Factors Influencing the Acceptance and Use of Koha Library Software in Academic Libraries of Uganda

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Abstract

Purpose: The study aimed at investigating factors that influence acceptance of Koha Integrated Library System (ILS) and its use in academic libraries of Uganda.
Design/methodology/approach: The study was based on descriptive cross-sectional survey design. A representative sample of 103 was used out of the target population of 140, comprising academic librarians and ICT personnel from four academic libraries in Uganda. Structured self-completion questionnaire, semi-structured interviews and observations were used in data collection. A success response level of 78% of the questionnaires sent out was realized. Data analysis was carried out using SPSS software; to establish the significance level of the factors influencing Koha acceptance.
Research limitation(s): Non-academic libraries and patrons were not part of the study population.
Key finding(s): The findings from the study indicate that nine factors influence acceptance of Koha in selected academic libraries of Uganda. These include productivity, ease of use, free and open source nature of Koha, peer pressure, availability of resources, domain knowledge, awareness, anxiety and computer literacy levels. Four factors were moderating variable namely age, gender, level of education and experience. System productivity had the highest mean score of 4.20 and the least ranked factor was peer pressure with a mean score of 3.12.
Practical implication(s): The study has paved way for academic librarians and managers wishing to adopt Koha in regard to the core system attributes.
Contribution to knowledge: The study has contributed new knowledge in the aspect of ascertaining the factors that influence acceptance of Koha in academic libraries of Uganda, specifically system productivity, ease of use. The contribution can act as a basis for further studies.

Paper type: Research.
Keyword(s): Integrated Library System (ILS); UTAUT; Academic Libraries; ICTs in Libraries; Acceptance of technology; Koha Library software; Uganda.

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Introduction and Background of the Study

The acceptance and use of Koha integrated library system in Uganda is on increase especially by academic libraries. Some of the many reasons for the trend is the free and open source code nature of the software, the wide knowledge and the salient features that go hand in hand with the unique needs of academic libraries.

The use of computers in libraries has a history of over 55 years when Library of Congress implemented a data processing unit and in-house library holdings system. In the 1970, machine readable cataloguing (MARC) was accepted internationally (Allen, 2014) and the National Library of Medicine (NLM) in the United States came on board. Over the year ICTs have gained momentum in the library and information science industry all over the world with, commercial integrated library software development such as Dynix, VTLS and TINLIB, (Adeyomoye, 2008; Mutula, 2012). Academic libraries in Nigeria automated library functions as far back as 1970 where TINLIB software was introduced in the University of Ibadan and Ahmadu Bello University library (Haliso, 2011). Libraries in Eastern, Southern and Central Africa adopted ICTs in libraries notably the UNESCO WINISIS or Computerized Documentation Services /Integrated Set of Information Systems (CDS/ISIS) which was subsidized and used as early as 1980s (Allen; Mutula, 2012).

Slowly the use of ICTs spread to other types of libraries, such as national, special and public libraries (Chisenga, 2004). Many other integrated library systems have been developed and used in libraries worldwide which include Libsys, NewGenLib, Virtua, Millennium GLAS, X-LIB and ALICE but to mention a few, (Awwad & Al-Majali, 2015; Hudron & Emmanuel, 2014; Madhusudhan & Singh, 2016; Todd, 2018).

The adoption and use of ICTS in libraries in the Africa; South of Saharan have posed a number of challenges over the years and differ from one academic institution to another (Ponelis & Adoma, 2018). The variation is associated with a number of factors such as the location of the academic institution, financial and administrative support, ICTs infrastructure and maintenance capabilities and level of knowledge and skills among others (Kiwanuka and Bukenya, 2012). Uganda for example Internet and other ICTs infrastructure for academic libraries located in Kampala and surrounding areas are better than those in rural areas(Ponelis and Adoma, 2018). Some rural areas the network is poor and power blackouts are very common. Academic libraries with good financial and administrative support with sufficient ICTs knowledge and skills personnel tend to thrive in ICTs associated library services than those without. Despite the challenges libraries are aware of the importance of ICTs in the provision of effective services such as multiple access to information resources, easy communication

and information sharing, easy processing of library materials and storage (Awwad & Al-Majali, 2015; Ogbenege & Adetimirin, 2013). Academic libraries in Uganda work together through consortia, seek donors support and opt for open source technology as a way to mitigate the challenges. Open source software (OSS) improve on library services because they can be customized to suit unique needs, are freely available and have community support online. According to Muller (2010) as cited by (Ponelis & Adoma, 2018) commonly used OSS include Koha, NewGenLib, ABCD, and Evergreen and out of the four Koha is the most used worldwide.

Over fifteen academic libraries in Uganda out of over 53 accredited academic institution libraries have adopted the use of Koha library software in the provision of library and information services. These include Uganda Management Institute, St. Mbaaga Major Seminary, Nkumba University, Makerere University Business School, Uganda Martyrs University (UMU), Ndejje University, Cavendish University, Lira University, Kyambogo University, International Health Sciences University, Uganda Christian University, Kabale University, Muni University, Busitema University and Kampala International University. In addition, Makerere University is in the process of migrating from Virtua to Koha and the trend is growing (Ponelis & Adoma, 2018). This trend is growing day and after day, yet little research is done in the area. It was upon this background the researchers embarked in the study to empirically seek to know the factors and challenges behind the trend. The study will be guided by the following questions:

1. What are the necessary moderating factors that can be included in the study?
2. How does system productivity influence the acceptance of Koha library software in academic libraries?
3. How does ease of use influence the acceptance of Koha library software in academic libraries?
4. How does peer pressure influence the acceptance of Koha library software in academic libraries?
5. How does the availability of resources influence the acceptance of Koha library software in academic libraries?
6. Is there a significant relationship between system productivity, ease of use, peer pressure and availability of resources and acceptance of Koha?
7. Which other factors apart from UTAUT have influences acceptance of Koha in Uganda?

Review of Related Literature

Academic libraries

These are integral units in academic institutions such as universities and institutes with a mandate to support teaching, learning, research and community outreach with information. The libraries today are multipurpose departments with various responsibilities. As fountains of knowledge, they provide services to support the learning and research activities. In this respect, they have long stood unchallenged throughout the world as the primary collection of knowledge. They decide what focus they take in collecting materials since no single library can supply everything. Librarians examine the needs of students and instructors as well as the priorities of the college or university when deciding what to focus on. The collection is often the basis of a special collection department and may include original papers, artwork and artefacts written or created by a single author about a specific subject. These libraries carry out various operations which include acquisition, cataloguing, charging and discharging of information materials, accessioning and serial management. It is through these operations that they serve the teaching and research needs of students and staff (Campbell, 2006).

Academic Libraries in Uganda network through the Consortium of Uganda University Libraries (CUUL) to combat ICTs challenges and avail best practice services among members. The consortium comprise of over 50 member universities and research related institutions (Buwule & Ponelis, 2015; Kiwanuka & Bukenya, 2012; Ponelis & Adoma, 2018).

Theoretical perspective

Unified Theory of Acceptance and Use of Technology (UTAUT) proposed by Venkatesh et al. (2003) originates from eight acceptance and use of technology theories. The UTAUT aims at explaining user intentions to use an information system and subsequent usage behaviour. It holds on four key constructs (performance expectancy, effort expectancy, social influence and facilitating conditions) as the direct determinants of usage intention and behaviour. It theorizes that intention to use a technology is influenced by the above four constructs (Tibenderana, 2009; Venkatesh et al., 2003).

Performance Expectance (PE) is defined as the degree an individual user believes that using the software will help in improving his/her performance. It was derived from a combination of five similar constructs including perceived usefulness (TAM/TAM2 and C-TAM-TAB), job-fit MPCU, extrinsic motivation (MM), outcome expectations (SCT) and relative advantage (DOI) (Venkatesh et al., 2003).

Effort expectancy (EE) is the degree of ease the user feels with respect to the use of the software. This construct has theoretical foundation from the three constructs from different theories that relate to effort expectance (Venkatesh et al., 2003). These are perceived ease of use (TAM/TAM2) by Davis (1989), complexity (MPCU) and ease of use (DOI). It is generally believed to have a significant influence on technology acceptance as well as perception of usefulness. In validation of the UTAUT, effort expectance was significant in both voluntary and mandatory usage contexts although only for the first period of usage.

Social influence is defined as the degree to which an individual user perceives that it's important for others to believe he/she should use the software. Three constructs from six theories capture the concept of social influence (Venkatesh et al., 2003). The constructs are; social factors (MPCU), subjective norm (TRA, TAM2, TPB and C-TAM-TPB) and the image (DOI). It includes consideration of the person's perception of the opinion of others, his or her reference group's subjective culture and specific interpersonal agreements with others, as well as the degree to which use of an innovation is perceived to enhance one's image or status in one's social system (Venkatesh et al., 2003).

Facilitating conditions (FCs) are defined as the degree to which a user believes that an organizational and technical infrastructure exist to support use of the software. (Venkatesh et al., 2003). They represent organizational support and include the constructs of perceived behavioural control, facilitating conditions and compatibility from prior models. The effects of the above four constructs of the theory on behaviour intention to use technology are moderated by gender, age, experience and voluntariness to use technology a viewed below:

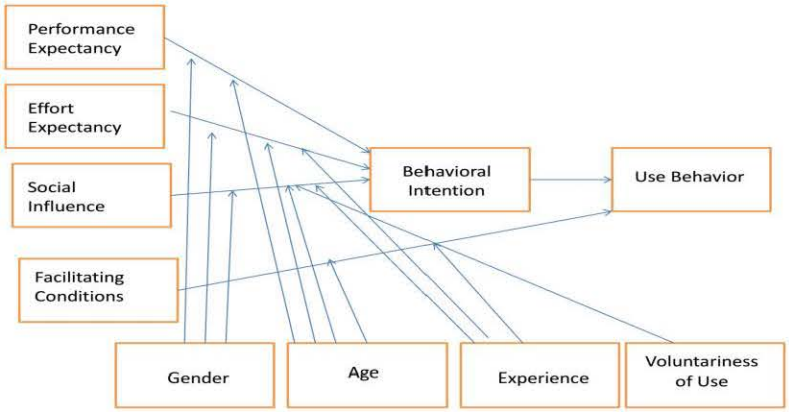

Figure 1. UTAUT Model (Venkatesh et al., 2003)

The study finds the model relevant especially the four constructs(Performance, effort, social influence, facilitating condications) and the three moderate variables(gender, age, experience). The voluntariness was not very necessary to the study therefore it was replaced by level of education.

Integrated library system

An Integrated Library System (ILS) is a computer application with ability to support overall functions of a library which include acquisition, circulation, cataloguing, Online Public Access Catalogue (OPAC), serial management, reporting, information sharing, administration and security. Today academic libraries can no longer perform the functions effectively and efficiently without a computerised system (Awwad & Al-Majali, 2015; Madhusudhan & Singh, 2016). There are various ways academic libraries are acquiring ILS which include purchase from venders, in house developed and open source. The ways of acquisition depends on the financial capabilities, ICTs skills and the need at hand. But what is important is that the ILS chosen should have all the necessary features which include the library function modules, database, indexing, Web 2.0/3.0 but to mention a few (Madhusudhan & Singh, 2016).

Open source ILS

According to Todd (2018) open source ILS are the best option for libraries because they are readily available online, the cost of maintenance and customization is minimal and they can easily be tailored to suit local library need. However they require a community for support, well-trained IT personnel or a librarian with good IT skills for customization, training and maintenance. For instance Morton-Owens, Hanson, and Walls (2011) report the difficult of integrating OPAC with the website.

Koha ILS is one of the open source software freely available, with sufficient documentation online, use Linux operating system, with updates every year and a large international community (Roseburg, 2019). Customization of Koha to meet the uniqueness of any academic library is possible with minimal IT support (Todd, 2018). Support for the cataloguing and search standards machine readable catalogue (MARC) and Z39.50 for information exchange.

Koha is a Maori word meaning a special kind of gift, most accurately defined as a gift with expectation or donation. It has an open source code initially developed in New Zealand in 2000 by Katipo Communications Ltd and first deployed for Horowhenua Library Trust. Currently Koha is maintained by a team of software providers and library technology staff from around the world (Morton-Owens, Hanson, & Walls, 2011). The user interface modules are web driven

under a GNU General Public License (Kumar & Jasimudeen, 2012). Koha is MARC compliant, data exchange possible with the ability to support the overall function of a library which include acquisition, circulation, cataloguing, serial management, Online Public Access Catalogue (OPAC), patron records management and reporting (Asim & Mairaj, 2019). Furthermore Koha can connect branch libraries, enable them to share information and work together and support the functions of a fast growing library (Egunjobi & Awoyemi, 2012).

Acceptance and use of Koha in Uganda

Acceptance, adoption and use of Koha in Uganda related literature is limited. The study found four most relevant writeups by Kiwanuka and Bukenya (2012) Buwule and Ponelis (2015), Adoma and Ponelis (2015), and Ponelis and Adoma (2018) who agree with Omopupa, Adedeji, and Sulyman-Haroon (2019) that the acceptance and use of Koha in Africa is because of its salient features, cheaper, free and open source code nature. Awareness and ICTs knowledge are also reported as contributing factors (Buwule & Ponelis, 2015).

Furthermore, Koha as an open source software inculcate critical thinking and innovation in Libraries (Balter, 2015; Jose, 2017). Omopupa, Adedeji, and Sulyman-Haroon (2019) say Koha adoption facilitate improved services.

Acceptance and use of Koha has not been without challenges. Lack of sufficient technical support and training, location of the library, intermittent Internet and power supply, lack of well documented frameworks and policies were among the challenges mentioned in Uganda (Buwule & Ponelis, 2015; Kiwanuka & Bukenya, 2012; Ponelis & Adoma, 2018).

Methods and Materials

The study employed a cross-sectional descriptive survey research design to investigate the user perceptions Koha. The study used structured questionnaire, guided interview and observations to collect data. Purposive sampling methods were used to select the respondents from the four academic institutions. Sloven's sample size formula (Israel, 1992) was applied to arrive at a sample of 103 from population of 140 as follows:

$$N_0 = \frac{N}{1+N\,(e)^2}$$

N_0 = Sample Size, N = Population Size, e = margin of error at 95% confidence level of acceptance in research at level of significance of 5% or p 0.05

Table 1. Sample Calculations (n=103)

Libraries	**Target population**		**Sample size**	
	ICT staff	Librarians	ICT staff	Librarians
IHSU	4	24	3	15
UCU	4	31	3	25
UMI	4	24	3	15
NU	4	45	3	36
Sub total	16	124	12	91
Grand total	16 ICT staff + 124 librarians = 140		12 ICT staff + 91 librarians = 103	

The responses were analyzed using SPSS software. Frequencies, percentages and means drew the inferences. Correlational data analysis using Pearson Product Moment. Correlation was also used to establish the relationship between the system productivity, ease of use, peer pressure and existence of resources and acceptance of Koha.

The following numerical values and descriptions were used.

Mean range	**Response mode**	**Interpretation**
3.40-3.90	Strongly Agree	Very good
2.80-3.30	Agree	Good
2.20-2.70	Neither agree nor disagree	Fair
1.60-2.10	Disagree	Poor
1.00-1.50	strongly disagree	Very poor

Validity and reliability of the research instruments

The reliability and validity of research instruments is crucial for creating confidence in the findings. According to Mugenda (2003), reliability implies the consistency and stability of measurement of the instrument from one use to the next exhibiting consistency. Validity is a measure of ensuring correct content of the measuring instrument in this case the questionnaire. Validity of the instruments was ascertained by subjecting the research instruments to some research experts and administrators who have knowledge about the Koha software. Item by item to rate the validity of the questions at a rating of one to five where four and five indicated the item was valid and consistent with the study. Also a content validity index formula CVI=R/N (Amin, 2005) was used for each item to test their validity. Where R was the number of items declared valid and N was the total number of items. The items declared valid were 43 and the total number of items in the questionnaire was 49. Therefore, CVI=43/49 =0.878 which was acceptable.

Ethically permission from the libraries and the respondents to participate in the study was sought officially in writing and sufficient time with convenience was considered for responses. The confidentiality of the respondents was also maintained. The 103 questionnaire distributed the response was 81(78%).

Findings

Demographic information of respondents

Demographics include gender, age, level of education and experience (Table 2).

Table 2. Demographics (n=81)

Category	Sub-category	Frequency	%
Gender	Male	46	56.8
	Female	35	43.2
Age	20-24 years	9	11.1
	25-29	32	39.5
	30-34	26	32.1
	35-39	5	6.2
	40 and above	9	11.1
Level of education	PhD LIS	1	1.2
	Masters LIS	7	8.6
	Postgraduate Diploma in LIS	2	2.5
	Bachelors in LIS	40	49.4
	Diploma in LIS	19	23.5
	Certificate in LIS	1	1.2
	Non-LIS education	11	13.6
Experience	Below 1 year	13	16.0
	1-3 years	36	44.4
	4-5 years	12	14.8
	6 and above	20	24.7
	Total	**81**	**100**

Table 2 indicates that out of the 81 respondents, 46 (57%) were males and 35(43%) were females. Youths are the majority 67(82.7%) involved in Koha age bracket 20 to 34 years old and bachelors level of education 40(49.4%).

Factors influencing the acceptance and use of Koha

The factors below were examined in relation to major library activities which are cataloguing, circulation, acquisition, OPAC, serial management, and administration to establish its productivity. The results are presented below table.

Table 3. Koha Library System Productivity (n=81)

Productivity	**Mean**	**Std. deviation**	**Interpretation**
Cataloguing	4.48	.69121	Very good
Searching facility	4.42	.66829	Very good
OPAC functions	4.91	5.68814	Very good
Patrons registration	3.96	.92796	Very good
Circulation functions	4.14	.83296	Very good
Reports generation	4.09	.86887	Very good
Overdue identification	4.23	.88419	Very good
Barcodes support	4.09	.89718	Very good
Administration and management functions	3.88	.92713	Very good
Multi-lingual facility	3.84	3.44404	Very good
Average mean	**4.20**	**1.583**	**Very good**

Productivity contribute to acceptance of Koha in Uganda as seen in table 3 above with an average mean of 4.20 whereby OPAC module was highly ranked compared to the rest of the system functionalities. These findings with the study by Chang et al. (2007) and Pai and Huang (2011) who concluded that performance expectancy affected behavioral of intention to use technology is stronger than other factors.

Respondents measured usage in terms of easiness, peer pressure, availability of resources to accept and use Koha. The findings were that Koha cataloguing mode was the easiest to use with a mean of 4.37 and the hardest was report preparation with a mean of 3.86. These results agree with those of Kumar and Vimar (2012) over 60% of the respondents in the study of adoption and user of Koha library management system in India said cataloguing module was very easy to use compared to other modules. The results also agreed with those of Ponelis and Adoma (2015 & 2018) Koha was flexible to meet various information needs.

Social, financial, peer pressure from people with prior knowledge about the system, colleagues in the profession influenced others to use

Koha as library. The pressure was stronger from the superiors with an average mean of 3.68 compared to any other groups. These findings agree with those of Suha and Anne (2009) study on the influence of peer pressure on usage of online services, 47% of the participants inclined to use online services because their family members and other people in their environment were using them. Availability of the necessary resources influenced academic libraries in Uganda to accept and use Koha. Institutional management support, financial availability, ICTs infrastructure, competent personnel and availability of training among others encouraged the acceptance and use of Koha. Meanwhile Institutional management support was highest ranked with an average mean of 4.26 meaning that superiors made the decision to accept and use Koha in the libraries in Uganda. The findings are in line with Siddike, Munshi, and Sayeed (2011) who in their study found out that administrative factors, support from the higher authorities and government influence much in introducing ICT in the public and private university libraries of Bangladesh.

Koha usage in Uganda

Koha functions were examined to reveal their relevance and usage rates in the libraries. This investigation revealed that acquisition module was almost not used in all the libraries studied. More of the findings are as viewed below.

Table 4. Koha Functions (n-81)

Koha Usage	**Mean**	**Std. deviation**	**Interpretation**
Acquisition	1.07	.49441	Very poor
Catalogue	4.42	.58873	Very good
Serials	4.41	.58689	Very good
Search	4.38	.56053	Very good
OPAC	4.41	.56519	Very good
Patrons	4.46	.54885	Very good
Circulation	4.22	.63246	Very good
The LOC, Dewey and other non-Dewey categorizations	4.41	.58689	Very good
Barcodes	4.26	.62805	Very good
Multi-lingual support	1.12	.55639	Very poor
Reporting	3.89	.80623	Very good
Total	**3.80**	**0.618**	**Very good**

The findings in Table 4 are supported by Ukachi (2012) results which show that 4.8% libraries are presently using Koha for

cataloguing, 7.1% libraries circulation and 4.8% of libraries use KOHA for managing serials. To confirm the UTAUT theory of technology acceptance, adoption and usage a summary of all the four major factors that were influencing the acceptance and usage of Koha in Uganda academic libraries was drawn indicating that system productivity was a very important factor. Libraries prefer technology that supports its overall activities for effective and efficient services to the patrons which is the same as performance expectancy in UTAUT. While the four factors influenced the acceptance and use of the software with an average mean of 3.80, which means that Koha is generally a very good software for libraries. More details are as presented on Table 5.

Table 5. Factors for Acceptance and Use of Koha (n=81)

Factors	**Mean**	**Std. deviation**	**Interpretation**
System productivity	4.20	.87428	Very good
Ease of use	4.13	.64592	Very good
Peer pressure	3.11	1.06760	Good
Availability of resources	3.93	.64251	Very good
Total	3.85	0.808	Very good
Acceptance of Koha	**3.80**	**.38271**	**Very good**

The findings in Table 5 are not different from those of Shengli, Yong, and Yuanyuan (2011) who found out that performance expectancy is a direct predictor of behavioral intention to use web-based question and answer service. The finding suggests that the software developers should focus on increasing the productivity and simplicity of their technology to influence acceptance and usage.

The relationship between factors and acceptance of Koha in Uganda

The four factors (system productivity, ease to use, peer pressure and availability of resources) were measured using the Pearson Product Moment Correlation (PPMC) to establish the level of significance in their relationship with acceptance (Table 6).

Table 6. Relationships between Factors and Acceptance of Koha (n=81)

Factors	Acceptance of Koha		Interpretation of correlation	Decision on H_0
System productivity	Pearson Correlation	.310**	Significant	Rejected
	Sig. (2-tailed)	.005		
	N	81		
Ease of use	Pearson Correlation	.624**	Significant	Rejected
	Sig. (2-tailed)	.000		
	N	81		
Peer pressure	Pearson Correlation	.080	Not significant	Accepted
	Sig. (2-tailed)	.478		
	N	81		
Availability of resources	Pearson Correlation	.380**	Significant	Rejected
	Sig. (2-tailed)	.000		
	N	81		

**Significant at 0.05

Regression analysis was used to measure the strength of the relationship between the factors and acceptance of Koha as shown in table 7 below.

Table 7: Model Summary (Regression)

Model	R	R square	Adjusted R square	Std. Error of the estimate
1	.632[a]	.400	.638	.30427

a. Predictors: (Constant), Productivity, Ease of use, peer pressure and Availability of resources.

Table 8: ANOVA

Model		Sum of squares	df	Mean square	F	Sig.
1	Regression	4.681	4	1.170	12.641	.000[a]
	Residual	7.036	76	.093		
	Total	11.717	80			

a. Predictors: (Constant), Resources, Pressure, Productivity, Use

The findings indicate that system productivity, ease of use, peer pressure and availability of resources significantly influence the acceptance of Koha by the r-value of .632, the adjusted r square of .638. Thus, the findings revealed that the degree of the relationship

between the two variables is strong at r- value of .632 of the regression model.

ANOVA in Table 8 indicates the F value for the regression models which represents the significance of the regression model. The determination of this is based on the principle that the larger the F value, the more variance in the dependent variable explained by the independent variable. Since the F value is 12.641 and it is greater than 1.0, the null hypotheses were rejected. It also indicates that the model is highly significant at the level of 0.000. Thus the general regression results indicated in the ANOVA. These factors (system productivity, ease of use, peer pressure and existence of resources) influence the variations in acceptance of Koha by 63% and 37% variations are contributed by among other factors such as anxiety, domain knowledge and computer literacy.

Through observation, interviews and document search below are other constructs that contributed to the acceptance and use of Koha in Uganda academic libraries.

Free and open source software

The system librarians and other ICTs personnel in the academic libraries in Uganda found the free and open source nature of Koha very instrumental. "There are many benefits of this software to Uganda academic libraries which influence the acceptance" (A statement by one of the respondents). Koha has open source code, continuous online improvement, maintenance and support. It provides the flexibility and therefore libraries are able to customize it according the unique information needs of their patrons and other library needs. Balter (2015) and Jose (2017) agree with the findings that free and open access software encourage innovation and creativity.

Anxiety

The study reveal that acceptance and use of Koha was high among the youth 67 (82.7%) in Uganda and resistance was among the elders 14 (17.3%) who seem to be anxious about change caused by technology.

Wide Knowledge of Koha through Ugandan library schools

Most of the young graduates from Library Schools in Uganda have Koha knowledge and skills. Koha is the most used in library school to demonstrate an ideal integrated library systems. Therefore the wide Koha knowledge and skills among graduates has contributed to the acceptance and use of Koha in Uganda. The best practices trainings influenced by the Consortium of Uganda University Libraries (CUUL) members has increased on the knowledge.

Awareness of Koha

In Uganda, there are no other library systems that are commonly known like Koha. This is again attributed to the trainings in Library Schools and the encouragement done through the Consortium of Uganda University Libraries (CUUL). Academic and Research Libraries in Uganda through its consortium use Koha as an ideal system and encourage its members to accept and use it in their libraries.

Computer literacy levels

Computer Literacy levels had an influence on Koha. The majority of the respondents over 75(92%) were computer literate, however they did not have higher levels of Koha back end technical knowledge. This explains to why libraries in Uganda rely heavily on ICTs personnel to manage the back end work of their systems 11(13.5%). Below is the model the study developed from the UTAUT and extended constructs.

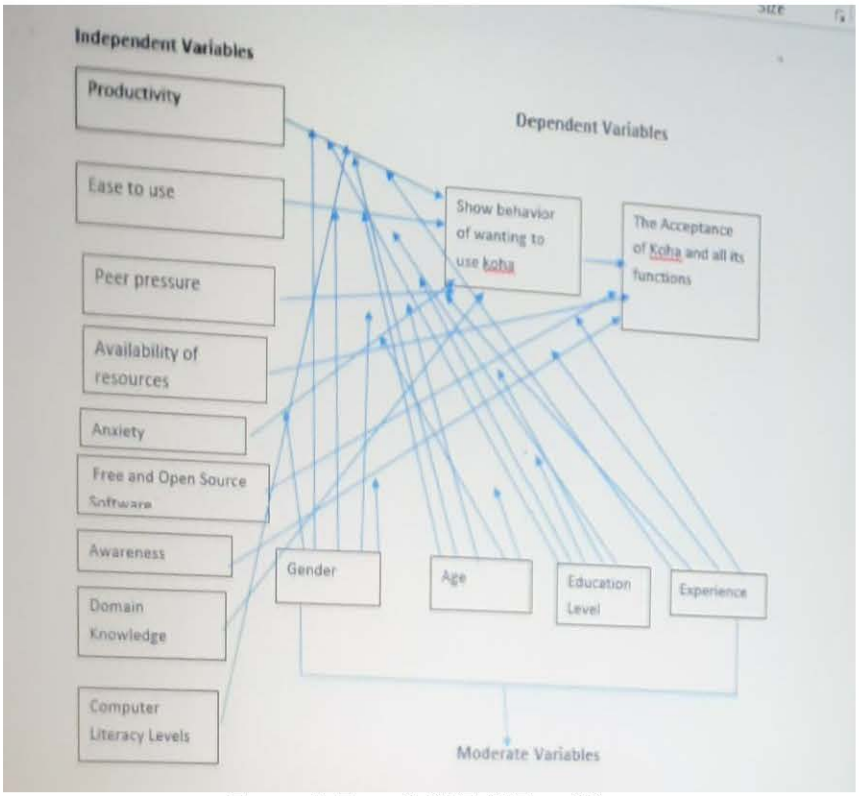

Figure 2. Extended UTAUT model

Discussion of the Findings

Technology is affecting every aspect of human life more so in the information field. An academic library today is valued by its vast, relevant, up to datedness and easy access to its holdings. These libraries are striving to ensure their print and electronic collections are easily accessed and used with the support of technology. Integrated Library Systems (ILS) are exploited to ensure efficient and effectiveness of library services. Koha as one of the integrated library systems is widely accepted and used in Uganda. The important features in Koha that go hand in hand with the major functions of an academic library are part of the factors that are influencing the accepting and use of Koha in Uganda (Buwule & Ponelis, 2015). The free and open source code that allows easy access to the system and customization to the local needs of every academic library in Uganda have also contributed to the acceptance of Koha. Ugandan Library schools use Koha as a model integrated library system which has made almost all the graduates in Uganda aware of Koha and love to implement it in any library they get employed.

Age, gender, level of education and experience moderate the factors that influence Koha acceptance in Uganda. Male youths were the majority system librarian and ICTs personnel in the academic libraries. These findings implied that youths are aware and accept Koha in libraries in Uganda compare to the elders. The findings agree with those of Tibenderana et al. (2010) that the majority of the users who accepted and used hybrid library services were youths. The fresh graduates are also reported to be involved in Koha, this means they have a work experience of less than five years. These findings indicate that Koha acceptance and use in Uganda is not an old phenomena. It is a new trend which is less than five years old in most of the libraries which is growing at a high speed.

Anxiety towards use of Koha technology was reported among the older staff members. Anxiety is described as evolving anxious or emotional reactions when it comes to performing a behaviour (e.g., using a computer) the apprehension or even the fear an individual has toward the possibility to use a technology (Venkatesh et al., 2003). Anxiety as a construct has a foundation from the Social Cognitive Theory (SCT) introduced to information system by Campeau and Higgins (1985), as an extended SCT in the context of computer utilization.

Consortium of Uganda University Libraries (CUUL) has had an influence on the knowledge of Koha and the use of electronic library services in academic libraries (Adoma & Ponelis, 2015). Through the consortium academic libraries discuss and adopt best practices like Koha. However, there is no documented systematic procedure that is followed (Buwule & Ponelis, 2015). Knowledge is defined as the

person's knowledge of the respective discipline, domain or area that is relevant to the database search. Past research has demonstrated empirically that persons with a higher level of domain knowledge were able to conduct searches and database queries more efficiently (without error) and more rapidly than novices (Thong et al., 2002).

Furthermore this study found there was a close relationship between factors that influence the acceptance and use of Koha in the academic libraries in Uganda which should not be ignored. The four UTAUT factors namely productivity, easy to use, peer pressure and availability of resources, including the moderating factors relevant to Uganda academic libraries acceptance and use of Koha. Additionally there were other factors identified such as the free and open source nature of Koha, awareness, anxiety, computer literacy levels and Wide Knowledge of Koha through Ugandan Library Schools. The findings partly agree with those of Ukachi (2012), Sobalaje, Ajala, and Salami (2018), and Asim and Mairaj (2019) which also highlight awareness, open source and productivity as the motivating factors. Omopupa, Adedeji, and Sulyman-Haroon (2019) report that the University of Ilorin Library chose Koha because of upgrade which was cheaper and able to serve their needs.

However the study found challenges that agree with those of Buwule and Ponelis (2015), Ponelis and Adoma (2018) and Omopupa, Adedeji, and Sulyman-Haroon (2019) that those libraries accepting and using Koha in Africa are experiencing hidden customization costs, maintenance and lack of sufficient technical abilities. Several studies indicate that a positive relationship exists between previous computer usage/computer fluency and the adoption of a computer-dependent technology. Internet also had a significant impact on the user's acceptance of a system. These findings implies that Academic Libraries in Uganda cannot do alone without other ICTs personnel, training of librarians on back end work of systems is crucial.

Conclusions and Recommendations

Universities in Uganda accepted and use Koha to improve its library services. The UTAUT factors have contributed to the influence of the acceptance. Free and Open source code nature of Koha cannot be ignored as one of the major innovation that has revolutionized library automation in Uganda.

Considering the findings of the study the following are the recommendations:

1. Library managers and administrators in academic libraries in Uganda should work together in their consortium to develop a standardized framework that will include the factors highlighted in the study. The framework can be well documented as

justification and guideline for other institutions wishing to follow the same trend in Uganda and beyond.
2. Library Schools should explore other integrated library systems to give a wider knowledge to its graduates.
3. Library managers and administrators should be aware that there are hidden costs when it comes to open source software which they need to include in their budget so that the automation activities may not be hampered.
4. Libraries should invest heavily in training youths to manage their systems because they hold the future of library technology.
5. Academic Libraries in Uganda should lobby and advocate for government support toward stable Internet and power supply to enable maximum benefits from Koha and other ICTs services especially for rural institutions.

Future Research

1. A comparison study should be carried out to compare Koha and other library software that are used in academic libraries in the world.
2. An empirical study should be carried out to find out challenges academic libraries users are experiencing with Koha in Uganda.
3. The same study can be replicated on non-academic institutions using Koha in Uganda.

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