

Staff Use and Satisfaction with Open Source Software in the Management of Selected Federal University Libraries in South-South Nigeria

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ABSTRACT

The study focused on staff use and satisfaction with Open Source Software in the management of university libraries. The quantitative research methodology was employed using the survey approach. The population (203) also stood as the sample size of the study, which constitute the entire population of all library staff in the selected university libraries. The census sampling technique was adopted for the study with the "Library Staff Use and Satisfaction with Open Source Software Questionnaire (LSUSOSSQ)" as instrument for data collection. The reliability of the instrument was achieved through test-retest method, using Pearson Product Moment Correlation Coefficient (r) that yielded a reliability coefficient of 0.84. Two hundred and three (203) copies of questionnaire were administered while 195 copies were retrieved representing 96.1% return rate. Data were analyzed using descriptive statistics such as mean and standard deviation to answer the research questions and t-test for testing the hypotheses at 0.05 level of significance. The study revealed that there was high use of the administrative, cataloguing and circulation modules of OSS by library staff and high levels of satisfaction with the use of the modules in university libraries in South-south Nigeria. The study recommended the use of OSS in Nigerian university libraries to facilitate teaching and research, which will also make for visibility of Nigerian academics in the committee of researchers worldwide.

Keywords: *Open Source Software; Software Use Satisfaction, University Libraries*

Introduction

Access to information is core in human and organizational endeavours because individuals and managers need information for effective and efficient decision making. Hence, universities that engage in the training of high level manpower must equip the trainee for high performance at workplace upon graduation. To this end, university libraries acquire, process, organize and disseminate the required information resources to meet the information needs of the teaming students' population for

future purposes. However, the plethora of information and knowledge at the disposal of man and in organizations, fostered by modern technologies has made the concept of access to information complex. Therefore, librarians are compelled to device means of ensuring that students and researchers have access to useful information resources in the cause of managing libraries. One of such is the adoption of the open source library management software for effective and efficient library services.

The Open Source Software (OSS) is an integrated library management system used in the management of libraries. It was released

under an Open Source Initiative (OSI) that provides broad rights to use, modify, and distribute. Iwundu (2012) defined an open source software as a software that is available free of charge on the internet, that can be downloaded for use with the availability of internet facility. The source code for OSS is accessible and flexible to manipulate and this allows users of the software not only contribute to its further development and fixing of bugs, but it is available free of cost and its license authorize users to run and distribute the software without any restrictions (Synopsys, 2022). This is against the proprietary software that is expensive and cannot be easily manipulated. Hence, libraries globally are embracing the OSS for daily operations and library services management, thereby providing means for efficient service delivery. The creation of OSS in the world today has facilitated the dynamic world of technological library services (Ukachi, 2012).

The Open Source Software (OSS) paved way for libraries in developing countries to compete with libraries in the western world, having incorporated manually-tasking modules such as administration, cataloguing, circulation and many others into the software programme. OSS is a technological package developed by software technologist with the key or symbols and the right to ownership of the packages given to the users with the access to redevelop it to personal expectations. According to Abdulaheem, Usman and Iyun (2008), Open Source Software is fashioned in a transparent process of distributed peer review, with promises of better quality, higher reliability, more flexibility, lower cost and provides a good alternative to vendor-propelled applications. This is as a result of its low costs - no initial purchase fees, licensing fees, or upgrade fees. It is generally not tied to proprietary hardware, thus lowering the hardware cost.

The use of computer systems in the university library has improved library service delivery, particularly with the use of OSS that facilitates the automation of libraries. Randhawa (2016) identified the KOHA ILS, Greenstone, Evergreen, NewGenLib, Dspace and EPrints (repository software) as some of the available OSS usable in libraries. One of such that has

been commonly used is the KOHA ILS. These OSS has charged librarians to be duty bound in performing automated library routines as against the manually performed routines such as administrative, serials control, cataloguing and circulation, etc. As such, training for library staff to acquire the needed skills and competencies for the utilization of the library software to enhance optimal service delivery is inevitable. This training will facilitate librarian's use of the software and possibly bring about competence and satisfaction in their professional practice.

Library staff's satisfaction with the utilization of the open source software becomes paramount for an automated library system. The use of the software by library staff to navigate the various library modules would assist in performing library routines quicker and more efficiently. This is because developers can examine how the source code works and freely make changes to problematic aspects of the application to better fit their unique needs and programmers can use pre-existing code to improve the software and even come up with their own innovations (Synopsys, 2022), which proprietary software do not offer. Therefore, the ease of use is a factor of staff satisfaction with the modules, which in turn makes for maximal service delivery. However, lack of satisfaction with the software by library staff will mean poor and inefficient service delivery and invariably negates attainment of library goals. Hence, this study investigated staff use and satisfaction with open source software in the management of selected federal university libraries in South-South, Nigeria

Literature Review

Being open to ideas and implementing same underscore the potency of open source or free software. Software used to pass around on a piece of paper and anyone could share it with anyone, work upon it and redistribute it to whoever they wanted to and was free from the start of computers (Thomas, 2017). Many people uses open source software (OSS) today and millions contribute to the code itself. ProjektLink Konsult Limited (2010) observed that Koha was the first open-source integrated library software (ILS) used

worldwide by public schools and special libraries, which is acceptable to a growing community of libraries and users collaborating to achieve their technological goal. Akinbobola and Adeleke (2013) posited that the Koha software meets library personnel's specifications and has the ability to fulfill their needs effectively and efficiently. Furthermore, library personnel have the capability and confidence in their ability to use computers to perform well with the Koha software. According to Sarma (2016), the OSS contains the following modules; administration, acquisition, serial management, selective dissemination of information (SDI) Service, and many more. Details of each module will be explained as shown below.

Adekanye (2011) reported that the administrative module of the library software oversees the management information system for the entire unit, which ensures the day-to-day maintenance of the database, developing new applications and technical support for the software. The administrative module of library software does the housekeeping operations for the automated system. Sarma (2016) posited that the housekeeping operations include acquisition of documents, technical processing like classification and cataloguing, circulation control, serials control, inter-library loan (ILL), etc. while the public services include Online Public Access Catalogue (OPAC), suggestions for book purchase, etc. According to Dhamdhare (2016), the administrative module of OSS allows specifying user's profiles and assigning users to them so as to define access to any subset of the different modules and their databases.

The circulation module is another important feature of OSS. According to Chattopadhyay and Makhopadhyay (2016), circulation work in a library involves a group of operations that are specific, repetitive and systematic. Circulation systems through OSS require minimum set of essential data for carrying out circulation activities. Circulation systems are structured to navigate some set of information concerning the lender, data concerning the resource material to be loaned out and the terms for lending. Verus Solutions (2015) explained the functionalities of the circulation module of NewGenLib, which is designed to be very

simple: so that circulation desk staff can handle them easily with little or no training. It will take less than 30 minutes to train the circulation desk staff on critical circulation desk activities, rapid (speed) usage. Interfaces are designed in such a way that you can easily handle long queues of users at the circulation desk and communicative. As soon as a transaction is carried out in circulation, a thread (in the server) starts dispatching an email and SMS to the user about the transaction. Worthy of note is that the ability of the module to perform the circulation routines brings the software use to bear. Therefore, a good library management system should provide for a circulation system in terms of registration of users, maintenance of their status, knowing about the status of titles in the library, maintenance of the database, inter library loan, collection of fine from defaulters and online searches.

Cataloguing and classification is the core of library operations and should be adequately considered. There should be a robust cataloguing and classification module in every library automated system, be it open source or proprietary (fee-based). The cataloguing module of library automation software must meet the universally acceptable MARC (Machine Readable Cataloguing) standard for cataloguing. Hence, Macan, Fernández and Stojanovski (2013) observed that KOHA ILS supports two broadly used metadata standards – MARC21 and UNIMARC (Universal Machine Readable Cataloguing). Similarly, ABCD (Automation des Bibliothèques et Centres de Documentacion) is also compatible with MARC21, Dublin Core, METS (Metadata Encoding and Transmission Standard) and other current standards, but it is actually independent of formats and libraries can implement any metadata standard or their own metadata schema (Macan, Fernández & Stojanovski, 2013) as a result of the software flexibility.

Managing different bibliographic structures is a very useful functionality, especially for libraries that do not use any common metadata standard. The cataloguing and classification module must provide MARC bibliographic frameworks for original cataloguing and especially copy cataloguing with Z39.50/SRU

search protocol. A good cataloguing module should pave way for a well-structured bibliographic record in the OPAC (Online Public Access Catalogue). The OPAC of the OSS assist patrons to search the library's holdings and utilize online services. Major task of the module are: the strength of patrons to find information, view the information and status of any given item, users access to login, book suggestion, book reserve or hold, and other similar services in the OPAC functionality.

With these modules among others, library staff could execute library services easier and faster to meet user's information needs. Therefore, the level of use of OSS modules in university libraries has become imperative for it goes a long way in determining acceptability and adaptability of the software in libraries to efficiently meet user's information needs thereby resulting in satisfaction. Hence, this study is to determine how library staff uses the open source software in the management of university libraries and their satisfaction with the software in achieving library goals.

Statement of the Problem

The main goal of universities is teaching, learning, research and community services; and university libraries facilitate the process. However, the penetrating force of information and communication technologies (ICTs), in the use of OSS in library operations has influenced the services provided by library staff. Despite the numerous benefits associated with an automated library services and service delivery, it is disheartening to note that most university library staff finds it difficult or seem to lack the requisite skills and competencies in functioning in the digital environment. Also, most university libraries are still miles away from been automated. Moreover, library staff seem not keen in the effective and efficient use of the digital provisions to facilitate library services, leading to slow library operations and service delivery to users. Therefore, this study investigated the use of OSS in the management of university libraries with focus on library staff satisfaction.

Purpose of the Study

This study examined the use and satisfaction of library staff with OSS in the management of university libraries. The specific objectives are to:

1. find out the level of use of the administrative module of OSS by staff in the management of university libraries;
2. examine the level of use of the cataloguing module of OSS by staff in the management of university libraries;
3. know the level of use of the circulation module of OSS by staff in the management of university libraries;
4. determine the extent to which library staff are satisfied with the use of these OSS modules in the management of university libraries;

Research Questions

The following research questions will be answered in the study;

1. What is the level of use of the administrative module of OSS by staff in the management of university libraries?
2. What is the level of use of the cataloguing module of OSS by staff in the management of university libraries?
3. What is the level of use of the circulation module of OSS by staff in the management of university libraries?
4. To what extent is library staff satisfied with the use of these OSS modules in the management of university libraries?

Research Hypotheses

The following research hypotheses will be tested in the study at 0.05 level of significance:

H1: There is no significant difference between the mean ratings of male and female library staff on the level of use of the administrative module of OSS for the management of university libraries.

H2: There is no significant difference between the mean ratings of male and female library staff on the level of use of the cataloguing module of OSS

for the management of university libraries.

H3: There is no significant difference between the mean ratings of male and female library staff on the level of use of the circulation module of OSS for the management of university libraries.

H4: There is no significant difference between the mean rating of male and female library staff on the extent to which they are satisfied with the use of these modules for the management of university libraries.

Research Methods

The study examined library staff use and satisfaction with open source software in the management of university libraries. The descriptive survey research design was employed in the study to describe and interpret existing conditions and practices. The population of the study is two hundred and three (203) comprising all library staff in three (3) selected federal university libraries in South-south Nigeria. The purposive sampling technique was used to select the university libraries based on the fact that they were already making use of OSS in the libraries. They are the University of Benin, Benin City (75); University of Uyo, Uyo (68) and University of Calabar, Calabar (60). The census sampling technique was used for sampling thereby making the sample size 203, because of the nature of the small population of library staff and number of university libraries making use of OSS at the time of this study.

The sole instrument for data collection in this study is the questionnaire, tagged "Library Staff Use and Satisfaction with OSS Questionnaire" (LSUSOSSQ) and made up of two (2) sections. Section 1 contains the personal data of the respondents while Section 2 is made up of 3 parts in 8 clusters. It contains questions on Library Staff Level of Use of the Administration, Cataloguing and Circulation Modules of OSS; and statements on Library Staff Satisfaction with the Administration, Cataloguing and Circulation Modules of OSS design in close-ended statement on a four-point rating scale. The instrument was personally

administered to the respondents over a period of one month to ensure proper response and high response rate. The data for the study were analyzed using descriptive (mean and standard deviation) to answer the research questions and inferential statistics (t-Test) to test the null hypothesis at 0.05 level of significance with a criterion mean of 2.50, any item above this was accepted and any item below was rejected. All statistical analyses were performed with Statistical Package for Social Sciences (SPSS) software using a demographic variable of gender.

Results and Discussion of Findings

The researcher administered 203 copies of the questionnaire and 195 copies were duly completed and returned, representing 96.1% return rate, which were used for the study. The results are hereby presented below.

Library Staff Use of the Administrative Module of OSS in the Management of University Libraries

On the Level of Use of the Administrative Module of OSS by library staff in the management of university libraries, Table 1 was used to answer the research question.

The data presented in Table 1 shows that the cluster mean rating of the 10 items is 3.48 and cluster standard deviation is 0.59 respectively, which is within the real limit of 2.50-3.49. This indicates high use of the administrative module (OPAC configuration, MARC bibliographic framework, setting basic parameters, patrons and circulation control, adding Z39.50 search targets, managing plug-in, managing the reports module, system backup/file, etc.) of OSS by library staff in the management of university libraries. Similarly, the t-test result for the hypothesis is shown in Table 2.

Table 1: Mean Responses of Library Staff on the Level of Use of the Administrative Module of OSS (n = 195)

SN	Administration module of OSS is used for:	VHU	HU	LU	VLU	\bar{X}	σ	Rmk
1.	OPAC Configuration	144	47	3	1	3.71	.51	VHU
2.	MARC Bibliographic Framework	154	38	2	1	3.76	.47	VHU
3.	Setting Basic Parameters	138	55	2	-	3.69	.48	VHU
4.	Patrons and Circulation Control	138	53	2	2	3.67	.54	VHU
5.	Setting Acquisition Parameters	99	84	12	-	3.44	.60	HU
6.	Adding Z39.50 Search Targets	87	92	15	1	3.35	.64	HU
7.	System Upgrade	70	115	7	3	3.29	.61	HU
8.	Managing Plug-in	76	105	14	-	3.31	.60	HU
9.	Managing the Reports Module	79	100	11	5	3.29	.69	HU
10.	System Backup/File	95	74	19	7	3.31	.79	HU
	Cluster mean					3.48	.59	HU

Note: \bar{X} = Mean, σ = Standard Deviation of the Population, VHU= Very High Use, HU = High Use, LU=Low Use, VLU=Very Low Use, n = number of respondents, Rmk = Remark.

Table 2: The t – Test Analysis of the Mean Responses of Male and Female Library Staff on the Level of Use of the Administrative Module of OSS in University Libraries

Group	N	\bar{X}	Σ	df	t-cal	Sig. (p-value)	Remark
Male Library Staff	102	3.52	.60	193	.77	.53	NS
Female Library Staff	93	3.46	.58				

N = Number of respondents, *X* = Mean of respondents, σ = Standard deviation of a population, *df* = degree of freedom (193), *t-cal* = t-calculated, sig. (p-value) = significant at $p < 0.05$, NS = Not significant.

Table 2 above shows a p-value of 0.53, which is greater than the alpha-value of 0.05 indicating that there is no significant difference between the mean ratings of the administrative modules of OSS in university libraries. Therefore, the hypothesis of no significant difference ($p < 0.05$) between the mean responses of male and female library staff on the level of use of the administrative module of OSS is accepted.

The finding of this study is revealed in the assertion of ProjektLink Konsult Limited (2010) that Koha, being the first open-source integrated library software (ILS) used worldwide by public school and special libraries is acceptable to a growing community of libraries and users collaborating to achieve their technological goal. Similarly, it corroborates Adekanye's (2011) study that the administrative module ensures the day-to-day maintenance of the database and technical support for the software. With the local area

networking, users are able to access the library collections from all over the campus without the need to physically come to the library.

Library Staff Level of Use of the Cataloguing Module of OSS in University Libraries

On the level of use of the cataloguing module of OSS by library staff, the data presented in Table 3 was used to answer the research question.

Table 3: Mean Responses of Library Staff on the Level of Use of the Cataloguing Module of OSS in University Libraries (n = 195)

SN	Cataloguing Module of OSS is used for:	VHU	HU	LU	VLU	\bar{X}	σ	Rmk
1.	Adding new records	88	84	20	3	3.31	.71	HU
2.	Adding Search Targets	102	77	6	10	3.38	.78	HU
3.	Choosing Item Types	90	81	16	8	3.29	.58	HU
4.	Creating Metadata	77	96	15	7	3.24	.74	HU
5.	Z39.50 Search (Copy Cataloguing)	84	84	10	17	3.20	.89	VHU
6.	Creating Alternative Search	117	71	5	2	3.55	.60	VHU
7.	Importing Z39.50 Record	121	66	7	1	3.57	.59	VHU
8.	Itemization	107	82	5	1	3.51	.57	VHU
9.	Editing Records	98	90	5	2	3.45	.60	HU
10.	Saving	78	94	21	2	3.27	.69	HU
	Cluster mean					3.38	.68	HU

Note: \bar{X} = Mean, σ = Standard Deviation of a population, VHU= Very High Use, HU = High Use, LU=Low Use, VLU=Very Low Use, n = number of respondents, Rmk = Remark.

Table 4: The t – Test Analysis of the Mean Responses of Male and Female Library Staff on the Level of Use of the Cataloguing Module of OSS in University Libraries

Group	N	X	S	df	t-cal	Sig. (p-value)	Remark
Male Library Staff	102	3.42	.70	193	.76	.52	NS
Female Library Staff	93	3.34	.69				

N = Number of respondents, X = Mean of respondents, σ = Standard deviation of a population, df = degree of freedom (193), t-cal= t-calculated, sig. (p-value) = significant at $p < .05$, NS = Not significant.

From the data presented in Table 3, the cluster mean response of the 10 items is 3.38 and cluster standard deviation 0.68 respectively. This signifies that there is a high use of the cataloguing module (adding new records, adding search targets, creating metadata, Z39.50 search through copy cataloguing, editing records, saving, etc.) of OSS by staff in university libraries. In the same vein, the t-test result for testing the hypothesis is presented in Table 4.

Table 4 above shows a p-value of 0.52, which is greater than the alpha-value of 0.05 indicating that there is no significant difference between the mean responses of male and female library staff on the high use of the cataloguing module of OSS in the management of university libraries. Therefore, the hypothesis is hereby accepted.

The findings with respect to the level of use of the cataloguing module of OSS by staff in university libraries is high in the aspect of adding new records, adding search targets, choosing item types, creating metadata, Z39.50 search (copy cataloguing), creating alternative search, importing Z39.50 record, itemization, editing, record keeping and saving. The

findings of this study is supported by that of Bello (2013) and Amune (2014), which exposed the reality of cataloguing module of OSS to be highly efficacious since library staff are expressly satisfied with the cataloguing provisions of the software. Similarly, the findings of this study is corroborated by that of Okewale and Adetimirin (2011) who found that cataloguing module had the highest frequency of use among the library staff in confirmation of Uwaifo's (2008) work that cataloguing was the major library routine to which computer was applied in universities in Nigeria.

The findings of the present study is in agreement with that of Ukachi (2012) who reported that the advent and development of OSS in the present age, has made the transition from "traditional" to "technology-based" library services possible, which gives room for more efficient service provision, easy and cost effective services. Hence, libraries adopted it in their cataloguing, technical services, digitization processes, and general library management. Also, is that of Bello (2013) who studied automated cataloguing practices and job satisfaction in academic libraries and found that respondents generally adopt work

Table 5: Mean Responses of Library Staff on the Level of Use of the Circulation Module of OSS in University Libraries (n = 195)

SN	Circulation Module of OSS is used for:	VHU	HU	LU	VLU	\bar{X}	σ	Rmk
1.	User Registration	91	74	17	13	3.24	.87	HU
2.	Checking-out Items	150	44	1	-	3.76	.70	VHU
3.	Checking-in Items	135	59	1	-	3.68	.49	VHU
4.	Reserving Items (placing items on hold)	94	93	8	-	3.44	.57	HU
5.	Purchase suggestions	79	107	6	3	3.34	0.61	HU
6.	Default Fine Recording	94	92	9	-	3.43	.58	HU
7.	Sending and Receiving Messages	100	92	3	-	3.49	.53	HU
8.	Changing Password	89	95	7	4	3.37	.65	HU
9.	My Summary	95	90	7	3	3.42	.64	HU
10.	My List	100	90	5	-	3.48	.55	HU
11.	Saving	104	82	9	-	3.48	.58	HU
12.	My Favourite	86	96	13	-	3.37	.60	HU
	Cluster mean					3.46	.61	HU

Note: \bar{X} = Mean, σ = Standard Deviation of a population, VHU= Very High Use, HU = High Use, LU=Low Use, VLU=Very Low Use, n = number of respondents, Rmk = Remark.

Table 6: The t – Test Analysis of the Mean Responses of Male and Female Library Staff on the Level of Use of the Circulation Module of OSS in University Libraries

Group	N	\bar{X}	S	df	t-cal	Sig. (p-value)	Remark
Male Library Staff	102	3.46	.59	193	.74	.52	NS
Female Library Staff	93	3.46	.58				

N = Number of respondents, \bar{X} = Mean of respondents, σ = Standard deviation of a population, df = degree of freedom (193), t-cal= t-calculated, sig. (p-value) = significant at $p < .05$, NS = Not significant.

The data presented in Table 5 shows a cluster mean of 0.46 and cluster standard deviation of 0.61 respectively, which indicates high use of circulation module (user registration, checking-in items, checking-out Items, reserving items/placing items on hold, default fine recording, sending and receiving messages, changing password. etc.) of OSS by staff in the management of university libraries. The result further revealed the test of hypothesis shown in Table 6.

Table 6 above shows a p-value of 0.52, which is greater than the alpha-value of 0.05. This indicates that there is no significant difference between the mean responses of male and female library staff on the high use of the circulation module of OSS. Therefore, the hypothesis is accepted.

The findings with regard to the level of use of the circulation module of OSS by library staff in university libraries revealed high usage in user registration, checking out items, checking in items, reserving items / placing items on hold, purchase suggestions, default fine recording, sending and receiving messages,

changing password, etc. The findings is in agreement with that of Slideshare (2013) that pointed out the circulation system tracks, borrowing and returning of materials, generation of notices such as holds and overdue loans and calculating any fine or fee owed. The basic functions of a circulation system that guarantee its continuous use include ability to tell - what material is available and what is on loan, which material is on loan, to whom and when it is due back, advanced features of a circulation system include the ability to, recognize and trap reserved items when returned, prepare (and send) overdue and recall notices, keep records of items on loan to individual patrons and notify over borrowing, allow for renewals, facilitate the calculation and collection of fines or demerits as required and collect statistics.

Extent of Library Staff's Satisfaction with the Use of the Administrative Module of OSS in University Libraries

On the extent of library staff's satisfaction with the use of the administrative module of OSS in the management of university libraries, the data presented in Table 7 was used to answer the research question.

The findings of this study establish that the extent of satisfaction of library staff on the use of the administrative module of OSS by staff in university libraries is high in OPAC configuration, MARC bibliographic framework, setting basic parameters, setting acquisition parameters, adding Z39.50 search targets, system upgrade, managing plug-in, managing the reports module, system backup/file.

Table 7: Mean Responses of Library Staff on the Extent to which they are Satisfied with the Use of the Administrative Module of OSS in University Libraries

(n = 195)

SN	I am satisfied using the Administration module of OSS for	VHE	HE	LE	VLE	\bar{X}	σ	Rmk
1.	OPAC Configuration	91	83	17	4	3.33	.72	HE
2.	MARC Bibliographic Framework	84	94	16	1	3.53	.84	VHE
3.	Setting Basic Parameters	100	82	12	1	3.44	.63	HE
4.	Patrons and Circulation Control	18	58	109	10	2.43	.73	LE
5.	Setting Acquisition Parameters	79	85	20	11	3.18	.83	HE
6.	Adding Z39.50 Search Targets	73	102	16	4	3.25	.69	HE
7.	System Upgrade	121	62	8	2	3.53	.67	VHE
8.	Managing Plug-in	105	78	8	4	3.45	.57	HE
9.	Managing the Reports Module	109	76	7	3	3.50	.64	VHE
10.	System Backup/File	70	116	8	1	3.60	.57	VHE
	Cluster mean					3.32	.69	HE

Note: \bar{X} = Mean, σ = Standard Deviation of a population, VHE = Very High Extent, HE = High Extent, LE = Low Extent, VLE = Very Low Extent, n = number of respondents, Rmk = Remark.

From the data presented in Table 7, the cluster mean response is 3.32 and cluster standard deviation is 0.69 respectively. This shows that there is high extent of satisfaction by library staff in the use of the administrative module of OSS in the management of university libraries. Also, the result of the t-test for the hypothesis is shown in Table 8.

The findings of the present study also conformed to the result of Bhavsar (2012) who conducted a survey among Indian library professionals to find out the satisfaction of Koha users, which is high in administrative module. Though, the findings of Mukhopadhyay (2016) gave a clearer picture of the development of library management systems over the years and emergence of OSS

Table 8: The t – Test Analysis of the Mean Responses of Male and Female Library Staff on the extent to which they are Satisfied with the Use of the Administrative Module of OSS in University Libraries

Group	N	\bar{X}	S	df	t-cal	Sig. (p-value)	Remark
Male Library Staff	102	3.32	.66	193	.98	.46	NS
Female Library Staff	93	3.23	.69				

N = Number of respondents, \bar{X} = Mean of respondents, σ = Standard deviation of a population, df = degree of freedom (193), t-cal = t-calculated, sig. (p-value) = significant at $p < .05$, NS = Not significant.

Table 8 shows a p-value of 0.46, which is greater than the alpha-value of 0.05. This implies that there is no significant difference between the mean responses of male and female library staff on the high extent to which they are satisfied with the use of the administrative module of OSS. Therefore, the hypothesis is hereby accepted.

solutions for library management as alternatives to closed commercial products and found the usage of the administrative module more frequent and staff was dissatisfied with the functionalities.

However, the findings of this study agreed with that of Albee and Chen (2014) who

examined public library staff attitudes towards an open-source library automation system in the State of Indiana, USA and found that most of the librarians using the administrative module were satisfied with the features. The findings of this study also agreed with the result of Vimal and Jasimudeen (2012) who found that several modules are customizable through the General Systems Preferences embedded in the administrative module of Koha ILS and reported a huge satisfaction level of 75% with the use of the administrative module of Koha OSS.

Extent of Library Staff's Satisfaction with the Use of the Cataloguing Module of OSS in University Libraries

On the extent of library staff's satisfaction with the use of cataloguing module of OSS in university libraries, the data presented in Table 9 was used to answer the research question.

Table 10 below shows a p-value of 0.39, which is greater than the alpha-value of 0.05. This indicates that there is no significant difference between the mean responses of male and female library staff on the high extent to which they are satisfied with the use of the cataloguing module of OSS. Therefore, the hypothesis is hereby accepted. The findings of this study on the extent of satisfaction of library staff on the use of the cataloguing module of OSS by staff in university libraries is high in adding new records, adding search targets, choosing item types, creating metadata, Z39.50 search (copy cataloguing), creating alternative search, importing Z39.50 record, itemization, editing records and saving. The findings of this study supported that of Bello (2013) who studied automated cataloguing practices and job satisfaction in academic libraries and found that the respondents are

Table 9: Mean Responses of Library Staff on the Extent to which they are Satisfied with the Use of the Cataloguing Module of OSS in University Libraries (n = 195)

SN	I am satisfied using the Cataloguing module of OSS in university libraries	VHE	HE	LE	VLE	\bar{X}	σ	Rmk
1.	Adding New Records	79	104	8	4	3.32	.65	HE
2.	Adding Search Targets	120	71	4	-	3.60	.53	VHE
3.	Choosing Item Types	119	70	5	1	3.57	.57	VHE
4.	Creating Metadata	96	93	5	1	3.45	.57	HE
5.	Z39.50 Search (Copy Cataloguing)	103	75	17	-	3.44	.65	HE
6.	Creating Alternative Search	90	98	6	1	3.62	.58	VHE
7.	Importing Z39.50 Record	87	92	14	2	3.35	.66	HE
8.	Itemization	89	92	9	5	3.35	.70	HE
9.	Editing Records	103	79	10	3	3.44	.66	HE
10	Saving	118	69	7	1	3.55	.59	VHE
	Cluster mean					3.47	.62	HE

Note: \bar{X} = Mean, σ = Standard Deviation of a population, VHE= Very High Extent, HU = High Extent, LE=Low Extent, VLE=Very Low Extent, n = number of respondents, Rmk = Remark.

The data presented in Table 9 showed that the cluster mean is 3.47 and cluster standard deviation is 0.62 respectively. This indicates that the library staff is to a high extent satisfied with the use of cataloguing module of OSS in the management of university libraries. Similarly, the t-test result for the hypothesis is presented in Table 10.

satisfied and adopt work redistribution among other cataloguers. Sixty one percent (61%) spend an average of three to six hours daily on cataloguing and classification using Koha OSS with high job satisfaction. Randhawa (2016) reported that with technologies, organizing libraries has become easier and more efficient

Table 10: The t – Test Analysis of the Mean Responses of Male and Female Library Staff on the Extent to which they are Satisfied with the Use of the Cataloguing Module of OSS in University Libraries

Group	N	X	S	df	t-cal	Sig. (p-value)	Remark
Male Library Staff	102	3.49	.58	193	1.08	.39	NS
Female Library Staff	93	3.39	.63				

N = Number of respondents, X = Mean of respondents, σ = Standard deviation of a population, df = degree of freedom (193), t-cal= t-calculated, sig. (p-value) = significant at $p < .05$, NS = Not significant.

Kushwah, Gautam and Singh (2012) conducted a study on two popular proprietary library management systems. The study reported both commercial and open source library management systems are good in terms of features and functions.

Extent of Library Staff's Satisfaction with the Use of Circulation Module of OSS in University Libraries

On the extent of library staff's satisfaction with the use of the circulation module of OSS in the management of university libraries, data presented in Table 11 is used to answer the research question.

Table 12 above shows a p-value of 0.36, which is greater than the alpha-value of 0.05 indicating that there is no significant difference between the mean responses of male and female library staff on the high extent to which they are satisfied with the use of the circulation module of OSS. Therefore, the hypothesis is accepted.

The findings of this study on the extent of satisfaction of library staff on the use of the circulation module of OSS by staff in university libraries is high in user registration, checking out items, checking in items, reserving items (placing items on hold),

Table 11: Mean Responses of Library Staff on the Extent to which they are Satisfied with the Use of Circulation Module of OSS in University Libraries (n = 195)

SN	I am satisfied using the circulation module of OSS in	VHE	HE	LE	VLE	\bar{X}	Σ	Rmk
1.	User Registration	105	86	4	-	3.51	.54	VHE
2.	Checking-out Items	106	86	3	-	3.52	.53	VHE
3.	Checking-in Items	105	79	10	1	3.47	.73	HE
4.	Reserving Items (placing items on hold)	77	95	18	5	3.25	.64	HE
5.	Purchase Suggestions	-	84	93	18	2.34	.72	LE
6.	Fine recording	79	97	15	4	3.28	.70	HE
7.	Sending and Receiving Messages	82	98	11	4	3.32	.67	HE
8.	Changing Password	97	84	13	1	3.42	.54	HE
9.	My Summary	82	95	17	1	3.32	.65	HE
10.	My List	123	70	1	1	3.61	.52	VHE
11.	Saving	108	74	12	1	3.48	.63	HE
12.	My Favourite	102	86	5	2	3.47	.70	HE
	Cluster mean					3.33	.63	HE

Note: \bar{X} = Mean, σ = Standard Deviation of a population, VHE=Very High Extent, HU = High Extent, LE=Low Extent, VLE=Very Low Extent, n = number of respondents, Rmk = Remark.

Table 11 revealed that the cluster mean is 3.33 and cluster standard deviation is 0.63 respectively. This indicates that the library staff is to a high extent satisfied with the use of the circulation module of OSS in the management of university libraries. The t-test result for the hypothesis is presented in Table 12.

fine recording, sending and receiving messages, changing password, my summary, my list, saving and my favourite. The findings of this study are in agreement with the result of Verus Solutions (2015) that explained the functionalities of the circulation module of NewGenLib which is designed to be very simple: So that circulation desk staff can handle them easily with little or no training.

Table 12: The t – Test Analysis of the Mean Responses of Male and Female Library Staff on the Extent to which they are Satisfied with the Use of the Circulation Module of OSS in University Libraries

Group	N	X	S	df	t-cal	Sig. (p-value)	Remark
Male Library Staff	102	3.38	.64	193	1.14	.36	NS
Female Library Staff	93	3.31	.60				

N = Number of respondents, X = Mean of respondents, σ = Standard deviation of a population, df = degree of freedom (193), t-cal= t-calculated, sig. (p-value) = significant at $p < .05$, NS = Not significant.

It will take less than 30 minutes to train the circulation desk staff on critical circulation desk activities, rapid (Speed in usage). Interfaces are designed in such a way that you can easily handle long queues of users at the circulation desk and communicative. As soon as a transaction is carried out in circulation, a thread (in the server) in the server starts dispatching an email and SMS to the user about the transaction.

The findings of this study corroborated with Mulla and Chandrashekar (2014) that explored the satisfaction level of software usage in Engineering College Libraries in Gulbarga and Belgaum regions in Karnataka found that schools have tested several OSS, and they testified that Koha's simplicity of use made it the best amongst other software they've used.

Therefore, library staff were to a high extent satisfied with the use of the administrative, cataloguing and circulation modules of OSS in the management of university libraries studied. As such, there was no significant difference between the mean responses of male and female library staff on the high extent to which they are satisfied with the use of the modules.

Summary and Conclusion

From the study, there is high use of the administrative, cataloguing and circulation modules of OSS by library staff in the management of university libraries. The results further revealed that there is no significant difference between the mean responses of male and female library staff on the high use of the different modules of OSS. There was high level of use of the administrative module of OSS in OPAC configuration, MARC bibliographic framework, setting basic parameters, patrons and circulation control, setting acquisition parameters, adding Z39.50 search targets, system upgrade, managing plug-in, managing the reports module and system backup/file by library staff in the cause of managing the university libraries. The implication of this study is that it will bring about a robust library operations and efficient and effective service delivery leading to high patronage by library users.

Recommendations

Based on the findings of this study, the following recommendations were made.

1. All university libraries in Nigeria are encouraged to deploy the use of OSS for better library operations and services to users.
2. Training and retraining of library staff is needed to up date their skills in the use of open source software for better service delivery. This training will improve their skills in OSS use in the libraries as new technologies emerge on daily bases.
3. The university management should compulsorily engage a system librarian with adequate technological and network operation ideas to facilitate adequate maintenance of the OSS system.
4. There should be security measures put in place during operations so as to avoid unauthorized persons access / data loss by installing error codes or alarm.

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