionality except offline circulation.

From Table 1, it can be noted that circulation module of the SLiMS partially covers essential functionality such as membership management, transaction management, fine management and provide overdue notices through email facility. SLiMS does not provide self checkout patron, Barcode reader/RFID support, CAS/SDI service(s), binding management and Offline circulation but the Administrative setting for circulation (Administration member category, circulation fine rules etc) is partially supported.

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Table 2 present results of OPAC module:

Functionality of OPAC module by sore

Table 2: Evaluation of OPAC module

	Function	Koha	NewGenLib	SLiMS
1	Basic search by :			
	keyword	2	2	2
	phrase search	2	2	2
2	Advanced search by:			
	Boolean, truncation	2	2	2
	Wild card, proximity	2	2	2
	Field specific/ subject	2	2	2
3	Relevancy sorting	2	1	0
4	Faceted navigation	2	2	0
5	Browse shelf by title, author, subject,	2	2	0
6	Did you mean	1	0	1
7	Display MARC, AACR2, link to Google books, publisher site (subscribed books), worldcat etc	2	1	1
8	Full text search	0	0	0
9	Patron services: patron login, view issued books, issue history	2	2	2
	Status of book, reserve/place on hold or suspend/ cancel items on hold	2	2	2
	Recommend books/ make suggestion, new arrival	2	2	2
	Download, save or print records	2	2	2
	Emails /SMS records, RSS feed	2	2	2
10	User review rating, commenting, taggings	1	2	1
11	Help: FAQ, ask question, chat, help file	1	0	1
12	List and carts	1	1	1
13	Citation/ reference management software integration	2	2	0
14	Mobile phone access compatibility	2	2	2
15	Administrative setting for OPAC	2	2	2
16	Total	38	35	29

Table 2 indicates that Koha fully covers almost all search features. Basic search, advanced search, relevancy sorting, faceted navigation, are fully provided and records can be viewed in MARC21. Also, Patron related services, citation and reference integration as well as mobile phone access compatibility and Administrative setting for OPAC functionality are fully covered by koha. Record from OPAC can be downloaded and /or saved in different format such as

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BIBTEX, MARC and MODS but not directly to any other citation format such as patron APA, Chicago etc. User review rating, commenting, tagging, List and carts as well as help functionality are partially cover. Koha does not support Full text search. This finding is similar to observation reported by Naik (2016) on functional features of open source software.

Table 2 also reveals that NewGenLib OPAC fully supports basic search, faceted navigation, and browse features. It also supports integrated federated search and records in OPAC can be viewed in simple and MARC format. OPAC of NewGenLib provides a number of patron related services and facilities such as reservations, checkout, personal details, privileges, request for ILL, vouchers, circulation history, etcetra. Patron can also add tag, review particular record, print records, download record, subscribe RSS feed, view new arrivals and messages. NewGenLib OPAC is Zotero complaint and provides access of OPAC on the mobile through android based apps. Present version of NewGenLib does not provide "did you mean" feature and OPAC search help file. List and carts and relevancy sorting partially covered.

The table also shows that SLiMS OPAC is simple and has attractive interface. It provides simple and basic search, advanced search with Boolean logic. It also provides keyword suggestion feature. Patron services, Mobile phone access compatibility and Administrative setting for OPAC are fully covered. Although SLiMs OPAC display record with information and book cover image in common format and XML format as well as provide help on how to search OPAC. Citation/ reference management software integration, Full text search, Relevancy sorting, Faceted navigation and browse features of SLiMS OPAC are not supported

Table 3: Comparison of Circulation Functionality

| Open Source Software (OSS)	Total score assigned to circulation related features	Assessed score of circulation related features	Percentage
Koha	28	23	82
NewGenLib	28	21	75
SLiMS	28	12	42
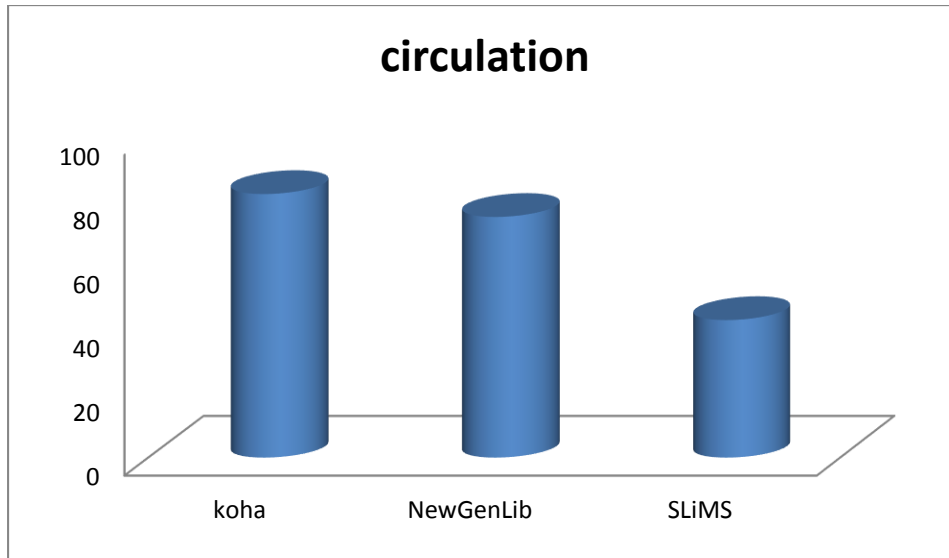
Fig.1: Comparison of Circulation Functionality

It is clear from Table 3 and Fig.1 that Koha occupies the top position with 82%, followed by NewGenLib with 75% while SLiMS had 42% of all the related circulation features. This means that koha circulation module has more circulation related function than NewGenLib and SLiMS, hence, it is a better module for managing circulation activities.

Table 4: Comparison of OPAC Functionality

Open Source Software (OSS)	Total score assigned to OPAC related features	Assessed score of OPAC related features	Percentage
Koha	44	38	86.36
NewGenLib	44	35	79.54
SLiMS	44	29	65.90
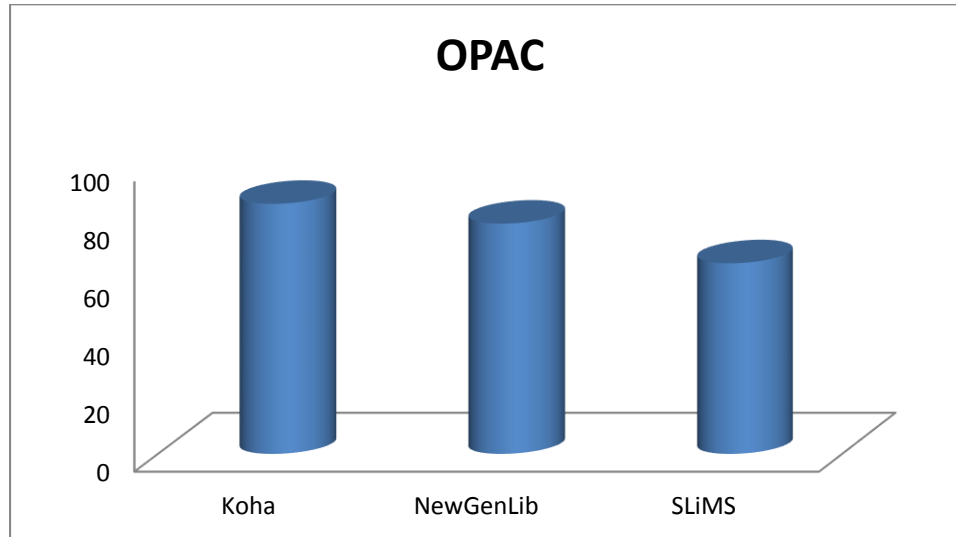
Fig. 2: Comparison of OPAC Functionality

Table 4 and fig. 2 revealed that all the library management software studied have good OPAC features, Koha rank first with 86.36%, NewGenLib score 79.54% while SLiMS ranked third with 65.90%. This implies that Koha OPAC has more enhanced functionality compared to NewGenLib and SLiMS.

CONCLUSION

Circulation and OPAC are very important and essential modules of library management software. With the continuous development and improvements of LMS, there has been additional new features such as Self check out, RFID, SMS/Email, offline, full-text search, FAQ, did you mean that have being incorporated in circulation and OPAC modules. The presence of these functionalities have enhanced and transformed library operations and given room to variety user service. Therefore, libraries can adopt Koha and NewGenLib for library automation.

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