ASSESSING USE OF INTEGRATED LIBRARY MANAGEMENT SYSTEMS IN SELECTED NIGERIAN UNIVERSITY LIBRARIES

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Abstract

The adoption of integrated library management systems (ILMS) in Nigerian university libraries is becoming popular. However, literature review revealed that many libraries have been moving from one system to another and in the process losing large chunk of library records. This situation poses a serious threat not only to ILMS adoption but also to its use. This study, therefore, sought to evaluate the usage of ILMS in Nigerian university libraries. The study design is descriptive survey. Five hundred and fifty-eight (558) librarians from the selected university libraries formed the population. Total enumeration sampling technique was adopted due to the small size of the study population. Data collection instrument was a questionnaire that was validated using a test re-test reliability method and yielded overall Cronbach's Alpha r = 0.93. Data analysis was done using descriptive statistics including frequency count, percentages, and standard deviation. The results showed that the system quality measured by ease of use 98.22%, user-friendliness 97.53% and high-speed 92.73%; the content quality measured by good format 96.73%, up-to-date 93.91%, information quality 93.14% and relevance 93.62%; and support services provided 93.71% were good. Librarians self-regulated their learning to use ILMS by familiarizing themselves with the systems before adoption (62.73%) and troubleshooting (80.22%); library preparedness was adequate (IT infrastructure 75.41% and capacity building 75.61%); and librarians were satisfied with the ILMS usage (85.52%), and was beneficial to the librarians (90.91%). The study concluded that the evaluation of ILMS usage has been successful for the libraries that have adopted them. It therefore recommended that library management should not compromise the quality of ILMS already attained but rather improve upon it by setting benchmark with ILMS in other Universities in the developed countries.

Keywords: Integrated library management systems, System quality, Management system, information systems, support service quality

Introduction

The usage of information systems in present-day organizations is experiencing phenomenal growth. The heightened quality of these new systems, coupled with their inherent benefits, constitutes major factors explaining their widespread adoption across virtually all types of organizations. The application of computing and information systems in libraries has long been a focal point for both libraries and professional librarians (Rochtanek & Matthews, 2002). Recently, libraries have increasingly pursued software solutions involving distributed networking and remote access to information resources, deploying a range of library information systems. An Information System (IS) is commonly defined as a set of interrelated components that gather, manipulate, store, and disseminate information, while providing feedback mechanisms to accomplish specific goals (Laudon & Laudon, 2012).

There exist several types of Information Systems (IS) in libraries, encompassing Library Management Systems (LMS), Integrated Library Management Systems (ILMS), Electronic Resources Management Systems (ERMS), Management Information Systems (MIS), and various others. Library management systems (LMS) primarily aim to computerize specific library routines, like cataloguing. An example is the Dynix library management system, developed in the mid-1980s, which replaced the former paper-based book catalogue. LMS typically operates as a single module; TINLIB, for instance, was a widely used LMS in Nigerian academic libraries in the early 90s (Agboola, 2000).

Following LMS is the Integrated Library Management System (ILMS), which consolidates major library routines such as search, cataloguing, circulation, acquisitions, periodicals and serials control, network communication, selective dissemination of information (SDI), Online Public Access Catalogue (OPAC), Electronic Resources Management (ERM), and overall library management into modules within a single software. An example is Visionary Technology in Library Solution's VIRTUA, a comprehensive library management system providing control over various workflows including circulation, cataloging, serials, acquisitions, course reserves, and more (VTLS). In 2002, the standalone Electronic Resource Management System (ERMS) emerged, dedicated solely to managing electronic resources. It gained wide acceptance in Europe and the United States (Sadeh, 2004).

The preliminary findings from these researchers, acquired through website searches of Nigerian universities, phone consultations with colleagues at specific universities, and field studies, revealed that ten integrated library management systems are currently available and implemented in university libraries in Nigeria. One of these systems is VIRTUA (produced by Visionary Technology in Library Solution), jointly utilized by Ahmadu Bello University, Zaria; Obafemi Awolowo University, Ile Ife; University of Ibadan, Ibadan; University of Jos, Jos; and University of Port-Harcourt, Port-Harcourt. Additionally, Strategic Library Automation Management (SLAM) is in use at Federal University of Technology, Akure; University of Benin, Benin City; Ekiti State University, Ado-ekiti; and Kogi State University Anyigba.

At the time of this study, KOHA was being utilized by Redeemer's University, Ede; Bowen University, Iwo; Ladoke Akintola University of Technology, Ogbomoso; University of Ilorin, Ilorin; University of Jos, Jos; University of Nigeria, Nsukka; Nnamdi Azikiwe University, Awka; Federal University of Agriculture, Abeokuta; and Federal University of Technology, Owerri.

Moreover, Computerised Documentation Service/Integrated Set of Information System (CDS/ISIS) is employed by Michael Okpara University of Agriculture, Umudike; Liberty by the Nigerian Defence Academy, Kaduna; Kiha by the University of Jos, Jos; Millennium by the University of Lagos, Lagos; Alice for Window by Lagos State University, Ojo. Furthermore, UIILS (University of Ibadan Integrated Library System), a locally developed system in collaboration with a local software company, is gradually being integrated with VIRTUA at the University of Ibadan, Ibadan. Greenstone is currently utilized by the American University of Nigeria, Yola.
The occasional breakdown and outright failures (in some cases) of these systems have become a source of concern. Okiy (1998) posited that literature on library automation and library management systems adoption in university libraries in Nigeria indicates

failure occasioned by challenges which often results in outright stoppage in use or migration to another software. Libraries in Nigeria are still experiencing these frustrations arising out of library automation even two decades after Okiy (1998) initial observation. One interesting aspect is that each frustration presents new challenges and opens up avenues to explore ways of surmounting the challenge.

Ayankola (2012) highlighted challenges and frustrations in the implementation of ILMS by libraries in Nigeria, concluding that many are now gravitating toward developing new ILMS to meet their requirements and provide efficient services. An instance is the University of Ibadan Library System (UIILS), which engaged a software development firm to create a fallback system in case the current VIRTUA system encounters issues, thus leading to the emergence of UIILS.

The importance of system usability has long been acknowledged, yet it often receives minimal attention. The user interface of an information system can significantly impact its success. As libraries have progressed from character-based software to windows-based systems, library management systems, and integrated library management systems, the evaluation of usability and system sustainability among librarians becomes crucial (Hartson, Shivakumar & Perez-Quinones, 2004).

Concurrently, assessing the success of information systems stands as a critical issue in information systems research. Numerous conceptual and empirical studies have delved into this vital yet contentious area. Against this backdrop, this study aims to evaluate the use of ILMS in selected Nigerian university libraries.

Statement of the Problem

The adoption of integrated library management systems in Nigerian university libraries is gradually gaining traction, albeit at a relatively low rate compared to the total number of university libraries. Despite the inherent benefits of implementing ILMS in library automation, Nigerian university libraries face challenges in effectively utilizing these systems to achieve their adoption objectives (Uzomba, Oyebola & Izuchukwu, 2015).

Literature reveals that many libraries that have adopted these systems still grapple with issues such as immediate abandonment post-migration, inadequate maintenance, underutilization of system capabilities, malfunctioning modules, and insufficient vendor support, among other adoption and usage challenges (Sha, 2007). In contrast, libraries in developed nations that have fully embraced and implemented ILMS share success stories, citing enhanced value from library services, streamlined workflows, and notable improvements in information resource usage statistics (Watson, 2007).

However, Nigerian university libraries have faced more problems than successes. Reviews indicate that several libraries adopting ILMS have switched systems, abandoning previous ones and losing substantial library records and resources in the process (Adegbore, 2010). These challenges suggest a lack of prior evaluation of ILMS use before hasty selection and deployment in many cases. Consequently, libraries struggle to progress in ILMS utilization and often find it difficult to backtrack once committed, posing a threat not only to adoption but also to the potential learning from successful implementations for other non-adopting libraries.

In light of these issues, this study aims to examine adoption factors and evaluate the use of Integrated Library Management Systems (ILMS) in Nigerian university libraries.

Research Questions

Answers were provided to the following research questions.

i. What is the quality of ILMS systems used in Nigerian university libraries?
ii. What is the content quality of ILMS systems used in university libraries in Nigeria?
iii. What is the quality of support services provided for the use of ILMS systems in university libraries in Nigeria?
iv. Are librarians' self-regulating their learning to use ILMS in Nigerian university libraries?
v. What is the level of preparedness by libraries to successfully implement ILMS in Nigerian university libraries?
vi. What is the level of satisfaction of the librarians with the use of ILMS in Nigerian university libraries?
vii. What are the benefits of ILMS to university libraries in Nigeria?

Literature Review

The behavioural intention to adopt information systems (IS) in other organizations might echo similar patterns observed in library science, although studies specifically addressing this area are scarce. Hence, this review combines studies related to other information systems' domains with the limited ones related to librarianship.

The Blackboard course management system shares similarities with ILMS as both aim to automate previously manual routines and are utilized in higher learning institutions. Tella (2013) examined predictive factors for the University of Botswana's intention to adopt the Blackboard system. The study, involving 503 students from 7 faculties and 42 departments, utilized a survey method, collecting data through questionnaires. It revealed that factors like Blackboard content quality, system quality, support service quality, teaching and learning quality, self-regulated learning, user satisfaction, and net benefits significantly influenced the adoption of the Blackboard system by students. Net benefits, self-regulated learning, and Blackboard content quality played pivotal roles compared to other factors. These variables bear a resemblance to those used in evaluating ILMS usage in Nigerian university libraries in the second phase of this study.

A study of Woolwich bank in the United Kingdom highlighted the institution's successful adoption of IS innovations in electronic banking. Critical success factors identified for its e-banking included customer understanding, organizational flexibility, resource availability, system security, established brand name, multiple integrated channels, e-channel specific marketing, systems integration, systematic change in management, top management support, and quality customer service (Sha & Siddiqui, 2006).

Kiriyanant (2012) conducted a survey of open-source integrated library systems in Thai university libraries in Bangkok and Pathumthani. Results indicated that the majority (93.1%) used library automation, while a minority (6.9%) did not. Among those using library automation, 59.3% utilized commercial/proprietary integrated library systems (ILS). The most commonly used commercial/proprietary ILSs were Millennium, Horizon, and VIRTUA. Additionally, in-house developed library automations by internal IT staff or through outsourcing included Open Biblio, Walai Auto Lib, LM, Jindamanee, Digital Librarians, and BU Cat.

Studies have shown that positive attitudes toward ICT use and implementation, coupled with ICT knowledge and training among library staff, positively influence ICT adoption (Eguavoen, 2011). Al-adaileh (2009) proposed and validated an information system evaluation model through a study assessing information systems' success within the Jordanian telecom group. The model comprised five constructs: Information Quality (IQ), Perceived Ease of Use (PEOU), Perceived Usefulness (PU), User Technical Capabilities (UTC), Management Support (MS), and Users' perception of IS success. Analysis revealed that perceived usefulness, user technical capability, information quality, and management support significantly predicted IS success in Jordanian telecommunication companies.

The KOHA system software was evaluated at the Bowen University, Iwo, Osun State, considering only the systems' quality and users' satisfaction, results indicate that all the fourteen (14) library staff who participated in the study were happy with the system and would recommend it to other libraries (Otunla & Akanmu-Adeyemo, 2010). Tsai et al. (2009) evaluated the information systems success of enterprise resource planning (ERP)'s implementation in Taiwan's industries using Delone-McLean (D&M) information system success model. The study measured services quality provided by ERP system vendor against system performance, the results showed that the Taiwanese enterprises using ERP have higher service quality support from ERP firms.

Alkhattabi, Neagu, and Cullen (2010) proposed a new framework to measure the content quality of e-learning systems. Linear regression was used to calculate the relative importance for each dimension inside the three quality factors which are intrinsic, contextual representation and accessibility information quality, and the relative importance for each factor in the overall quality. The study opined that the proposed framework could be used to provide a comprehensive indication of information quality in the context of e-learning systems and that it could be useful to e-learning systems designers, providers and users as it provides a comprehensive indication of the quality of information in such systems. The study concluded that it could claim that the effort to include every possible parameter and element leading to the assessment and proving, at a greater or smaller degree, of the efficiency, quality, and success of any information system model incorporates numerous aspects and is composite and complex. Meanwhile, the effectiveness of an institutional organization is improved by increasing the effectiveness of an organizational memory information system. This concept can be applied to the entire content of an information system, thus proving that the organizational memory information system can be effective, of quality and successful (Mamma, 2010).

Value added service has equally been established as a factor that determines information system success. Maquignaz and Miller (2004) investigated the impact of the changing information environment on the expectations of academic libraries in terms of the functionality of their integrated library management system (ILMS). This research found out that libraries still strategically rely on their ILMS vendors for their services and are adding functionality from their system vendors as it becomes available. "Add-on" systems (non ILMS) are being used to cater for the requirements of digital data but at this stage does not dominate. The partnership between academic libraries and their ILMS vendors seems strong – as long as these vendors can continue to add the required functionality.

Kiriyanant (2012) conducted an extensive survey of open source integrated library system in Thai university libraries in Bangkok and Pathumthani. The participants of the study were 38 directors/administrators of Thai academic libraries in Bangkok and Pathumthani. Questionnaire was used for data collection of the study with both closed and open-end questions, asking whether library automation was used in the respondents' organization, which integrated library system (ILS) products were used (commercial/proprietary ILS, in-house developed system by internal IT staff or by outsourcing, open source ILS developed by others and customized to fit the organization's needs and so on).

Basua *et al*. (2002) surveyed the impact of organizational commitment, senior management involvement, and team involvement on strategic information systems planning, drawing data from 105 corporate information systems planners. Their study indicated that senior management involvement positively predicted the achievement of objectives, whereas organizational commitment displayed an Inverted-U relationship. Generally, these factors—organizational commitment, senior management involvement, and team involvement—are expected to positively influence the achievement of strategic information systems planning (SISP) objectives. However, excessive planning might have detrimental effects, a factor planners should be wary of.

Syaifullah (2014) investigated the correlation between organizational commitment and the quality of accounting information systems. The study aimed to assess the impact of organizational commitment on the quality of accounting information systems and hypothesized a significant relationship between the two. Findings revealed a significant positive effect of organizational commitment on the quality of accounting information systems.

Stockdale, Borovicka, and Innsbrck (2006) conducted a study on the website quality of tourism companies in Austria. They designed a website evaluation instrument derived from quality dimensions within an existing information system e-commerce success model. The instrument, tested on typical tourism websites, aimed to assist travel industry players in identifying website quality.

Tsai *et al*. (2009) surveyed Taiwanese firms focusing on implementing packaged Enterprise Resource Planning Systems (ERPS). Using the DeLone and McLean (D&M) Model of information systems success, they aimed to evaluate information system performance and measure service quality provided by ERP system vendors and consultants. Results indicated that enterprises with higher service quality from

ERP system vendors and consultants showed better performance in ERP implementation. This raises questions about whether a similar emphasis on service quality applies to ILMS use in Nigerian university libraries.

Ayankola (2012) conducted a survey on the challenges and frustrations of software adoption in Nigerian libraries, administered through questionnaires across academic, research, and seminary libraries. The findings highlighted a shift towards in-house development of new software due to reasons like inadequate funding, maintenance challenges, lack of skilled manpower, power failures, data loss/system crashes, poor management, and vendor inadequacy, all contributing to the failures of previously adopted systems. The study expressed hope for a future with fewer frustrations in software adoption, envisioning a problem-free era for libraries.

Research Methodology

The survey design was adopted in this study due to the nature of its subject and as it is the most appropriate design tool to obtain a large sample (Babbie, 2013). The population of the study included twenty-eight (28) systems librarians and five hundred and fifty-eight (558) librarians in the twenty-eight (28) Nigerian university libraries selected for this study. The three categories of universities in Nigeria viz; federal, state and private universities were included in the study. They were fifteen (15) federal government owned universities, six (6) state government owned universities and seven (7) private owned universities. The yardstick for the selection of these universities was based on evidence of having implemented an ILMS-Integrated Library Management System since the aim of the study was to determine adoption factors and usage evaluation of integrated library management systems in Nigerian university libraries. Due to the small number of librarians in the selected universities, this study adopted total enumeration sampling technique. The sample size for this study was five hundred and fifty-eight (558) and the breakdown is represented in Table 1. This sample size was the whole representation of librarians in the twenty-eight (28) universities that have implemented ILMS.

Table 1: Selected Universities, Year Founded, ILS/LMS Software in use, Study Population/Number of Librarians

S/n	University	Year founded	ILS/LMS software in use	Study population of Librarians/Sample Size
1	University of Ibadan, Ibadan	1948	Visionary Technology in Library Solution (VIRTUA)	32
2	University of Nigeria, Nsukka	1960	KOHA	61
3	Ahmadu Bello University, Zaria	1962	VIRTUA	118
4	Obafemi Awolowo University, Ile-Ife	1962	VIRTUA	23
5	University of Lagos, Lagos	1962	Millennium	18
6	University of Ilorin, Ilorin	1975	KOHA	11
7	University of Jos, Jos	1975	VIRTUA, ITS, KOHA	26

8	University of Port-Harcourt, Port-Harcout	1975	VIRTUA	23
9	Federal University of Technology, Owerri	1980	KOHA	15
10	Federal University of Technology, Akure	1981	Strategic Library Automation Management (SLAM)	12
11	Nigerian Defense Academy, Kaduna	1985	Liberty	13
12	University of Agriculture, Makurdi.	1988	KOHA	25
13	Michael Okpara Uni. Of Agric., Umudike	1992	CDS ISIS	10
14	Nnamdi Azikiwe University, Awka	1992	KOHA	18
15	Nigerian Police Academy, Wudil, Kano	2012	KOHA	4
16	Lagos State University, Ojo, Lagos.	1983	Alice for Window	15
17	Ekiti State University, Ado Ekiti	1988	Strategic Library Automation Management (SLAM)	14
18	Ladoke Akintola University of Technology, Ogbomoso	1990	KOHA	15
19	Benue State University, Markudi	1992	KOHA	20
20	Adekunle Ajasin University, Akungba.	1999	SLAM	5
21	Kogi State University Anyigba	1999	SLAM	12
22	Babcock University, Ilishan-Remo	1999	KOHA	10
23	Bowen University, Iwo	2001	KOHA	10
24	Covenant University, Ota	2002	Millennium	19
25	American University of Nigeria, Yola	2005	Greenstone	11
26	Redeemer's University, Ede	2005	KOHA	10
27	Adeleke University, Ede	2011	KOHA	4
28	Landmark University, Omu-Aran.	2011	Millennium	4
			Total	**558**

Sources:
1. University names and years founded
http://www.nuc.edu.ng/pages/universities.asp?ty=1&order=inst_name&page=2

2. ILS/LMS software in use and study population.
Field Survey (January, 2015)

This study adopted the quantitative method for data gathering. Data collection instrument used was questionnaire. In order to ensure the content validity of the instruments used in this study, a pretest was conducted. The ILMS usage evaluation survey instrument was tested in its entirety r = 0.93 and the sub-scales of the instrument were tested independently. The reliability of each factor was as follows: ILMS System Quality, r = 0.82; Content Quality, r = 0.76; System Support Quality, r = 0.91; Library Preparedness r = 0.72; Self-Regulated Learning, r = 0.81; Librarians' Satisfaction r = 0.9 and Net Benefits, r = 0.95.

Data Presentation, Analysis and Discussion

Out of the total five hundred and fifty-eight (558) questionnaires distributed, only three hundred and ninety-four (394) were completed and deemed suitable for data analysis, accounting for 70.6%. Consequently, the subsequent analysis is based on the 394 responses. For the analysis, the responses of "strongly agree" and "agree" were combined as "strongly agree," while "disagree" and "strongly disagree" were combined as "strongly disagree." The mean score of these combined responses is presented in the eighth column of the analysis.

Research Question 1: what is the quality of ILMS systems used in university libraries in Nigeria?

Table 2: Integrated Library Management System Quality

S/N	Question items	SA	A	U	D	SD	$\bar{x}$
1	Integrated library management system in my library is easy to use	135 (36%)	245 (62.2%)	1 (0.3%)	5 (1.3%)	1 (0.3%)	1.05
2	Integrated library management system in my library is user-friendly	132 (33.5%)	252 (64%)	1 (0.3%)	8 (2%)	1 (0.3%)	1.07
3	Integrated library management system in my library provides interactive features between users and system	107 (27%)	262 (66.5%)	4 (1%)	17 (%)	4 (1%)	1.16
4	Integrated library management system in my library provides high-speed access to Information	124 (31.5%)	241 (61.2%)	5 (%)	22 (5.6%)	2 (0.5%)	1.19
5	Integrated library management system in my library enables me to accomplish tasks more quickly.	122 (31%)	247 (62.7%)	6 (1.5%)	18 (4.6%)	1 (0.3%)	1.15
6	Integrated library management in my	88 (22.3%)	252 (64%)	14 (3.6%)	32 (8.1%)	8 (2%)	1.31

	library is robust						
7	Integrated library management in my library is well integrated and reduce duplication of actions	116 (29.4%)	237 (60.2%)	7 (1.8%)	28 (7.1%)	6 (1.5%)	1.26
8	Integrated library management in my library is customized to suit in-house purposes	88 (22.3%)	260 (66%)	4 (1%)	33 (8.4%)	9 (2.3%)	1.32

Source:

In Table 2, the responses aimed at evaluating the quality of integrated library management systems (ILMS) in Nigerian university libraries are presented through eight question items. The findings revealed that a high percentage of respondents expressed positive views across various aspects: 98.2% found the ILMS easy to use, 97.5% considered them user-friendly, 93.5% found the systems to be interactive, 92.7% acknowledged high-speed access to information, 93.7% noted a high rate of task accomplishment, 86.3% agreed on the systems' robustness, 89.6% recognized their integration and reduced duplication of actions, and finally, 88.3% acknowledged that the ILMS in Nigerian university libraries were customized to present the required features and local contents. The implications drawn from the results in Table 2 suggest that the ILMS currently adopted and utilized in Nigerian university libraries were of commendable quality. All system quality indices used in this study received over 80% agreement from respondents, indicating a positive overall assessment of the systems' quality and functionality.

Research Question 2: what is the content quality of ILMS systems used in university libraries in Nigeria?

Table 3: Integrated Library Management System (ILMS) Content Quality

S/N	Question items	SA	A	U	D	SD	$\bar{x}$
1	The content of the integrated library management system in my library is presented in a useful format	118 (29.9%)	263 (66.8%)	3 (0.8%)	8 (2%)	2 (0.5%)	1.07
2	Integrated library management system in my library provides up-to-date information	113 (28.7%)	257 (65.2%)	5 (1.3%)	16 (4.1%)	3 (0.8%)	1.15
3	Integrated library management system in my library provides content/information that seems to be exactly what I need in carrying out my routine.	88 (22.3%)	279 (70.8%)	5 (1.3%)	19 (4.8%)	2 (0.5%)	1.16
4	Integrated library management system in my library provides content/information relevant to my routine.	95 (24.1%)	274 (69.5%)	2 (0.5%)	19 (4.8%)	4 (1%)	1.18

The assessment of the ILMS content in Nigerian university libraries involved respondents rating it based on four key questions. Results indicated a strong agreement across all aspects, as depicted in the table. Respondents largely agreed that the information and content of the ILMS met specific criteria: the content was presented in a useful format (96.7%), maintained up-to-date information (93.9%), accurately aligned with user requests (93.1%), and remained relevant to user routines (93.6%). These findings imply that the content and information within the ILMS of Nigerian university libraries were deemed of high quality. The strong consensus among respondents toward these aspects suggests a positive assessment of the content's utility, accuracy, and relevance, reflecting the overall quality of the ILMS content.

Research Question 3: what is the quality of support services provided for the use of ILMS systems in university libraries in Nigeria?

Table 4: Integrated Library Management System (ILMS) Support Service Quality

S/N	Question items	SA	A	U	D	SD	$\bar{x}$
1	The HELP feature in the ILMS adequately provides answers to FAQs (Frequently Asked Questions)	65 (16.5%)	296 (75%)	8 (2%)	20 (5.1%)	5 (1.3%)	1.19
2	The IT department/systems unit support Staff members are always available for consultation.	134 (34%)	237 (60%)	2 (0.5%)	21 (5.3%)	-	1.16
3	The IT department/systems unit support staff provides satisfactory support to use of integrated library management system in my library.	133 (33.8%)	236 (59.9%)	4 (1%)	21 (5.3%)	-	1.16
4	Technical support team provides after sale services	63 (16%)	254 (64.5%)	19 (4.8%)	53 (13.5%)	5 (1.3%)	1.46
5	Technical support team's after sale service is reliable	69 (17.5%)	249 (63.2%)	21 (5.3%)	49 (12.4%)	6 (1.5%)	1.44
6	Technical support team's after sale service is sufficient	61 (15.5%)	244 (61.9%)	20 (5.1%)	58 (14.7%)	11 (2.8%)	1.55
7	Technical support team are competent	80 (20.3%)	273 (69.3%)	12 (3%)	27 (6.9%)	2 (0.5%)	1.22
8	Technical support team usually shows empathy	54 (13.7%)	284 (72.1%)	16 (4.1%)	35 (8.9%)	5 (1.3%)	1.31

The analysis for Research Question 3 aimed to evaluate the quality of support services provided by either the ILMS companies or the technical support teams within the university or university library for the system users. The breakdown in Table 4 demonstrated favorable responses across various support aspects: the ILMS's help feature adequately addressed FAQs (91.5%), the IT department/systems unit support staff were consistently available for consultation (94%), they provided satisfactory support for ILMS use (93.7%), the technical support team offered after-sale services (80.5%), their after-sale service was deemed reliable (80.7%), sufficient (77.4%), and the technical support team was perceived as competent (89.6%) and empathetic (85.8%) when handling queries from librarians. Hence, these findings suggest that the support services related to ILMS in Nigerian university libraries were of good quality.

The positive responses across various support dimensions indicate that the support mechanisms provided by both ILMS companies and internal technical support teams were well-received and perceived to be effective and reliable by the system users.

Research Question 4: How are Librarians self-regulating their learning to use ILMS in Nigerian university libraries?

Table 5: Librarians' Self-regulated learning using Integrated Library Management System (ILMS)

S/N	Question items	SA	A	U	D	SD	$\bar{x}$
1	I am aware of how the integrated library management in use in this library works prior to the adoption by the library	75 (19%)	187 (47.5%)	6 (1.5%)	108 (27.4%)	18 (4.6%)	1.97
2	I have planned and carried out self-observation of how the system works prior to its adoption by the library	41 (10.4%)	206 (52.3%)	11 (2.8%)	121 (30.7%)	15 (3.8%)	2.06
3	Using the system, I have learned how to help myself in troubleshooting of problems without having to involve the help of IT department/systems unit support staff	61 (15.5%)	255 (64.7%)	8 (2%)	58 (14.7%)	12 (3%)	1.54
4	I have learn to use the HELP feature in the ILMS to solve problems rather than relying on the tech team	53 (13.5%)	252 (64%)	13 (3.3%)	64 (16.2%)	12 (3%)	1.59
5	Using self-regulated learning is assisting me in solving problems associated with our ILMS has been successful in most cases	54 (13.7%)	280 (71.1%)	10 (2.5%)	41 (10.4%)	9 (2.3%)	1.39

Table 5 presented the results for research question 4. The percentage scores showed that Librarians were aware of how the ILMS works before adoption (66.5%) and had planned and carried out self-observation of how the system works prior to its adoption by their libraries (62.7%). Equally, Librarians had learned how to help themselves in troubleshooting of problems without having to involve the help of IT department/systems unit support staff (80.2%), they learnt to use the HELP feature in the ILMS to solve problems rather than relying on the technical team (77.5%) and using self-regulated learning is assisting them in solving problems associated with their ILMS and had been successful in most cases (84.8%). It was evident from results obtained from the table 5 that awareness level of librarians about the available ILMS, how they work and knowledge about pertinent features was high among librarians. Librarians do carry out self-observation of how the systems work before they were adopted by their libraries. Librarians have equally learn how to help themselves solve challenges that might arise from their use of the systems without having to rely on the systems unit support staff by using HELP features in the systems and success had been recorded using self-regulated learning by librarians.

Research Question 5: What is the level of preparedness by libraries to successfully implement ILMS in Nigerian university libraries?

Table 6: Library Preparedness for Adoption and Usage of Integrated Library Management System (ILMS)

S/N	Question items	SA	A	U	D	SD	$\bar{x}$
1	The IT infrastructure in the library was adequate before adoption of ILMS	93 (23.6%)	204 (51.8%)	5 (1.3%)	75 (19%)	17 (4.3%)	1.71
2	Skills and capacity building was adequate was adequate before adoption of ILMS	63 (16%)	235 (59.6%)	5 (1.3%)	80 (20.3%)	11 (2.8%)	1.7
3	Building space was adequate to house the ILMS equipment before adoption	92 (23.4%)	238 (60.4%)	8 (2%)	44 (11.2%)	12 (3%)	1.43
4	Funding of IT projects was adequate before adoption of ILMS	38 (9.6%)	142 (36%)	5 (1.3%)	188 (47.7%)	21 (5.3%)	2.61
5	Risk factor (i.e. preparation for substitute in case the adopted ILMS crashes) was considered and planned for.	38 (9.6%)	119 (30.2%)	5 (1.3%)	202 (51.3%)	30 (7.6%)	2.78

In Table 6, the results for Research Question 5 were presented. The data in Table 19 indicated that funding of IT projects and risk factors received less favorable responses, with 53% and 58.9% disagreement, respectively. This suggests that more than half of the respondents disagreed with the adequacy of preparation concerning funding for IT projects and planning for potential risks, such as preparation for substitutes in case the adopted ILMS encounters issues. On the contrary, other aspects measuring library preparedness yielded positive responses. Specifically, IT infrastructure received agreement from 75.4% of respondents, skill and capacity building obtained a 75.6% agreement, and building space garnered an 83.8% agreement. These positive responses were measured on a scale from 5 (strongly agreed) to 1 (strongly disagreed). The implication of these findings indicates that libraries had generally prepared well before adopting the current systems. However, there were shortcomings in planning for continuous funding and risk preparedness. This suggests the need for more robust strategies to address ongoing financial support and comprehensive risk management in the context of ILMS adoption in Nigerian university libraries.

Research Question 6: how satisfied with the use of ILMS in Nigerian university libraries by librarians?

Table 7: Librarians Satisfaction with Integrated Library Management System (ILMS)

S/N	Question items	SA	A	U	D	SD	$\bar{x}$
1	The system meets our library's ILMS adoption requirements.	111 (28.2%)	250 (63.5%)	5 (1.3%)	23 (5.8%)	5 (1.3%)	1.22
2	We are satisfied with the system's efficiency considering its technological qualities.	75 (19%)	269 (68.3%)	7 (1.8%)	35 (8.9%)	8 (2%)	1.33
3	We are satisfied with the system's effectiveness considering its	79 (20.1%)	259 (65.7%)	8 (2%)	42 (10.7%)	6 (1.5%)	1.37

	technological qualities.						
4	The system meets the library's ILMS adoption expectations considering its technological qualities.	84 (21.3%)	248 (62.9%)	11 (2.8%)	42 (10.7%)	9 (2.3%)	1.39
5	The system is sustainable in the library considering its technological qualities.	84 (21.3%)	259 (65.7%)	12 (3%)	31 (%)	8 (2%)	1.3
6	We are satisfied with the system's adoption and usage.	86 (21.8%)	251 (63.7%)	11 (2.8%)	33 (8.4%)	13 (3.3%)	1.35

In Table 7, the results for Research Question 6 indicated that all the items used to measure this question scored above 80% when combining "Strongly agreed" and "Agreed" responses. The findings showed high agreement levels across various aspects: the systems met the ILMS adoption requirements of the libraries (85.7%), librarians were satisfied with the systems' efficiency (87.3%) and effectiveness (85.8%), the systems met the expectations of librarians (84.2%), they were deemed sustainable (87%), and librarians were satisfied with the systems' overall performance (85.5%). In summary, the usage of these systems has greatly satisfied the librarians, effectively addressing and fulfilling their needs. These results provide a clear and affirmative response to Research Question 6.

Research Question 7: What are the benefits of ILMS to university libraries in Nigeria?

Table 8: System Benefits of Integrated Library Management System (ILMS)

S/N	Question items	SA	A	U	D	SD	$\bar{x}$
1	The ILMS has increased the library services' efficiency	109 (27.7%)	261 (66.2%)	4 (1%)	19 (4.8%)	1 (0.3%)	1.15
2	Using the ILMS has been profitable in the sense that it has helped cut back expenses that might have arisen from system failure or malfunction	79 (20.1%)	265 (67.3%)	12 (3%)	34 (8.6%)	4 (1%)	1.29
3	The value of the library as regards its services within the academic environment its serving has been improved	97 (24.6%)	266 (67.5%)	5 (1.3%)	24 (6.1%)	2 (0.5%)	1.2
4	The library is better rated in automation among other university libraries due to the adoption and use of the system	102 (25.9%)	255 (64.7%)	8 (2%)	25 (6.3%)	4 (1%)	1.22

5	The overall library performance has improved using the system	96 (24.4%)	262 (66.5%)	6 (1.5%)	26 (6.6%)	4 (1%)	1.23

For an information systems usage to be successful, it must have certain benefits that are being derived from its use. The system benefit of ILMS in Nigerian university libraries was the dependent variable of the usage evaluation aspect of this study. It was assumed that if the system is beneficial to the libraries, then the system was successful. Table 8 indicated that ILMS use has increased the library services' efficiency (93.9%), cut back expenses (87.4%) since the libraries were no more requiring to fund a new ILMS adoption process overtime, improved the libraries' value (92.1%) among their users, made it possible for the libraries to be better rated (90.6%) and improved the overall performance of the libraries (90.9%). Thus, it was evident from the result of table 8 that ILMS in Nigerian university libraries were beneficial to them and were successful.

Discussion of the Findings

Quality of ILMS in Nigerian University Libraries

The objective was to assess the quality of the ILMS adopted by university libraries and their correlation with the systems' net benefits. Research Question 1 revealed that the ILMS were of high quality, and their system qualities significantly correlated with the net benefits derived from these systems. This finding aligns with Tella's (2009) study on course content management systems at the University of Botswana, which also highlighted that system quality is a key predictor of system success.

These results are consistent with Otunla and Akanmu-Adeyemo's (2010) findings regarding the KOHA ILS at Babcock University, emphasizing that the quality of ILMS or any information system in the library must be robust. Essentially, these outcomes underscore the critical importance of system quality in information system evaluations within the field of librarianship. Ignoring or neglecting this variable could render any information system evaluation study in librarianship ineffective or unreliable..

Content quality and net benefits of ILMS in Nigerian university libraries

The objective aimed to assess the content quality of ILMS in Nigerian university libraries from the perspectives of librarians. The results indicated that the ILMS content was presented in a useful format, regularly updated, accurately aligned with user requests, and relevant to users' routines. This suggests that, akin to the overall system quality, the content of these systems is of high quality. These findings align with those from a study on WebCT at the University of Botswana by Tella (2009), emphasizing the importance of content quality in information system evaluations. Alkhattabi, Neagu, and Cullen (2010) also highlighted the significance of content quality in information system evaluations, a notion supported by this study's findings, which underscored content quality as a crucial factor in evaluating ILMS effectively.

ILMS support service quality in Nigerian university libraries

The objective was to determine the quality of support services provided for ILMS in university libraries. There upon, the research question two was set to fulfill this determination. Findings show evidence that ILMS support services by vendors/software developers and that of the technical team of the libraries is qualitative. The systems do come with an HELP feature that answers users' frequently asked questions (FAQs), IT staff of the library are always available to help. The support staff intervention is always satisfactory; there is usually provision of an adequate, reliable, sufficient, complete and an accenting after sale service.

What these findings amount to be is that ILMS support services in Nigerian university libraries is of good quality. This study supports the opinion of Maquignaz and Miller (2004) that value added service from ILMS vendors is very important to successful implementation. It is equally in consonance with Tsai et al. (2009) and Tella (2009) both who found out that Taiwanese enterprises have higher service quality support in enterprise resource planning system (ERPS) and university of Botswana having high WebCT CCMSS support service quality. This result has negated some some conclusions that service qualities were poor (Kiriyanant, 2012). this serves as encouragement to other libraries to reenact their ILMS adoption desire.

Librarians' self-regulated learning effect on use of ILMS

The aim of the objective was to determine how Librarians self regulates their learning. It was shown that Librarians put self-regulated learning to practice when using ILMS and it shown positive effect on use. They device the means to achieve this by familiarizing themselves with the systems components and programmes by reading, attending conferences, workshops etc these ensured that they are aware of how the system works before adoption by their respective libraries, self-observed it, help themselves troubleshooting problems and challenges arising from use, limiting reliance on technical support and using the HELP feature to answer particularly FAQs. Self-regulated learning assists the Librarians in their quest to put ILMS to good use. The result is in consonance with Tella (2009) who found that self-regulated learning among students at the University of Botswana correlates with net benefits of WebCT CCMSS.

Preparedness and successful implementation of ILMS in Nigerian University Libraries

The objective was to determine the preparedness level of the university libraries in Nigeria to implement ILMS successfully. Results indicated that there is prior preparation such as building facilities, space for information systems equipment and as well as infrastructures to kick-start adoption by various libraries. However, continuous funding and risk factor (in case the adopted ILMS develops fault) were not adequately catered for in the preparation. Basua *et al*. (2002) believed that organizational factors should have positive impact on information system, and Syaifullah (2014) found out that organizational commitment has significant positive effect on the success of accounting information system. These two evidences confirm the importance of preparedness by organization on achievement of successful implementation of information system. This indicated that libraries still need to do more to ensure that adequate preparations are on ground before adoption of ILMS. As revealed in the background to the study, Okiy (1998) and Ayankola (2012) both

reported failure in the adoption of library software in Nigerian libraries which both have equally tied to the shoddy preparation by libraries.

Librarians satisfaction with ILMS and relationship with net benefits

This objective was to investigate whether Librarians are satisfied with ILMS use in university libraries in Nigeria. Findings reveal overwhelming satisfaction with ILMS by Librarians Since the Librarians have positive disposition to system, content and support service qualities, library preparedness and self-regulated learning, it is not strange that they are satisfy with the system. This finding is in line with Eguavoen (2011) who concluded that if library staff have positive attitude towards implementation of ICT, knowledge of ICT and training, it will aid usage of ICT positively. Librarians in university libraries in Nigeria demonstrated that they have absolute satisfaction using the ILMS. This indicates that the systems met adoption objectives and is in consonance with what was found by Tella (2009) on WebCT evaluation in University of Botswana that the students are satisfied with WebCT use and that the higher the satisfaction towards individual components of the WebCT system- system efficiency, dependability, accuracy, usefulness, responsibility content and format of the output of the system- the higher the overall satisfaction towards the system.

Systems benefits of ILMS in Nigerian University Libraries

The objective was to investigate the benefits derived from ILMS use in Nigerian university libraries since the ultimate aim is to ensure whether ILMS adoption in Nigerian university libraries is successful or otherwise. Findings revealed that majority of the respondents agreed that the ILMS in Nigerian university libraries are of high benefit to them judging by increase in the library services' efficiency, cutting back expenses that might have arisen from system failure or malfunction thereby increasing profitability of the library, improvement in the library's value as regards its services within the academic environment its serving, improvement in the competitive advantage as the library is better rated in automation among other university libraries and improvement in the overall library performance.

In consonance with the findings on system benefits of ILMS, Stockdale, Borovicka and Innsbrck (2006) found quality dimensions (system, information, support services quality) supports e-commerce success in tourism in Austria. As well, Shah and Siddiqui (2006) equally reported that Woolwich bank in United Kingdom found the adoption of information system innovations in electronic banking successful. Factors adduced to this are understanding customers, organizational flexibility, availability of resources, system security, established brand name, having multiple integrated channels, e-channel specific marketing, systems integration, systematic change in management, support from Top Management and good customer services. Al-adaileh (2009) also in tandem to the net benefits predictors reported that perceived usefulness, user's technical capability, information quality and Management support were the very important and good predictors of information system success in telecommunication companies in Jordan.

Conclusion and Recommendations

All libraries adopt ILMS to automate previously manual routines and ensure swift, accurate information management. However, the process of adopting and evaluating ILMS demands proper documentation. This study concluded that in Nigerian university libraries, ILMS systems, their content, and support services are of high quality, ultimately achieving net benefits from ILMS adoption. Additionally, librarians autonomously regulated their learning to utilize ILMS effectively, familiarizing themselves with the systems before their adoption.

While library preparedness for successful ILMS implementation in Nigerian university libraries was generally adequate, areas such as funding and risk factors require improvement. Librarians expressed satisfaction with ILMS usage, highlighting its overall benefits to the university libraries.

Based on these findings, the following recommendations were proposed:

1. Uphold and advance the attained quality of ILMS without compromise. Benchmarking with ILMS in developed country universities can aid in this improvement.
2. Enhance ILMS content to include control vocabularies pertinent to librarianship, ensuring user-friendly commands.
3. Improve support services for ILMS usage, ensuring consistent availability of ILMS support staff to address technical faults promptly.
4. Increase access points and computer nodes to facilitate the comprehensive use and integration of various ILMS modules in different units.
5. Enhance the presentation of content output to make it more appealing and comprehensible, encouraging wider adoption and use of the systems.
6. Align IT infrastructure upgrades and maintenance with ILMS integration, ensuring better access to computers within libraries.
7. Increase bandwidth in university libraries to optimize system speed and performance, addressing challenges in utilizing information system facilities. Collaboration between the IT department and the university is essential for resolving this issue effectively.

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