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Abstract

Technological advancements, innovations, research, changing user needs, and online education have significantly affected traditional libraries. The 21st-century has engendered library users who seldom visit physical libraries but rely on alternative sources of information like Google from their convenient locations. This implies that for libraries to effectively adapt to the technologically driven academic landscape, adoption of Virtual Library and Information Services (VLIS) is the most feasible approach for them to fulfill their mandate of information provision. However, despite the numerous benefits VLIS offers, such as timely and convenient access to a wide range of current electronic resources, its adoption, implementation and consumption remains limited. This paper gives a report of a study that was conducted to determine the attitude of library users and faculty towards VLIS at Makerere and Uganda Christian University (UCU) libraries. A pragmatic research paradigm with mixed methods approach was adopted to collect data from 394 library users, using a questionnaire while interviews were conducted with 8 library staff. Data were analyzed using the SPSS. Study findings indicated that VLIS is perceived highly in terms of enhancing users' studies and significance in the core universities tasks. Users' also exhibited interest in acquiring more VLIS knowledge and demonstrated their appreciation of VLIS. Conversely, users' in using VLIS was rated poor. Recommendations included modification of the Open Distance and E-learning policies, integration of active links of e-resources in students' reading lists, a media monitoring room, zero rating on all library websites and incorporation of IL into the university curriculum.

Keywords: Virtual Library and Information Services, Online academic library services, Attitudes towards Virtual Library and Information Services, Perception of Virtual Library and Information Services, Makerere University, Uganda Christian University, Uganda

1. Introduction

Traditional library services have been considerably impacted by advances in technology, research, and innovation, as well as changing library user information needs (Augustine et al., 2018). Due to the internet's invasion, 21st-century users are less likely to physically visit libraries but instead depend on alternate sources of information such as Google from their convenient places (Kumbhar & Bidve, 2016). Libraries must embrace Virtual Library and Information Services (VLIS) in the face of ICT proliferation in order to survive and thrive in such a technologically sophisticated academic environment (Gul & Bano, 2019).

VLIS provision is the most effective and efficient way of meeting information needs of the new library users' generation and to achieve the Sustainable Development Goals (SDGs)
(Anasi et al., 2018; Askin et al., 2021; Chisita, 2020; Gruss et al., 2019; Ihejirika et al., 2020; Medawar & Tabet, 2021; Pokorná et al., 2020; Walsh & Rana, 2020). In order to address the information demands of today's academic community, VLIS offers the most engaging interface between academic libraries and their users. They provide a framework for the distribution of library services and information over time, location, and distance (Abubakar, 2021).

Background of the Surveyed Universities

Determining perceptions towards VLIS was the third objective of a comprehensive PhD study that examined VLIS at a public and private university that is; Makerere and Uganda Christian University (UCU) libraries in Uganda.

Makerere University

Makerere University was founded in 1922 and is one of the oldest institutions in East Africa. Makerere University now includes 10 colleges and one semi-autonomous law school. The Makerere University Library, originally a tutor's library, was built in 1949 and opened in 1959 by Her Majesty, the Queen of England (Macpherson, 1964; Mandela, 2022). Today, it serves 10 college libraries, eight on campus and two off-campus, including the MUARIK Library and Sir Albert Cook Medical Library (Makerere University Library, 2023). Makerere has both Ugandan and international students' population totaling to about 31,000 undergraduates and 4000 postgraduates (CIVIS, 2023). In addition, the university has over 1000 faculty, and other researchers who by default use the Makerere Library (MakLib) (Nalumaga & Byamugisha, 2021). The library has over 300 computers for students and staff, discussion rooms, research and learning commons, a PowerPoint room, a multi-media unit, a Ugandan music archive, a training unit, and

a computer lab. It has about 240,000 electronic books and 12,000,000 electronic journal articles. Makerere Institutional Repository (MakIR) comprises 7,792 library-digitized theses, dissertations, and research publications by university faculty and students. Information resources comprise 258,900 book titles (668,644 copies), 16,402 archival records, 11,698 serials, approximately 12,000 still photos in the archive and 4,980 eBook titles, available online at www.makula.mak.ac.ug:8080 (Nalumaga & Byamugisha, 2021).

Uganda Christian University

UCU, a private university established by the Anglican Church of Uganda in 1997 along Jinja Highway in Mukono district, about 23 kilometres from Kampala City, Uganda's capital, emerged out of Bishop Turker College, which was founded in 1913. Currently, the university has expanded with affiliated educational institutions in Namugongo, Mbale, Kabale, and Arua. UCU was the first private university to be chartered by the Ugandan government in 2004 (Uganda Christian University, 2023).

The university provides a number of graduate programs leading to the award of PhDs, Masters, and postgraduate Diplomas (Nassimbwa, 2019). Three intakes of the programs are available in the semesters of September, January, and May. Over 2,000 UCU students utilize the library by default (Aminah & Wamea, 2021). The growth of UCU has led to the expansion of university programs, a factor that has necessitated the development of library services including LibGuides, a digital repository, and IL training entailing resource searching and retrieval, reference management, Anti-plagiarism tutorials, and evaluation of websites (Uganda Christian University, 2023). E-resources provided include e-journals, e-books, digital repositories, online archives as well as facilities entailing an ICT lab with 200 computers and wireless internet (Kizito et al., 2023).

2. Statement of the problem

There is undoubtedly a great need for VLIS due to invasive technology (Gul & Bano, 2019; Okundaye et al., 2019; Rahayu & Day, 2017), competition from non-library gateways (Kumbhar & Bidve, 2016), changing users' needs and institutional policies (Madu et al., 2020), as well as unprecedented calamities that threaten physical libraries (Bailey et al., 2020; Curzon, 2000; Doolittle, 2007; Liu et al., 2017). VLIS's indispensableness was, furthermore exposed by several impacts of the COVID-19 pandemic. First, was the total closure of universities, which limited physical access to library buildings. This in turn propelled an augmentation of the Open, Distance, and E-Learning (ODeL) system characterized by virtual teaching and learners being physically

away from their universities. However, much as there was a glaring wake-up call for libraries to fully embrace VLIS at Ugandan universities, perceptions towards VLIS were poor as manifested by its scanty provision which was mainly limited to addressing user queries and Electronic Document Delivery Services (Nalumaga & Byamugisha, 2021). Yet, VLIS cannot be considered successful until there is a complete adoption, implementation and utilization of the services (Singeh et al., 2020).

Aim of the study

The purpose of this study was to identify the perceived benefits that accrue from VLIS at Makerere and UCU libraries with a view of identifying gaps that should be addressed in order to enhance VLIS uptake.

3. Research Methodology

Population: Users of Virtual Library services at Makerere and UCU universities include Undergraduate students, post graduate students, researchers, and faculty. According to Makerere's MyLoft platform, statistics indicated 14341 users in the system (Makerere University Library, 2022), while UCU's RemoteX database indicated a total of 3585 (Uganda Christian University, 2023). Regardless of the user category, the total number of users in the MyLoft and RemoteX systems was 17926, and these constituted the population of this study.

Sampling: Library users were selected using convenience sampling which targeted library users who were accessible and willing to participate (Etikan & Bala, 2017). Online questionnaires were delivered to VLIS users in MyLoft and RemoteX databases and data was halted when the quota was met.

Sample size determination: Krejcie and Morgan's formula, one of the most used techniques for sample size calculation according to Johnson and Shoulders (2019) was adopted for estimation of the proper sample size for library users. Several studies, notably Gerald et al. (2020) as well as Ikon and Ogochukwu (2019), have used Krejcie and Morgan's method to compute sample sizes. If the population size is known, according to Chaokromthong and Sintao (2021), Krejcie and Morgan's sample calculation method is applicable. This method was therefore appropriate for the present investigation since the number of library users was clearly known based on the surveyed universities virtual library users' data. The total number of library users at the two selected universities, Makerere (14341) and UCU (3585), was 17926 in this study. The calculated minimum sample size for the current study was 407 as per the formula below.

Using Krejcie and Morgan's formula

$$S = X^2 \times N \times P(1-P) / \{d^2[N-1] + X^2 \times P(1-P)\}$$

$$= \frac{1.96^2 \times 17926 \times 0.5(1-0.5)}{\{0.048^2 \times [17926-1] + 1.96^2 \times 0.5(1-0.5)\}}$$

S = 407

N= Total Population	*17926*
X= z-score x at a Confidence Interval of 95%	*1.96*
p=The Population proportion (assumed to be 50% since this would provide the maximum sample size)	*0.5*
d= degree of accuracy/desired margin of error expressed as a proportion of 0.05. For more precision, this study used the desired margin of error of 0.048	*0.048*
S=required sample size	

In distributing the 407 amongst the two selected universities, I applied probability proportional to size (PPS) and came up with 326 users for Makerere and 81 users for UCU, as computed below.

Makerere University: $\frac{14341}{17926} x407 = 326$

UCU: $\frac{3585}{17926} x407 = 81$

Data collection method: The survey method which employs a questionnaire was used to collect data (Leavy, 2017). An online survey instrument was used because the library users in this study were literate and could complete the questionnaire independently without the help of a researcher (Yu et al., 2019). Secondly, online questionnaires allowed the researcher to reach out to geographically dispersed library users and were relatively cheap (Leavy, 2017). The questionnaire was designed using online software services referred to as Kobo toolbox and e-mailed it to the library users to complete.

Data quality control: The Alpha coefficient was used to ascertain the reliability of the questionnaire by measuring the accuracy and consistency of the feedback received from the survey questionnaire before proceeding to the subsequent phase of analysis (Nawi et al., 2020). Cronbach's alpha coefficient is one of the common indicators used to measure the reliability of the survey instrument (Creswell & Creswell, 2018; Nawi et al., 2020). The Reliability Coefficient of each dimension of the questionnaire was computed in SPSS using Cronbach's Alpha Coefficient (a), which gave a reliability value above the threshold of 0.70. Most of the values exceeded the acceptable range of 0.70 and were above 0.80, with an overall reliability result of .843 (Ikon & Ogochukwu, 2019). This implied that the questionnaire was actually excellent and highly reliable.

The pilot study was conducted in two universities with similar settings as the main study institutions and this enabled the pre-testing of research instruments (Ruel et al., 2015). The questionnaire was

pre-tested before data collection, and the researcher carefully examined the questionnaires after they were completed to ensure that all questions had been adequately addressed.

Data analysis and presentation: Quantitative data analysis from the questionnaires was carried out using the SPSS software program for Windows, version 21 (SPSS Inc., Chicago, Illinois, USA). This enabled us to carry out intricate statistical operations and summarize and present data in tables, charts, and other visual representations (Schwartz et al., 2018). Findings were expressed as frequencies, percentages, and mean for quantitative variables.

Ethical considerations: The Bordens and Abbott (2018) APA ethical criteria for human participants were followed in this research. Research and Ethics Committee approval was acquired before data collection. Voluntary participation was observed by giving participants liberty to freely participate in or opt-out of the study anytime at will. Informed consent was also granted when the researcher informed participants of the purpose, benefits, and risks of the study. Anonymity and confidentiality, where the identities of participants were concealed, were also ensured (Bordens & Abbott, 2018).

4. Findings of the study

Response rate: As stated in the methodology section, the survey targeted 407 library patrons. Only 394 of these were clean submissions that were properly filled out and examined, representing a 97% completion rate. According to Johnson and Christensen (2020), any response rate of more than 70% is statistically acceptable.

Library users' socio-demographics and personal information

Library users' demographic characteristics entailed sex, age, gender, category of library users and academic year as presented in the table below.

Table1: Library users' demographic characteristics (n=394)

Library users' social demographics		Makerere		UCU		Total	
Sex	Female	117	36.9%	34	44.2%	151	38.3%
	Male	200	63.1%	43	55.8%	243	61.7%
	Total	317	100.0%	77	100.0%	394	100.0%
Age	< 23 years	118	37.2%	42	54.5%	160	40.6%
	23-26 years	96	30.3%	27	35.1%	123	31.2%
	27-30 years	36	11.4%	3	3.9%	39	9.9%
	Above 30 years	67	21.1%	5	6.5%	72	18.3%
	Total	317	100.0%	77	100.0%	394	100.0%
Category of library user	Undergraduates	225	71.0%	69	89.6%	294	74.6%
	Postgraduate student	88	27.8%	8	10.4%	96	24.4%
	Teaching staff	4	1.3%	0	0.0%	4	1.0%
	Total	317	100.0%	77	100.0%	394	100.0%
Academic year	1st	66	21.1%	25	32.5%	91	23.3%
	2nd	114	36.4%	15	19.5%	129	33.1%
	3rd	111	35.5%	37	48.1%	148	37.9%
	4th	19	6.1%	0	0.0%	19	4.9%
	Others	3	1.0%	0	0.0%	3	0.8%
	Total	313	100.0%	77	100.0%	390	100.0%

Users' self-assessment of their attitude towards VLIS

Attitude was examined in regard to self-assessment towards VLIS. Library users were presented with statements to do a self-assessment of their perception towards VLIS. They were given a set of predetermined statements in which they were asked to rate themselves regarding how they felt about VLIS services. The ratings were scored based on a Likert scale of: strongly disagree (1) to strongly agree (5) responses. Mean levels of agreement or disagreement were then computed with an objective of understanding areas/dimensions where they exhibit good

performance, and where there are performance gaps. A comparison was made between users in the two universities and the outcomes of the empirical analysis are summarized in the table below.

Table 2 showing Users' attitudes towards VLIS (n=394)

	University	N	Mean	p-value
I feel comfortable and enjoy using VLIS	Mak	317	3.87	0.416
	UCU	77	3.97	
	Total	394	3.89	
I am willing to learn more about VLIS	Mak	317	4.3	0.939
	UCU	77	4.31	
	Total	394	4.3	
I feel uncomfortable when my colleagues discuss about VLIS	Mak	317	2.62	0.167
	UCU	77	2.38	
	Total	394	2.57	
I think that improving my own knowledge about VLIS is important	Mak	317	4.31	0.786
	UCU	77	4.34	
	Total	394	4.31	
I believe that VLIS can help me improve knowledge in my studies	Mak	317	4.39	0.896
	UCU	77	4.4	
	Total	394	4.39	
VLIS can improve my learning and research	Mak	317	4.39	0.549
	UCU	77	4.45	
	Total	394	4.4	
I think that VLIS training should be included in university education curriculum	Mak	317	4.25	0.088
	UCU	77	4.03	
	Total	394	4.21	

The data presented in the table above reveals several facts about users' attitudes about VLIS. Firstly, it demonstrates that users recognized VLIS as very effective in augmenting their learning and research pursuits. This is manifested in the statement "VLIS can improve my learning and research", which scored the highest mean score of 4.4. This implies that VLIS is significant in contributing to the primary goals of universities, namely learning and research.

Secondly, the next highly rated statement "I believe that VLIS can help me improve knowledge in my studies" with a mean score of 4.39, reflects users' recognition and value for VLIS as a tool that helps enhance their knowledge in academic pursuits.

Consequently, respondents acknowledged the significance of enhancing their understanding of VLIS, as shown by the following statement: "I believe that enhancing my personal knowledge about VLIS is of utmost importance," which obtained the third highest score (mean = 4.31).

The users' motivation for improving their knowledge of VLIS was therefore stimulated, as shown by the statement that received the fourth highest rating, with an average score of 4.3, which states "I am willing to learn more about VLIS."

Library users further expressed agreement with the assertion that the inclusion of VLIS training within the curriculum of university education is warranted. This statement is a reflection of the previously observed advantages of VLIS in relation to enhancing academic performance, which seems to have served as a driving force behind the aspiration to include VLIS in the University's educational program.

Librarians' opinion of users' attitude towards VLIS

Librarians, too were asked to share their opinion and experiences about how users perceive VLIS. In agreement with the users' data about their attitudes towards VLIS, a staff member from UCU noted an improvement in users' attitudes regarding VLIS. She claims that students used to boast about nonuse of the library during their whole academic career, but this is no longer the case, as she recalls that attitude toward library usage has changed.

" They are no longer proud of not using the library since someone may remark, "I finished my entire campus without visiting the library," which is no longer true (Staff U2E).

Much as users agree to all benefits of VLIS, their comfort and enjoyment in utilization of VLIS was rated low. The statement "I feel comfortable and enjoy using VLIS" scored the second last with a mean of 3.89. This implies that there are factors that deter users from their comfort and enjoyment of using VLIS.

In concurrence with the users' statistical data, a Makerere University staff member reported lack of interest exhibited by some users when called upon to attend library training. Several meetings have been scheduled for staff and students but they do not show interest and she described that, *"We have scheduled several trainings, the IL training for Staff, but somehow students and staff don't show interest" (Staff U1E).*

Librarians' opinion of faculty attitude towards VLIS

The faculty perceptions towards VLIS were also investigated. Librarians disclosed that academic staff largely have a negative attitude towards VLIS. Staff U2L noted that some faculty are proud and think they do not need the library. According to this respondent, librarians' endeavor to enlighten them that they need library resources, not only for themselves but also for their students as explained that, *"Even staff are proud sometimes. They think they don't need library resources. We encourage them and say, look, you don't need this only for yourselves but for your students too!* (Staff U2L).

Another interviewee lamented that after training lecturers, they don't come back for consultation or clarification on anything they need further understanding about. Yet, it's very necessary for lecturers to have a thorough understanding of VLIS so as to guide their students in accessing and utilizing it as staff U1E explicated: *"You have a training, but they don't come back for guidance because once you do a training, in a way you are sensitizing the staff, you expect them to come back and improve on their competencies to support the users, which is still a challenge"* (Staff U1E).

5. Discussion and implications of findings

According to the table, users valued VLIS in terms of improving their learning and research (mean 4.4) and helping to improve users' knowledge and subsequently, studies (mean 4.39). These results are consistent with Peter et al. (2019) findings that VLIS frees up users' time so they can focus more on improving the quality of their research and publishing. The implication of this finding is that VLIS offers a significant contribution to the attainment of university goals and as thus, its enhancement should be given priority on all fronts, including funding.

Well as VLIS is reportedly beneficial to the users, the findings indicated limited comfort and enjoyment with an average of 3.89. This finding raises very pertinent questions as to what could deter users' full gain from VLIS. There are several challenges facing library users to which this finding could be attributed. These range from insufficiency of user education, lack of skills to access, retrieve, and use information in different formats, and lack of computer and general ICT skills and insufficient ICT infrastructure. (Aminu, 2022; Gawai & Rokade). This similarly resonates with another study carried out to establish the "Reality of Library E-resources Acceptance by Postgraduate students of Digital School of virtual and Open Learning, Kenyatta University, Kenya" in which Michael (2019) revealed that a reasonable number (51, 40.5%) of

users lacked ICT skills. Lack of skills to utilize VLIS hence seems to be a key factor that limits users' comfort and enjoyment of VLIS and to address this imbalance, universities are called upon to intensify virtual library training so as to improve the much-needed users' skills. This finding reveals that several challenges affect users' comfort, enjoyment and full benefits of VLIS. It also implies that these challenges have to be addressed so as to improve the users' attitude towards VLIS. Inclusion of VLIS training in the University teaching curriculum is one of the desires that users exhibited as per the findings in the table. This similar cry was re-echoed by Nalumaga and Byamugisha (2021) who suggested embedding library staff in the e-learning programs and integrating information support in the e-learning curriculum rather than handling it separately.

The challenge of insufficient ICT infrastructure is indeed a threat to optimal enjoyment of VLIS and its benefits.

6. Conclusion

This study examined library users' attitudes towards VLIS in Ugandan public and private universities. The findings revealed that VLIS is highly regarded in terms of enhancing users' learning and research (mean 4.4). The study further confirmed users' continued interest in learning more about VLIS, which ranked second on the list with a mean of 4.3. Another statement, "I believe it is important to improve my own knowledge of VLIS," demonstrates users' appreciation of VLIS. These findings are hence a demonstration that VLIS plays a significant role in the key functions of universities which are learning and research.

On the other hand, however, users reported limited comfort in using and enjoying VLIS with an average evaluation of 3.89, implying that they seem to be missing this VLIS benefits to its fullness. This could be influenced by several factors as earlier highlighted ranging from lack of IL skills and insufficient ICT infrastructure among others.

7. Recommendations

Based on the fact that library users are lack the optimization the information literacy and digital skills to utilize VLIS, virtual training should be conducted more often and rigorously. This will help equip users the necessary skills to browse, filter and utilize authentic information as well as virtual services.

We recommend that libraries create a media monitoring room to assist users as they browse library databases. This will help librarians observe users as they browse through library websites and databases with a purpose of assisting them in case, they get stranded. Pop-up windows should be designed to interact with particular users who may be having difficulty while browsing. This would provide immediate assistance to users who may be frustrated while perusing the databases. This will not only save them time, but will also prevent them from becoming frustrated and resorting to non-library gateways, which may be unreliable.

We also recommend a policy that will enable implementation of zero rating where users do not spend data while browsing library websites and databases. This could help promote e-resource utilization that even when in the comfort of their homes, lack of data will not be a barrier to browsing, retrieval and usage of library resources.

A policy on incorporating virtual library training into the university teaching curriculum should be established and implemented. Universities should make information literacy (IL) a taught and examinable course unit, since VLIS consumption will remain a pipe dream without digital and IL capabilities.

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