Evidence Based Library and Information Practice

Evaluation of Integrated Library System (ILS) Use in University Libraries in Nigeria: An Empirical Study of Adoption, Performance, Achievements, and Shortcomings

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Résumé de l'article

Objective - The aim of this study was to evaluate Integrated Library System (ILS) use in university libraries in Nigeria in terms of their adoption, performance, achievements, and shortcomings and to propose a rigorous model for ongoing evaluation based on use of candidate variables (CVs) derived from the approach used by Hamilton and Chervany (1981) and from evaluation criteria suggested by Farajpahlou (1999, 2002).

Methods - The study adopted a descriptive survey design. Nigeria is made up of six geo-political zones including: North-East (NE), North-West (NW), North-Central (NC), South-South (SS), South-East (SE), and South-West (SW). The population for this study comprised Systems/IT and E-librarians in the university libraries from all six of the geo-political zones of Nigeria. Because of the large number of universities in each of the zones in Nigeria, a convenience sampling method was used to select six universities representing federal, state, and private institutions from each of the six geo-political zones of Nigeria. A purposive sampling method was used to select the Systems/IT and E-librarians who were directly in charge of ILS in their various libraries. Therefore, the sample for this study was made up of 36 Systems/IT and E-librarians from the 36 selected universities in Nigeria. The instrument used to elicit responses from the respondents was an online questionnaire and was distributed through the respondents' email boxes and WhatsApp. The questionnaire administration received a 100% response rate.

Results - Findings revealed that university libraries in Nigeria have made remarkable progress in the adoption and use of ILS for library services. The findings also showed that much has been achieved in the use of ILS in library services. Evidence in the study indicated that the performance of the ILS adopted in the selected university libraries in the area of data entry and currency, accuracy, reliability, completeness, flexibility, ease of use, and timeliness was encouraging.

Conclusions - Adoption and use of ILS in libraries is changing the way libraries deliver services to their patrons. Traditional methods of service delivery are different from the expectations of the 21st century library patrons. The transformation seen in the university libraries in Nigeria using ILS was tremendous and is changing the narratives of the past. However, several shortcomings still exist in the adoption and use of ILS in university libraries in Nigeria. Overcoming some of the limitations would require a conscious effort and decisiveness to ensure that librarians and library patrons enjoy the best services that ILS can offer. ILS developers should consider the dynamic needs of libraries and their patrons and incorporate specific candidate variables (CVs) in their ILS designs to enhance the quality of the services being offered to the library patrons.

Evidence Based Library and Information Practice

Research Article

Evaluation of Integrated Library System (ILS) Use in University Libraries in Nigeria: An Empirical Study of Adoption, Performance, Achievements, and Shortcomings

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Abstract

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Introduction

"Library and information science occupies a vantage position in the educational sector and plays a strategic role in national growth and development" (Shekarau, 2014). University libraries today are adopting Information and Communication Technologies (ICTs) to deliver information to their patrons. ICTs are playing a pivotal role in the way and manner in which information is being handled in the library. Before the use of ICT tools in libraries, traditional methods were employed to deliver most library services. Traditional library processes have been judged as unable to respond quickly enough in a technologically driven environment (Ayiah & Kumah, 2011). With a steady growth in library collections for various programs that are offered in the university, and the decentralization of library activities, it is essential to use an integrated library system that responds quickly to the needs of librarians and library patrons (Omeluzor, Adara, Madukoma, Bamidele & Umahi, 2012).

An ILS has been defined as "a series of interconnected operations that streamline input and retrieval of information for both information professionals and researchers" (Lucidea.com, n.d.). Since the concept of an ILS was first introduced by Harder in 1936, it has been developed and modified to suit different ideas and purposes in different sectors of the economy, for example, banking, marketing, and aviation among others. In the library, the term ILS has been used interchangeably for both mechanization and automation (Riaz, 1992). Singh (2013) defined library automation as the computerization of library records and functions, using computer hardware and software for tasks that may require a lot of paperwork and staff time. Singh (2013) noted that ILS is the use of computers, and associated technology, to do exactly what has been traditionally done in libraries with the justification of reducing cost or increasing performance. ILS enables adequate monitoring, controlling, service delivery, access to bibliographic records, collaboration among libraries, and enhanced access to information

materials irrespective of patrons' geographical locations (Omeluzor & Oyovwe-Tinuoye, 2016).

University libraries in Nigeria and other countries have increasingly used new tools such as ILS and methods for delivering information services to their patrons since the beginning of the 21ˢᵗ century (Sharma, 2009; Oladokun & Kolawole, 2018). However, in spite of the advances made in ILS adoption by Nigeria libraries, Ani (2007), Aguolu and Aguolu (2006) argued that libraries in Nigeria have been slow to adopt this level of automation and that most academic and research libraries in Nigeria had not computerized any of their functions. Studies such as Osaniyi (2010) and Omeluzor, et al. (2012) have also shown that some of the ILS adopted in Nigeria libraries are not performing optimally, impacting negatively on the libraries' achievements. It is against this backdrop that it becomes crucial to evaluate ILS adoption, performance, achievements, and shortcomings in Nigeria university libraries.

Although there have been many studies conducted that identify issues related to ILS in Nigeria university libraries, none have used a rigorous model for the evaluation. The use of appropriate candidate variables (CVs) and evaluation criteria may provide evidence of the performance of ILS that could support the decision for its adoption in library services. This study focusing on ILS adoption, performance, achievements, and shortcomings adapted Hamilton and Chervany's (1981) CVs approach to identify the performance features of ILS used in Nigeria university libraries.

Background

The use of ILS to automate or streamline library management, processes, and services is not a new phenomenon in developed countries. In developing countries, and especially Nigeria, ILS is gradually gaining momentum but not without some shortcomings. Over the last decade, a considerable number of ILS have been developed and deployed in libraries to facilitate

easier access to information. In Nigeria, efforts were made to adopt and use ILS in library services. Since the 1990s, when the World Bank in 1990 deployed management information system in some selected federal universities to improve institutional capacities of Nigeria universities, a considerable number of ILS have been developed and deployed in Nigeria university libraries to ease access to information. The intervention by the World Bank to deploy management information system included the deployment of unified ILS known as TINLIB for library automation. In addition, some federal university libraries in Nigeria, such as the University of Ibadan and University of Nigeria Nsukka Enugu Centre, among others, had adopted CD/ISIS, X-LIB, LIB+, GLASS, and Alice for Windows to provide library services. Similarly, several private university libraries have also adopted ILS for library services. For example, Bowen University, Iwo (BUI), and Babcock University (BU) libraries had at different times adopted Koha ILS for library services.

University libraries in Nigeria have adopted both proprietary and open source ILS. Proprietary ILS products have been available for many years and are characterized by expensive customized coding; these products have remained the dominant approach used for library automation (Uzomba et al, 2015). In contrast to proprietary ILS products, open source software (OSS) ILS products provide the original source code used in creating it, as well as the right of redistribution, which provides users the freedom to modify and customize them in order to suit one's own purposes. Conversely, a closed proprietary system limits the way the library can access the underlying data (Breeding, 2009). OSS is freely developed for the enhancement of routine library activities. OSS is available for anyone to have; not only is the software free, but it is also free for anyone to run, copy, distribute, study, change, improve, modify, and share for any purpose, thus enabling libraries to have greater control over their working environments (Kumar &

Jasimudeen, 2012). Whether the libraries have adopted either proprietary or open source ILS in Nigeria university libraries, there is evidence in the literature that challenges facing the adoption of ILS in Nigeria university libraries abound. However, few if any studies have focused on the adoption, achievements, performance, and shortcomings of ILS, which this present study tries to accomplish. The researcher believes that this study will contribute in developing a model for the evaluation of the adoption, achievements, performance, and shortcomings of ILS using the already proposed model by Hamilton and Chervany (1981) together with Farajpahlou's (1999, 2002) evaluation criteria for the evaluation of ILS in university libraries across the world. There are already numerous studies on the prospects, performance, successes and challenges of ILS adoption and use in university libraries, especially in developing nations (Osaniyi, 2010; Omeluzor, et al, 2012; Breeding, 2009; Uzomba, et al, 2015; Atua-Ntow, 2016). However, none of these studies have revealed the use of Hamilton and Chervany (1981) CVs to evaluate the capability of ILS in library services.

Aims

This study is aimed at designing a model that would be fundamental for evaluating the adoption, performance, achievements, and shortcomings of ILS in university libraries. It is guided by the following objectives, to:

1. Evaluate the extent of ILS adoption in Nigeria university libraries.
2. Evaluate the achievements made so far with ILS in Nigeria university libraries.
3. Evaluate the performance of ILS in library services in Nigeria university libraries.
4. Evaluate the shortcomings of ILS in Nigeria university libraries.

Literature Review

Evaluating ILS in Nigeria University Libraries

Hamilton and Chervany (1981) proposed an approach for the evaluation of management information systems (MIS) that involved the use of candidate variables (CVs) such as: data currency, accuracy, reliability and completeness, system flexibility, ease of use, response time, and turnaround time. Farajpahlou (1999) proposed the use of specific criteria for assessing the success of ILS. These criteria were in four broad categories including: management of the system, usage of the system, technicalities of the system, and boundary issues. Each of the criteria is found to be useful in this present study as together they present the basis for identifying the achievements, performance, and shortcomings of ILS in university libraries. Farajpahlou (2002) further emphasized that a successful automated library system would require pre-conditions such as a well-prepared automation plan and implementation program. Consistent evaluation of ILS is important to identify areas of improvement for effective services. Hill and Patterson (2013) noted that assessment could present challenges but is still worthwhile to undertake if the aim is to create and add value to that which is being assessed. Similarly, Okpokwasili and Blakes (2014) believe that assessments of ILS, library services, and resources need to be carried out on a continuous basis to ensure that they remain relevant to the needs of their patrons and stakeholders.

Omeluzor and Oyovwe-Tinuoye (2016) assessed the adoption and use of ILS for library services in university libraries in Edo and Delta States. A section of the instrument used for the study elicited information on the use, achievement, effectiveness, and challenges of ILS in academic libraries in the two states. Findings in the study revealed that the automation software adopted in some of the university libraries were effective

for accessing books, journals, and other library materials, as well as for bibliographic search and retrieval. Although the study presented some issues about use, achievement, effectiveness, and challenges, it did not focus on Hamilton and Chervany's (1981) CVs or Farajpahlou's (1999, 2002) criteria, which is a gap that this present study tries to bridge. Some studies (Akpokodje & Akpokodje, 2015; Ojedokun, Olla & Adigun, 2016) have shown one or two of the variables, such as adoption, achievements, performance or shortcomings. Surprisingly, none of these studies has tried to integrate Hamilton and Chervany's (1981) CVs which could have provided a clearer view of the performance and perhaps records of achievements and shortcomings of ILS in library services. A deliberate study, with a focus on CVs, could reveal some underlying attributes of ILS and the reasons for its adoption in library services.

Adoption of ILS in Nigeria University Libraries

Libraries in Nigeria have had their share of problems in the adoption of ILS. For example, the World Bank in collaboration with the National Universities Commission (NUC) in 1990 supported 20 federal universities in Nigeria with TINLIB automation software among other ICT tools for 20 participating libraries. The effort did not yield expected results since Sani and Tiamiyu (2005) in their evaluation of automated services in Nigerian universities found that the system fell short of some of the evaluation criteria and CVs proposed by Hamilton and Chervany (1981) and Farajpahlou (1999, 2002). Sani and Tiamiyu (2005) observed that the state of automated library services in the universities that were visited was haphazard, with the situation in state and private universities being particularly pathetic. This scenario may not be unconnected to lack of evaluation on the achievements, performance, and shortcomings of the ILS before adoption. Some laudable initiatives in the adoption of ILS for library services in Nigeria have failed in the last two decades due to lack of evaluation (Okiy, 1998; Nok, 2006; Osaniyi, 2010; Adegbore, 2010;

Omeluzor et al., 2012; Mbakwe & Ibegbulam, 2014). Aguolu, et al. (2006) reported the non-computerization of library functions in Nigeria university libraries. A study by Oladokun and Kolawole (2018) revealed that 35 libraries across the six geo-political zones of Nigeria had adopted Koha open source software. Findings in that study revealed that 13 (36%) of the respondents indicated lack of support from their institutions as a major reason for non-adoption of Koha in their libraries.

Shortcomings of ILS in Nigeria University Libraries

On the shortcomings of ILS in Nigeria university libraries, most of the studies focus on the challenges of the automation process, such as: technical problems, problems with retrospective conversion, non-availability of the software and vendors' attitudes, inadequate funding, lack of skill, inadequate ICT facilities, power supply, and others (Agboola, 2000; Sani & Tiamiyu, 2005; Osaniyi, 2010; Omeluzor, et al., 2012; Mbakwe & Ibegbula, 2014). No single research study has been conducted showing a step by step approach on the evaluation, performance, achievement, and shortcomings of ILS as portrayed in Figure 1, which perhaps would have shown evidence and criteria for its adoption in libraries. The pitfalls of adopting one ILS and switching over to another could perhaps be avoided if libraries adopt Hamilton and Chervany's CV (1981) and even Farajpahlou's (1999, 2002) evaluation criteria before adoption of ILS.

The model in Figure 1 proposes the evaluation of the performance, achievement, and shortcomings of ILS before adoption. The model is an expansion of Hamilton and Chervany CVs who in 1981 proposed evaluating only performance and achievement of MIS, including: accuracy, reliability, completeness, flexibility, ease of use, and timeliness excluding shortcomings. Emphasis in the model proposed by Hamilton and Chervany (1981) is primarily on the performance of information systems in
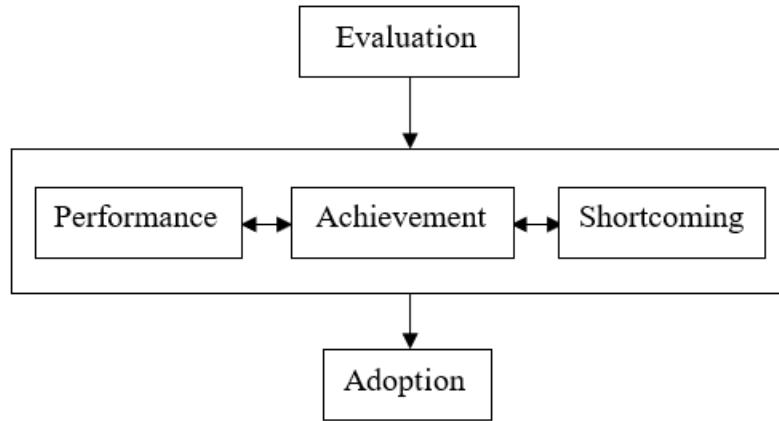
Figure 1
 A model for the evaluation of ILS in a university library

the delivery of services. An evaluation of the shortcomings of ILS as part of evaluation criteria would provide insights, helpful when making decisions about the adoption of ILS in university libraries in the future.

Methods

Research Approach

The study adopted a descriptive survey design. The adoption of descriptive survey design provides the researcher the opportunity of using data collected for this study for ILS evaluation using CVs in Nigeria University Libraries. According to Nworgu (2006) a descriptive survey design describes a condition or phenomenon as it exists naturally without manipulation.

Population

Nigeria is made up of six geo-political zones including: North-East (NE), North-West (NW), North-Central (NC), South-South (SS), South-East (SE), and South-West (SW). The population of this study comprised Systems/IT and E-librarians in the university libraries from all six geo-political zones of Nigeria. Since the aim of this study was to evaluate ILS, a purposive sampling method was used to select the

Systems/IT and E-librarians who are directly in-charge of ILS in their respective libraries. Because of the large number of universities in each of the zones in Nigeria, a convenience sampling method was used to select six universities, comprised of federal, state, and private universities, from each of the six geo-political zones of Nigeria, offering a good representative sample to achieve the purpose of this study. Therefore, the sample for this study is made up of 36 Systems/IT and E-librarians from the 36 selected universities in Nigeria as shown in Table 1.

Research Instrument Development

Based on the theoretical framework identified in the previous studies described above, the researcher developed a structured online questionnaire using a Google Online Form with five sections (see Appendix A) to provide answers to the questions raised on the evaluation of the adoption, performance, achievements, and shortcomings of ILS in Nigeria university libraries. Sections 3 and 5 of the instrument were adopted from Omeluzor et al. (2012) and Omeluzor & Oyovwe-Tinuoye (2016). The study by Omeluzor et al. (2012) reported the implementation of Koha ILS at Babcock University Library and the elements adopted are those that reveal the achievements

that were made with ILS such as: "provide on-the-spot access to resources," "enable sharing of resources with other libraries," "enable online cataloguing" and "provide access to books and external sources" (p. 218) that are relevant in this present study. On the other hand, Omeluzor and Oyovwe-Tinuoye (2016) assessed the adoption and use of ILS in academic libraries in Edo State and Delta State, Nigeria. The elements adopted from that study are those that show the shortcomings of adopting ILS such as: "inadequate training and technical knowhow for librarians," "cost of implementation," and "inadequate skilled personnel". The elements presented in both studies are limited to one private university library and academic libraries in Edo and Delta States. Using those elements in this present study provides more insight on how they affect the overall achievement and performance on the varied ILS adopted in Nigeria university libraries.

Section 4 of the instrument was adopted from Hamilton and Chervany (1981) CVs. The researcher found the CVs proposed in Hamilton and Chervany (1981) for the evaluation of MIS to be relevant in this present study, as it reveals the variables that should be considered for inclusion in the evaluation of ILS in the university library. The CVs that were identified from previous research studies as being relevant to the evaluation of ILS in library settings are: data entry and currency, accuracy, reliability, completeness, flexibility, ease of use, and timeliness. A 4-scale measuring instrument was used for sections 4 and 5 with 4 being the highest and 1 being the lowest.

Distribution and Data Collection

Before the administration of the questionnaire to the intended respondents, a pre-test was conducted to assess the reliability of the instrument on ten Systems/IT and E-Librarians working in public libraries, who were not part of the study. The 10 responses were retrieved and analysed using Cronbach Alpha correlation co-efficient at 0.50 level of acceptance which gave a

result of r =0.85. This indicates that the instrument is reliable and appropriate for data collection for this study since the test result is above the acceptance point of 0.50. Furthermore, the instrument was also examined by an ILS researcher to ensure content and construct validity. The questionnaire was then emailed to some of the respondents. Emailing the respondents directly eliminated the possibility of receiving responses from unintended respondents. However, because the researcher could not access all the respondents via email, the use of Nigeria Library Association (NLA) Online Forum, NLA IT Section and WhatsApp group became unavoidable. The use of the platforms was found by the researcher as an alternative to contact those respondents that could not be reached, since all of them are registered members. The responses received through those platforms were carefully sifted to eliminate double response from those respondents that were earlier contacted via email as well as from non-systems librarians. The Google response page was also very helpful in catching duplicate responses or any two respondents from the same university. The use of those platforms helped the researcher receive 100% of the responses needed to reach the goals of this study. The instrument elicited information on the ILS adopted, its achievements, performance level, and shortcomings. Data collected were analyzed using Statistical Package for Social Sciences (SPSS) version 7.0 and results are presented in frequency table, mean, standard deviation, chart, and percentage for clarity and understanding. In Tables 2 and 3 the mean scores are rated as follows: Mean is 0.1 to 1.9 = very low, 2.0 to 2.4 = low, 2.5 to 2.9 = high, 3.0 and above = very high.

Results

Demographic Information of the Respondents

Results show that 47% of the respondents with the role of Systems/IT and E-Librarians in university libraries in Nigeria are female and

Table 1a

State of ILS Adoption in University Libraries

University	ILS currently in use	ILS earlier used
Federal	Koha	Alice for Windows
Federal	Koha	VITRUAL
Federal	Koha	
Federal	Koha	Alexandria
Federal	Strategic Library Automation (SLAM)	
Federal	CDS ISIS	
Federal	Koha	
Federal	VIRTUA	
Federal	Koha	
Federal	New Gen Lib	SLAM
Federal	Readable	VIRTUAL, Alice for Windows
Federal	Koha	Alice for Windows
Federal		VIRTUAL
Federal	New Gen Lib	Millennium
Federal	Koha	GLASS, LIB+
Federal	Koha	VIRTUAL
State	SLAM	
State		
State	Koha	
State	Koha	X-Lib, SLAM
State		
State	Senayan LMS	SLAM
State		
State	Koha	
State	SLAM	
State	Alice for Windows	
State	Koha	
State	Koha	
State		
Private	Greenstone	
Private	Koha	X-Lib
Private	New Gen Lib	
Private	Koha	
Private	Millennium	
Private	Koha	
Private	Koha	

Table 1b
Type of ILS Used Earlier and Currently in Use in the Selected University Libraries

University	ILS currently in use		ILS used earlier	
	Open source ILS	Proprietary	Open source ILS	Proprietary
Federal	Koha			Alice for Windows
Federal	Koha			VITRUAL
Federal	Koha			
Federal	Koha			Alexandria
Federal		Strategic Library Automation (SLAM)		
Federal		CDS ISIS		
Federal	Koha			
Federal		VIRTUAL		
Federal	Koha			
Federal	New Gen Lib			SLAM
Federal		Readable		VIRTUAL, Alice for Windows
Federal	Koha			Alice for Windows
Federal				VIRTUAL
Federal	New Gen Lib			Millennium
Federal	Koha			GLASS, LIB+
Federal	Koha			VIRTUAL
State		SLAM		
State	Koha			
State	Koha			X-Lib, SLAM
State				
State	Senayan LMS (SLMS)			SLAM
State				
State	Koha			
State		SLAM		
State		Alice for Windows		
State	Koha			
State	Koha			
State				
State				
Private	Greenstone			
Private	Koha			X-Lib
Private	New Gen Lib			
Private	Koha			
Private		Millennium		
Private	Koha			
Private	Koha			

53% are male. The majority of the respondents (48%) have worked between 6-10 years. Another 24% of the respondents have worked between 1-5 years, and 20% of the respondents have worked between 11-15 years. Results also shows that a low percentage (8%) of the respondents have worked for 16 years or longer.

Research objective 1: Extent of ILS adoption in Nigeria university libraries*.*

Table 1a shows the state of ILS adoption in federal, state, and private university libraries in Nigeria (see full list of university libraries in this study in Appendix B).

Results in Table 1a show the ones adopted earlier as well as the ones in use in the various university libraries represented in this study. It is evident in Table 1a that the majority of the Nigeria university libraries have adopted ILS for the delivery of library services to their patrons. The results show that some libraries had adopted a different ILS before adopting the current one in use while for some libraries, the one currently in use is their first ILS. Results in Table 1a also show a shift from the adoption of proprietary ILS among the federal university libraries to open source ILS with 9 out of the 16 federal university libraries in this study using Koha ILS. This may be connected to the problems associated with the adoption and use of proprietary ILS. Results in Table 1a also show that only 10 federal university libraries, 2 state university libraries and 1 private university library out of the 36 libraries represented in this study had earlier adopted ILS while 23 of the libraries had none in use. However, results in Table 1a show some improvement on the extent of adoption of ILS as 31 of the libraries among the 36 in this study have adopted ILS with only 5 of the libraries that have none in use.

The results in Table 1b show the types of ILS that are adopted in university libraries in Nigeria. It is evident in Table 1b that all the libraries that started the use of ILS adopted only proprietary ILS since none of the libraries in this

study had open source ILS. This shows that in the past, Nigeria university libraries selected proprietary ILS more frequently than open source ILS, allowing the proprietary ILS to thrive despite research that reported its shortcomings. Results also show that out of the 36 libraries in this study, 8 libraries (4 federal, 3 state, and 1 private) are currently using proprietary ILS. Furthermore, results in Table 1b show that out of the 13 state university libraries, 4 are yet to adopt ILS for library services. It is interesting to note that federal libraries have predominantly changed systems in this study, while open source ILS was not initially adopted by any of the libraries. This means that the federal university libraries are at the forefront of adopting ILS in Nigeria than the state and private universities. The higher number of federal university libraries that adopted ILS may be the result of the effort made by the World Bank in collaboration with the National Universities Commission (NUC), which supported 20 federal universities in Nigeria with TINLIB automation software.

Research objective 2: Level of achievements with ILS in Nigeria university libraries

The results shown in Figure 2 demonstrate some strides that have been made by the university libraries in Nigeria with the use of ILS. The results indicate that out of the 36 respondents from the various libraries in this study, as shown in Appendix A, a majority or 30 of them specify that the ILS adopted at their various libraries provided on-the-spot access to resources for their patrons. Results shown in Figure 2 also suggest that adoption of ILS in university libraries in Nigeria enable sharing of information resources with other libraries as attested by 26 of the respondents. Others key results include the use of online cataloguing, accessing books and external sources, and making online instruction available for staff and students. The result shows that Nigeria university libraries are making progress in library services through the use of ILS. Perhaps this is also due to the increasing number of ILS
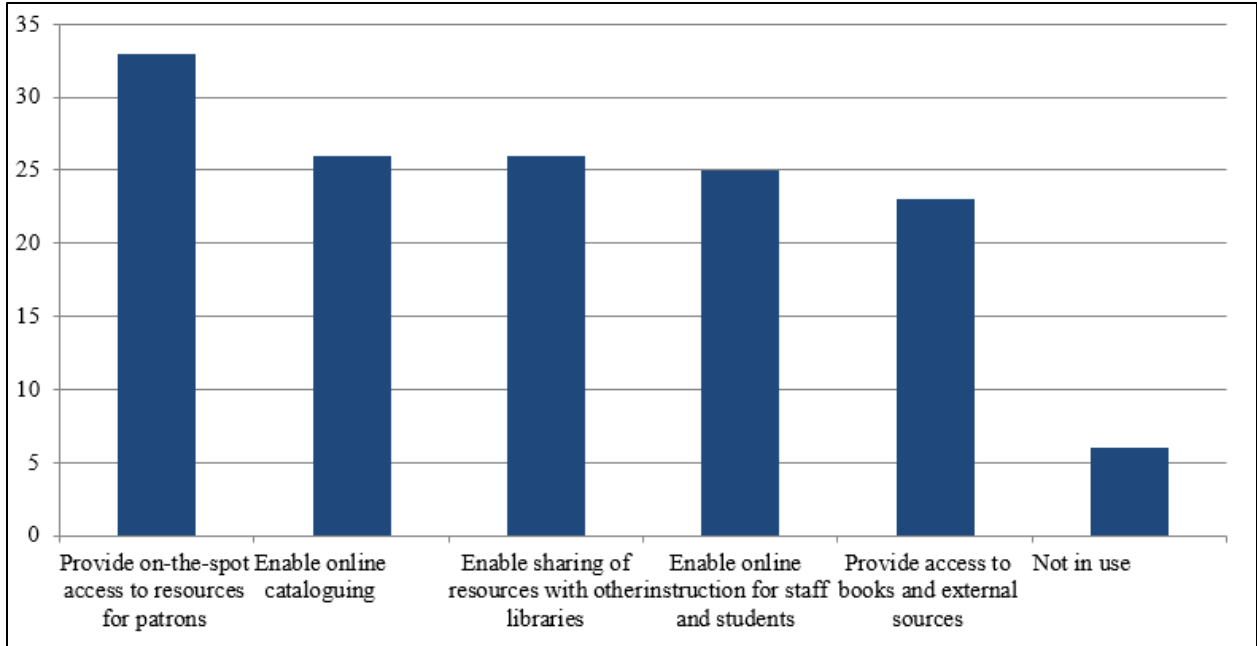
Figure 2
Achievements made with ILS in university libraries in Nigeria

Table 2
Performance of ILS in Library Services

Items	Minimum	Mean ($\overline{X}$)	Std. Deviation
Data entry and currency	3.00	4.55	0.55
Accuracy	4.00	4.66	0.47
Reliability and Completeness	3.00	4.33	0.67
Flexibility	4.00	4.66	0.47
Ease of use	3.00	4.38	0.72
Timeliness	1.00	4.27	0.84

that is now in use in the university libraries as shown in Table 1a.

Research objective 3: Performance of ILS in library services in Nigeria university libraries

In Table 2, the results show an impressive performance of the ILS that are adopted in various university libraries throughout Nigeria. Results reveal that ILS accuracy and flexibility are good $\overline{X}$ = 4.66 respectively while data entry

and currency has $\overline{X}$ = 4.55. On the ease of use, reliability and completeness, ILS results show higher mean, $\overline{X}$ = 4.38 and 4.33 respectively. Result on the timeliness of ILS shows a mean of $\overline{X}$ = 4.27.

The findings in Table 2 indicate that the adoption of ILS would improve the overall performance and increase productivity of the library because of timeliness, reliability, and

accuracy in providing resources for teaching, learning, and research, as well as gathering statistics of all the activities within the ILS. In addition, the flexible nature of ILS makes it easier for both librarians and users to use it in performing their duties and assignments.

Research objective 4: Shortcomings of ILS in Nigeria university libraries

The results in Table 3 reveal the shortcomings of ILS adoption in university libraries in Nigeria. The table focuses on those factors (shortcomings) that impede the performance and achievements of university libraries in their use of ILS in Nigeria.

The results in Table 3 show that among the factors that count as shortcomings in the use of ILS in libraries, robustness, inadequate training, and technical knowhow have a higher mean of 4.0 respectively. This means that these are the major shortcomings of ILS in the libraries. Other shortcomings of ILS in Nigeria university libraries in Table 3 are inadequate skilled

personnel $\overline{X}$ = 3.91, high cost of implementation $\overline{X}$ = 3.77, inadequate ICT facilities in the library X = 3.69, tedious and difficult to manage $\overline{X}$ = 3.08, lack of vendors' support $\overline{X}$ = 3.27, and frequent system failure $\overline{X}$ = 2.52. Results in Table 3 indicate that non-compatibility with the Internet is less of a shortcoming for the adoption of ILS in libraries than the other items listed in Table 3. This implies that improving all of the shortcomings as shown in this result, would enhance the achievements and performance of ILS in university libraries.

Discussion

The findings in this study clearly demonstrate the importance of adopting Hamilton and Chervany's CVs for the evaluation of ILS in university libraries in Nigeria and across the world. It further reveals the significance of using a holistic approach for the evaluation of ILS, with the inclusion of shortcomings as proposed

Table 3
Shortcomings of ILS in Nigeria University Libraries

Items	Minimum	Mean ($\overline{X}$)	Std. Deviation
Tedious and difficult to manage	2.00	3.08	0.87
Too expensive to implement	2.00	3.77	0.98
Inadequate ICT facilities in the library	2.00	3.69	0.85
Non-compatibility of ILS with the Internet	1.00	2.47	0.73
Frequent system failure	1.00	2.52	0.97
Not robust or enough features to help achieve tasks	2.00	4.00	1.04
Lack of vendors' support	1.00	3.27	1.20
Inadequate skilled personnel	2.00	3.91	0.99
Inadequate training and technical knowhow for librarians	2.00	4.02	0.90

in the model in Figure 1 before the adoption of ILS, to eliminate the risk of failure and the tendency of switching from one system to another. It is evident from this study that most of the university libraries in Nigeria had at one time or another switched from one system to another which might have affected their performance, achievement, and productivity. This scenario could be avoided when a thorough evaluation of the performance, achievements, and shortcomings is done on a new ILS prior to implementation.

Taking a critical look at Hamilton and Chervany CVs and Farajpahlou's criteria, including the evaluation of shortcomings, before deciding on the adoption of ILS, has the potential of helping the library to identify and avoid problems when implementing a new or second ILS. Such conscious evaluation would help to identify a feasible system. The findings in this study showed a gap in the evaluation criteria that has been bridged by the model as shown in Figure 1. It would also be beneficial for university libraries in Nigeria and other parts of the world that are yet to adopt any ILS, to focus its evaluation criteria on the Hamilton and Chervany proposal, Farajpahlou evaluation criteria, this current study, and possibly others. This approach could help to eliminate challenges that may arise in the future.

The findings in Table 3 show some of the shortcomings of ILS in Nigeria university libraries. They indicates that among the factors, robustness, inadequate training, and technical knowhow have a higher mean of 4.0 respectively. This means that those variables are the major shortcomings of ILS adoption in Nigeria university libraries. These shortcomings needs to be critically examined because it has become a recurrent issue in some recent studies, for instance, Osaniyi (2010), Omeluzor et al. (2012) and Ojedokun, Olla and Adigun (2016) have reported on some of these shortcomings

without recommending the use of either CVs or Farajpahlou's evaluation criteria, which would have provided acceptable criteria to evaluate ILS in libraries. The same shortcomings as shown in Table 3 have remained major hindrances for the adoption of ILS in some university libraries in Nigeria and other parts of the world. These shortcomings are directly or indirectly affecting the functions and performance of the university libraries when it comes to the delivery of quality library services to their patrons.

Limitations and Opportunities for Further Study

This study was limited to 36 university libraries from the 6 geo-political zones in Nigeria. The method of the study was limited to a structured online questionnaire without a face-to-face administration of the questionnaire and interview guide. The data collected and analyzed in this study were from the few selected university libraries in the six geo-political zones. A study of more university libraries in Nigeria using qualitative methods might produce different results and provide additional information. Future studies might investigate factors that would influence the choice for the adoption of ILS in libraries and how to overcome some of the shortcomings that are revealed in this study.

Conclusion and Recommendations

The main reason for the adoption and use of ILS in libraries is to enable quality management and delivery of library services, improving access and easy retrieval of information resources. In my opinion, the library patrons of today have high expectations of library services and are, for the most part, not satisfied with traditional methods. Within the last decade, university libraries in Nigeria have witnessed a turnaround in the adoption of ILS despite the disparaging remarks of Aguolu and Aguolu (2006). The

transformation being witnessed in the Nigeria university libraries through the use of ILS is tremendous as revealed by Oladokun and Kolawole (2018). Furthermore, the performance of ILS in Nigeria university libraries as it relates to Farajpahlou's (1999) criteria for assessing the success of ILS is encouraging. These criteria include data and currency, accuracy, reliability and completeness, flexibility, ease of use, and timeliness. That said, several shortcomings still exist in the adoption and use of ILS in Nigeria university libraries. Improving ILS adoption will require a conscious effort and decisiveness to ensure that librarians and library patrons enjoy the benefits that ILS offer. ILS developers should be able to consider the dynamic needs of university libraries and their patrons and therefore incorporate those specific features of Hamilton and Chervany's CVs in their ILS design, while keeping in mind the shortcomings presented in this study. This type of thoughtful design will enhance the quality of library services offered to patrons. Due to the various challenges facing university libraries in Nigeria, and some other countries in the world, and the failure of some libraries to adopt a robust ILS, the following recommendations are put forward:

1. Proper planning, adoption and implementation of ILS in libraries should be the library's first step.
2. ILS developers should strive to gather feedback from the ILS user community to identify some of the shortcomings, leading to product enhancement.
3. Future developments in ILS should incorporate tested theories such as Hamilton and Chervany's CVs and Farajpahlou's criteria in order to meet certain expectations of librarians.
4. University libraries should be at the forefront of providing necessary changes in the delivery of information services through the adoption and use of viable ILS.
5. TETFund support for the funding of government owned universities in

Nigeria should be encouraged and sustained while alternative sources of funding should be sought for ILS adoption in university libraries.
6. University librarians in Nigeria should adopt a system for the training and up skilling of staff to help in acquiring relevant skills and knowledge related to the use of ILS for library services.

References

Adegbore, A. M. (2010). Automation in two Nigerian university libraries. *Library Philosophy and Practice (e-journal),* Paper 425. Retrieved from: https://digitalcommons.unl.edu/libphilprac/425

Agboola, A.T. (2000). Five decades of Nigerian university libraries: A review. *Libri*, *50* (41), 27-34. https://doi.org/10.1515/LIBR.2000.280

Aguolu, C. C. & Aguolu, I. E. (2006). The impact of technology on library collections and services in Nigeria, In the Impact of Technology on Asian, African and Middle Easter Library Collections, ed. R. Sharma (Lanham, Md.: Scarecrow Press, 2006), 145.

Akpokodje, N. V. & Akpokodje, T. E. (2015). Assessment and evaluation of Koha ILS for online library registration at University of Jos, Nigeria. *Asian Journal of Computer and Information Systems, 3* (1), 20-27.

Ani, O. E. (2007). ICT revolution in African librarianship: Problems and prospects. *Gateway Library Journal*, *10* (2), 111-117.

Atua-Ntow, C. (2016). Staff assessment of the success of the integrated library system: The case of the University of Ghana library system. http://hdl.handle.net/2263/59625

Retrieved from
https://repository.up.ac.za/bitstream/handle/2263/59625/Ntow_Staff_2017.pdf?sequence=4&isAllowed=y

Ayiah, E. M. & Kumah, C. H. (2011, August 13 - 18). *Social networking: a tool to use for effective service delivery to clients by African Libraries* [Paper presentation]. A paper presented at the World Library and Information Congress: 77th IFLA General Conference and Assembly. San Juan, Puerto Rico. https://cf5-www.ifla.org/past-wlic/2011/183-ayiah-en.pdf

Breeding, M. (2009). Opening up library automation software. *Computers in Libraries, 29*(2), 25-28. Retrieved from https://librarytechnology.org/document/13803

Farajpahlou, A. H. (1999). Defining some criteria for the success of automated library system. *Library Review, 48*(4), 169-180. https://doi.org/10.1108/00242539910276451

Farajpahlou, A. H. (2002). Criteria for the success of automated library systems: Iranian experience (application and test of the related scale). *Library Review, 51*(7), 364-3721. https://doi.org/10.1108/00242530210438664

Hamilton, S. & Chervany, N. L. (1981). Evaluating information system effectiveness – part 1: comparing evaluation approaches. *MIS Quarterly, 5*(3), 55-69. https://doi.org/10.2307/249291

Hill, J.C. & Patterson, C. (2013). Assessment from a distance: A case study implementing focus groups at an Online

Library. *College & Undergraduate Libraries, 20*(3-4), 399-413. https://doi.org/10.1080/10691316.2013.829376

Kumar, V. & Jasimudeen, S. (2012). Adoption and user perception of Koha Library Management System in India. *Annals of Library and Information Studies, 59*, 223-230. Retrieved from https://core.ac.uk/reader/11890295

Lucidea.com (n.d.). The integrated library system (ILS) primer. Retrieved from https://lucidea.com/special-libraries/the-integrated-library-system-ils-primer/

Mbakwe, C. E. & Ibegbulam, I. J. (2014). *Efforts and challenges of automation of University of Nigeria, Enugu Campus Library* [Paper presentation]. A paper presented at the Nigeria Library Association, Enugu State Chapter 14th annual conference and general meeting, Enugu State., November 25 – 29.

Nok, G. (2006). The challenges of computerizing a university library in Nigeria: The case of Kashim Ibrahim Library, Ahmed Bello University, Zaria. *Library Philosophy and Practice, 8* (2), 1-9. https://core.ac.uk/download/pdf/188041074.pdf

Nworgu, B.G. (2006). *Educational Research: Basic Issues and Methodology*. (2nd ed.). Nsukka: University Trust publishers, p. 23.

Ojedokun, A. A., Olla, G.O.O., & Adigun, S.A. (2016). Integrated library system implementation: The Bowen University Library experience with Koha software. *African Journal of Library & Information Science, 26*(1), 31- 42. http://www.ajol.info/index.php/ajlais/article/view/135088

Okiy, R. B. (1998). Nigerian university libraries and the challenges of information provision in the 21st century. *Library Bulletin, 3*(1 & 2), 17-28.

Okpokwasili, N. P. & Blakes, E. (2014). Users' participation in acquisition and users' satisfaction with the information resources in university libraries in the South-South zone of Nigeria. *Journal of Research in Education and Society, 5*(3), 71.-85. Retrieved from https://www.researchgate.net/publicatio n/332321278_Authors'_Reputation_and_ Users'_Satisfaction_with_the_Informatio n_Resources_in_University_Libraries_in _the_South-South_Zone_of_Nigeria

Oladokun, T. & Kolawole, L.F. (2018). Sustainability of Library Automation in Nigerian Libraries: Koha Open Source Software. *Library Philosophy and Practice.* Paper 1929. Retrieved from https://digitalcommons.unl.edu/libphilp rac/1929/

Omeluzor, S. U. & Oyovwe-Tinuoye, G. O. (2016). Assessing the adoption and use of Integrated Library System (ILS) for library service provision in academic libraries in Edo and Delta States, Nigeria. *Library Review*, *65*(8/9), 578-592. https://doi.org/10.1108/lr-01-2016-0005

Omeluzor, S.U., Adara, O., Madukoma, E., Bamidele, I.A. & Umahi, F.O. (2012). Implementation of Koha integrated library management software (ILMS): The Babcock University experience. *Canadian Social Science*, *8*(4), 211-221. https://doi.org/10.3968/j.css.19236697201 20804.1860

Osaniyi, L. (2010). Evaluating the X-Lib Library Automation System at Babcock University, Nigeria: A case study. *Information Development, 26*(1), 87-97.

Retrieved from https://doi.org/10.1177/0266666909358306

Riaz, M. (1992). *Library Automation*. ITIC Publishers and Distributors: New Delhi. 61.

Sani, A. & Tiamiyu, M. (2005). Evaluation of automated services in Nigerian universities. *The Electronic Library, 23* (3), 274-288. https://doi.org/doi 110.1108/02640470510603679

Sharma, R. N. (2009). *Technology and academic libraries in developing nations* [Paper presentation]. A paper presented at International Conference on Academic Libraries (ICAL), India. p.23.

Shekarau, M. I. (2014). List of certified librarians in Nigeria, 2014. Librarians' Registration Council of Nigeria (LRCN) Directories, p. iii

Singh, K. (2013). Impact of technology in library services. *International Journal of Management and Social Sciences Research (IJMSSR)*, *2*(4), 74-76. Retrieved from http://citeseerx.ist.psu.edu/viewdoc/do wnload?doi=10.1.1.300.9109&rep=rep1& type=pdf

Uzomba, E. C., Oyebola, O. J. & Izuchukwu, A. C. (2015). The use and application of open source integrated library system in academic libraries in Nigeria: Koha example. *Library Philosophy and Practice*. Paper 1250. http://digitalcommons.unl.edu/libphilpr ac/1250

Appendix A
Questionnaire on the Evaluation of Integrated Library System in University Libraries in Nigeria: An Empirical Study of the Achievements, Performance and Shortcomings

Dear Respondent,

This questionnaire may take about 10 minutes and is designed to elicit data for the **evaluation of Integrated Library System (ILS) adoption in Nigeria University Libraries focusing on the Achievements, Performance and Shortcomings**. Information provided on this questionnaire will be used strictly for the purpose of this research. Please note that the respondent is not under any obligation to respond to the questions. However, the researcher appeals for your assistance in order to achieve the purpose of this study on schedule.

Thank you.
Researcher

Section 1: **Demographic Information of Respondents**
   a)   What is the name of your University …………………………………………………………
   b)   What is your gender   Male   Female
   c)   How long have you worked in your university

0-5 years	6-10 years	11-15 years	16-20 years
21-25 years	26-30 years	31 years and above	

Section 2: **Extent of ILS adoption in Nigerian University Libraries**
   d)   Which ILS is in use at your Library? Please specify: ……………………………………………..
   e)   Does your University use one previously?

Yes
No
Maybe
   f)   If your answer to question 5 is yes, which one was that ………………………………………….

Section 3: **Achievements made with the adoption of ILS in Library services**
   g)   Kindly indicate some of the achievements that your university has made with ILS

Statement	tick
Provide on-the-spot access to resources to patrons	
sharing of resources with other libraries	
Enable online cataloguing	
Provide access to books and external sources	
Online instruction of staff and students	
Not in-use at the moment	

Section 4: **Performance level of ILS in Nigeria University Libraries**

h) How will you rate the performance of the ILS in your library?

Items	Very good	Good	Poor	Very poor	Highly poor
Data entry					
Accuracy					
Reliability and completeness					
Flexibility					
East of use					
Timeliness					

Section 5: **Shortcomings of ILS adoption in Nigeria University Libraries**

i) What are the shortcomings of ILS adoption in university libraries in Nigeria?

Items	Strongly agree	Agree	Strongly disagree	Disagree	Not sure
Tedious and difficult to manage					
Too expensive to implement					
Inadequate ICT facilities in the library					
Non-compatibility of ILS with the Internet					
Frequent system failure					
Not robust or enough features to help achieve tasks					
Lack of vendors' support					
Inadequate skilled personnel					
Inadequate training and technical knowhow for librarians					

Appendix B
The selected federal, state and private universities in Nigeria used in the study

SN	University	Ownership
1.	Ahmadu Bello University, Zaria (ABU)	Federal
2.	Bayero University Kano (BUK)	Federal
3.	Federal University Lokoja (FUL)	Federal
4.	Federal University of Petroleum Resources Effurun (FUPRE)	Federal
5.	Federal University of Technology, Akure	Federal
6.	Michael Okpara Uni. of Agric., Umudike (MOU)	Federal
7.	Nnamdi Azikiwe University, Awka	Federal
8.	Obafemi Awolowo University, Ile-Ife (OAU)	Federal
9.	University of Agriculture, Markudi	Federal
10	University of Benin (UNIBEN)	Federal
11	University of Ibadan (UI)	Federal
12.	University of Ilorin (UNILORIN)	Federal
13.	University of Jos (UNIJOS)	Federal
14.	University of Lagos (UNILAG)	Federal
15.	University of Nigeria, Nsukka (UNN)	Federal
16.	University of Port Harcourt (UNIPORT)	Federal
17.	Ambrose Ali University, Kano (AAU)	State
18.	Bauchi State University	State
19.	Benue State University (BSU)	State
20.	Delta State University, Abraka (DELSU)	State
21.	Ebonyi State University, Abakiliki (ESUA)	State
22.	Ekiti State University (ESU)	State
23.	Ignatius Ajuru University of Education(IAUOE),Rumuolumeni, Port Harcourt	State
24.	Imo State University, Owerri	State
25.	Kogi State University, Anyigba	State
26.	Lagos State University, Ojo (LASU)	State
27.	Olabisi Onabanjo University, Ago Iwoye (OOU)	State
28.	Tai Solarin University of Education, Ijebu-Ode (TASUED)	State
29.	University of Medicine, Ondo (UMO)	State
30.	American University of Nigeria, Yola (AUN)	Private
31.	Babcock University, Ilishan-Remo (BU)	Private
32.	Bingham University	Private
33.	Bowen University, Iwo (BUI)	Private
34.	Landmark University, Omu-Aran.	Private
35,	Rhema University, Obeama-Asa, Abia State	Private
36.	Samuel Adegboyega University, Ogwa (SAU), Ogwa, Edo	Private