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COVID 19 Synchronicity: Evaluating Virtual Reference Services of some Academic Libraries in Africa

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Introduction

The recent in-road outbreak of the Coronavirus (COVID19) pandemic has influenced the ongoing downslide on economic development globally to the effect that financing of most organizations has been reduced or cancelled. The raging effects of the pandemic has been quite severe to the extent that, academic institutions and libraries have not been left out. This situation coupled with changing technological advancement, the explosion of information, as well as information seeking needs of library users has affected how they access and utilize library resources and services. This has compelled librarians to make a conscious effort sustaining their relevancy in providing responsive communication services and optimal delivery models of library resources to users during this COVID 19 pandemic. The efficiency and effectiveness of academic library service delivery success during this period can be measured by how timely and relevant communication and information provided are to the users locally and remotely. The acceptance and predominant growth of digital library resources and services have enhanced the access and service delivery of information without any limitation on time and location.

The era of the information revolution is shaping the nature of academic library resources, as well as services. For this reason, users are shifting from the traditional manual mode to a digital mode. The exponential development in digital services has led to a shift in the traditional role of reference librarians assisting users at the reference desk in the library to answering queries using electronic and digital reference service delivery models for both local and distance users. Academic reference librarians have now consolidated traditional and digital services to help streamline and eliminate the physical location of the reference desk to a more proactive model in answering users' queries (Bandyopadhyay and Boyd-Byrnes, 2016).

Khobragade & Lihitka (2016) argue that the nature of traditional reference services has changed tremendously due to the introduction of the internet and digital libraries. The role of reference librarians has taken a different dimension from sitting behind the reference desk duties to multifaceted tasks such as using text messages, live chat, instant messaging, telephone and email, audio and video conferencing software's to communicate with users (Bandyopadhyay & Boyd-Byrnes, 2016). The transformation of reference services by librarians within this last decade is due to successful electronic strategies in providing accurate and timely information to meet user's needs. The past decade has seen roving and tiered reference service transactions from face to face,

email and telephone content between librarians and users to instant chat and messaging. With the rapid change in library services, reference librarians are attempting to reinvent and embrace themselves with new technological tools to enhance their services (Baro et al., 2014). One service that academic libraries are employing to reshape and expand to match the communication and information crave of their users' delivery needs is the Virtual Reference Service (VRS). Virtual Reference Service which is also known as Online Reference Service and Digital Reference Service.

According to Khobragade & Lihitkar (2016) VRS is the use of web- based interactive software in providing instantaneous support for library users locally or remotely. When it comes to accessing help from the library, Hervieux & Tummon (2018) asserted that VRS are pervasive in public and academic library settings in providing local and remote users great support. VRS has been defined by many researchers, what is common among them is the use of asynchronous and synchronous channels to communicate between library staff and their users online. It is the service provided by the library reference section using electronic means to send timely answers while communicating with users remotely. They are an extension of library services provided to assist users remotely using digital resources and Web 2.0 platforms to avoid physical presence and face to face communication. VRS has enabled reference librarians to answer questions in different modes. By telephone, Instant Messaging (IM), email and also to perform other multitask responsibilities.

This transition from print to electronic has significantly resulted in an exponential change in the provision of services. Reference librarian's delivery services have changed from the traditional mode of assisting users with print materials in the library to electronic channels in answering queries anywhere and anytime. The information expectation and needs of library users are highly focused on virtual resources. This demand has in turn enhanced the essence of VRS. VRS is one of the vital constituent components of library services.

VRS has numerous advantages to academic libraries through its efficiency, effectiveness and easy way of providing reference service to users. Several researchers have discussed the new role of reference librarians in the digital age (Bandyopadhyay & Boyd-Byrnes, 2016; Barry et al., 2010; Ekwelem et al., 2018; Hervieux & Tummon, 2018; Khobragade & Lihitkar, 2016; Luini, 2012; Qobose & Mologanyi, 2015; Rehman & Kandari, 2019; Sekyere, 2011; Sinhababu, 2016; Stambaugh, 2016; Yatin et al., 2018). There is no doubt that this era of information and digital

revolution has brought about change and also affected reference service delivery in serving both local and distant users of the library. The gap that however exists is that the few studies that have been conducted on VRS in libraries have been focused mainly in the foreign countries with limited studies conducted in Africa (Eke & Ekwelem, 2014; Ekwelem et al., 2018; Khan et al., 2017; Sekyere, 2011; Tutu, 2006). This study seeks to evaluate the VRS services in use before and during the COVID 19 pandemic, types of services provided, most patronized service(s), challenges and the way forward for VRS in academic library service provision in Africa.

The purpose of this study is therefore to evaluate the use of virtual references services before and during the COVID 19 era in some Africa Countries and to answer the following questions:

1. What are the Virtual Reference Services (VRSs) provided for library users before and during the COVID 19 era?
2. What is the overall patronage level of these VRSs before and during the COVID 19 pandemic?
3. What are some challenges academic libraries encounter in providing VRSs for users?
4. What are the strategies to enhance VRSs to meet the information needs of library users?

Statement of the Problem

The priorities and strategies of operations in academic libraries has changed as a result of the COVID 19 pandemic which lead to the closure of universities. This lockdown greatly affected academic libraries as they were supposed to provide continuous online services to users resulting in an increase in finances in an already financially constrained environment being operated in. Academic libraries were compelled to increase remote services provided by reference librarians to their users (Mehta & Wang, 2020). There is no doubt that technology already had a historical impact on academic libraries but COVID 19 had increased it immensely.

The rebound and thriving of technology in academic libraries has affected the duties and responsibilities of librarians, as well as services provided by libraries to users. One service that has emerged, embracing technology in academic libraries in a bid to match the communication and information crave of users' needs both locally and remotely is Virtual Reference Service (VRS). However, regardless of the numerous benefits associated with digital resources and services,

African libraries are faced with financial challenges, poor management support, inadequate training on online information resources for library staff, inadequate internet connectivity, poor staff attitudes towards these services and inadequate training on digital services for users, etc. (Adeh & Hayatu, 2020; Bawack, 2019; Mawere & Sai, 2018; Ugwu & Orsu, 2017). The researcher is motivated to find out through a scientific study, the extent to which COVID 19 has affected VRS in some African academic libraries. Also, how these advancements in technology are being utilized, as well as efforts being made to meet the anticipated user needs and challenges of VRSs during this COVID 19 era.

Challenges of academic library staff during the outbreak of COVID 19

More than 88,000 COVID 19 cases were confirmed as at 8 June 2021 in Africa (Adotey, 2020). In an attempt by African leaders to contain the spread of COVID 19, institutions and schools were closed down and academic libraries were not spared. According to the World Economic Forum, seventy percent (70%) of the world's population was affected by the closure of the universities and schools due to the outbreak of the COVID 19 pandemic (Adotey, 2020). The wellbeing of library staff became a major priority during the pandemic, and this resulted in academic library staff migrating online to work from home. Librarians who wanted to be relevant during this time needed to be digitally led and also cyber librarians. Investing in online services and resources became a major task and priority due to the closure of physical libraries. The lack of preparedness before the outbreak of the COVID-19 pandemic has drastically changed the priorities and strategies of academic libraries in Africa because of the financial constraints and budget cuts within the environment they operate. In the process of working from home, staff encountered some obstacles and challenges including lack of highspeed connectivity, availability of computers, library staff subscriptions to the internet with their own money, purchasing hotspot devices/routers/modems, some library staff not being well equipped with the use of technologies, lack of private working space at home, juggling between being an employee and a parent, lack of training and preparedness on digital services and resources, coping with children learning and playing at home etc. According to Mehta (2020, p. 354) "all these challenges directly or indirectly affect the ability of library staff to explore the right tools and provide digital library services efficiently, confidently and comfortably during the pandemic period".

Methodology

The case study was the research design used for the study. The study gathered quantitative data to determine the role of VRSs by African academic libraries in this COVID 19 era. Seven Sub Saharan African countries, that is, Ghana, Uganda, Tanzania, Nigeria, Kenya, South Africa and Botswana were purposely chosen because of their burgeoning establishment in VRSs in Academic Libraries. The researcher sampled academic librarians from these countries as respondents to respond to the online questionnaire. The librarians who took part in this survey were from both private and public academic libraries. Due to the lockdown restriction on institutions, the online questionnaire was the best option for the researchers and was also relevant because of its relatively time requirements and its low cost (Tsekea & Chigwada, 2020). The questionnaire had both closed and open-ended questions. A total of 141 responses were received between the periods of March 25, 2001 to May 3, 2001 to ascertain the role of some academic libraries in Africa in providing VRSs during the COVID 19 era. Descriptive statistics (Means and Standard Deviation), inferential statistics (Multiple Regression and ANOVA) were used for the quantitative analysis of the data. Data was analysed using Microsoft Excel.

Result

The findings of this study will serve as a reference point in addressing ways of improving virtual reference services in academic libraries during the outbreak of COVID 19. It will also aid policy makers and management of various academic libraries in Africa in taking concrete decisions on the use of VRSs towards achieving organizational goals in situations of lockdown. Due to the extent to which digital technologies are being used in academic libraries in Africa, the study will critically examine the strengths and weaknesses of VRSs and how to extend and improve its services. It will also enlighten library staff on the relevant tools that can be employed by librarians in improving library services using VRSs in academic libraries.

Discussion

Biodata

Percentage and frequency tables numbered 1-3 were used to analyse the results that were obtained from the online questionnaire. The breakdown by gender of the 141 librarians who participated in the survey indicated 68(48.2%) as male and 73(51.8%) as female (**Table 1**). This show that majority of the respondents were female. **Table 2** breakdown indicate 44(31.2%) of the total

number of respondents were from Ghana while 31(22.0%) respondents were from Nigeria and Uganda. On the other hand, 12(8.5%) and 11(7.8) responses were from South Africa and Tanzania respectively. As an inference from **Table 2**, 9(6.4%) were from Kenya and 3(2.1%) responses were from Botswana. This implies that, most of the responses came from Ghana followed by Nigeria and Uganda. The **Table 3** responses also indicated that 119(84.4) respondents were Professional librarians while 16(11.3%) were Para Professional and 6 (4.3%) were Non-Professional staff of the academic libraries. This outcome indicates that, more than half of the librarians who participated in this survey were Professional followed by Para Professionals. See **Table 3**.

Table 1: Gender of the respondents

Gender	Frequency	Percent
Male	68	48.2
Female	73	51.8
Total	141	100.0

Table 2: Countries of respondents

Country	Frequency	Percent
Ghana	44	31.2
Nigeria	31	22.0
Uganda	31	22.0
South Africa	12	8.5
Tanzania	11	7.8
Kenya	9	6.4
Botswana	3	2.1
Total	141	100.0

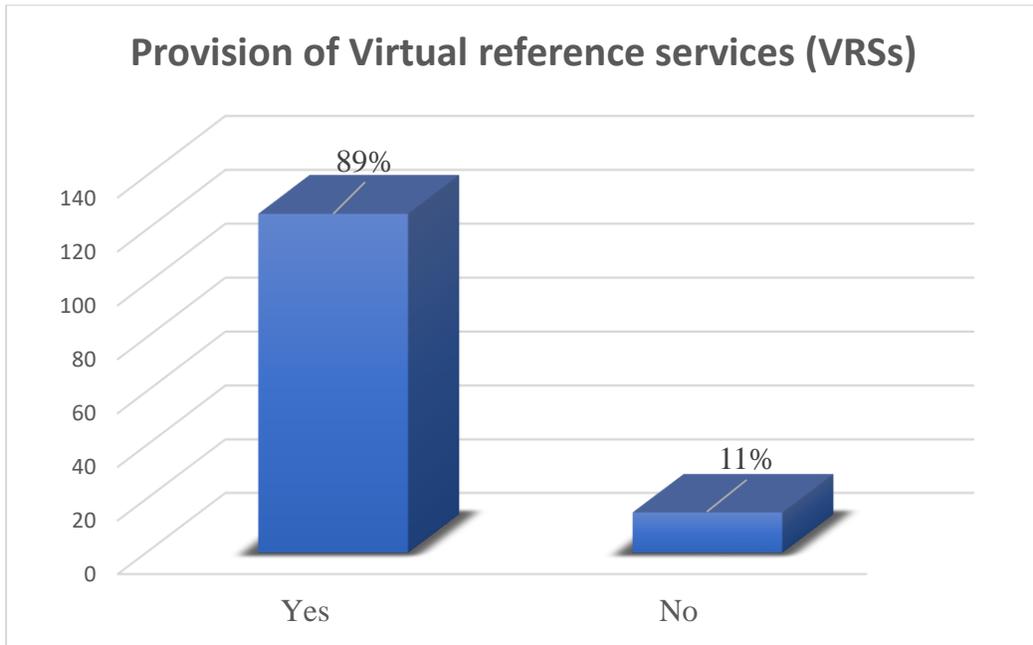
Table 3: Staff Rank of the respondents

Library staff rank	Frequency	Percent
Professional	119	84.4
Para-professional	16	11.3
Non-professional	6	4.3
Total	141	100.0

Provision of virtual reference services (VRSs)

The provision of online services by libraries for remote users has been effective and efficient through the use of VRSs. This service has helped library users to access the collections and resources of the library anywhere and at any time. According to Abubakar (2021), while the developed countries were recording rapid growth in the implementation and use of VRSs in academic libraries, their counterparts in developing countries were recording minimum success. The growing rate in implementation and incorporation of VRSs in these academic libraries can be attributed to the increasing number of remote users of libraries and the outbreak of COVID 19 pandemic. **Figure 1** shows the numbers of academic libraries providing VRSs to their users.

Figure 1: Provision of virtual reference services (VRSs)



Note: N= 126

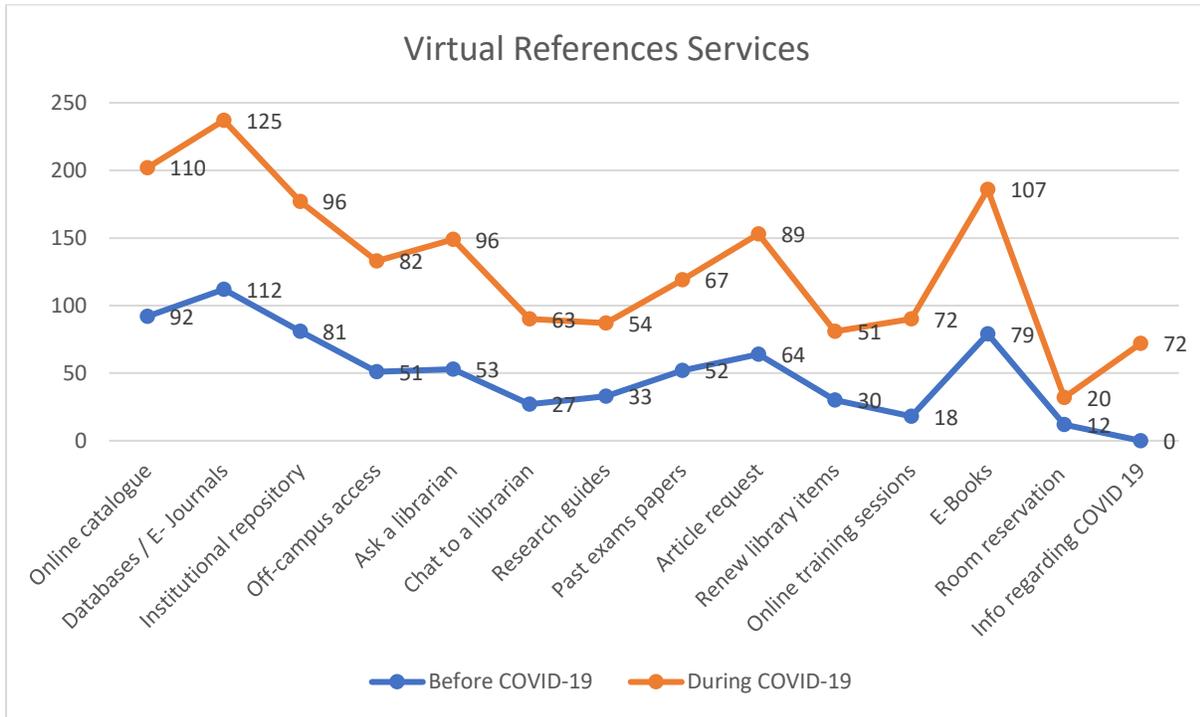
The findings show that, 126 librarians representing 89.4% of total number responses indicated their academic libraries offer virtual reference services (VRSs) to their library users. Fifteen (15) respondents representing 10.6% asserted that their academic libraries were not offering virtual reference services (VRSs) to their library users. The finding based on the responses show that the majority of academic libraries in Sub Saharan Africa Countries are making progress in providing VRSs to their users. This finding is in concurrence with a study by Rosenberg (2006) who asserted that the implementation of VRSs is progressing at a profuse speed and level in African academic libraries. From the responses, the implementation and integration of VRSs use in academic libraries in Sub Saharan African countries were encouraging even though some academic libraries were yet to implement VRSs in their service delivery.

Virtual Reference Services (VRSs) provided for library users before and during the COVID 19 era

Probing further, the researchers wanted to ascertain the VRSs provided for library users before and during the COVID 19 era. Respondents were asked to indicate as many as applied, which VRSs

were available in their library before and during COVID 19 pandemic. Figure 2 illustrates VRSs provided for library users before and during the COVID 19 era.

Figure 2: Virtual Reference Services (VRSs) provided for library users



Note: N= 126

Figure 2 shows a comparison of virtual reference services (VRSs) provided for academic library users before and during the COVID 19 era. As shown in the graph there was an 18 (14.3%) increase in Online catalogue services from 92 (73.0%) to 110 (87.3%) before and during the COVID 19 era. Respondents also indicated an increase of 112 (88.9%) to 125 (99.2%) for Databases / E-Journals and from 81 (64.3%) to 96 (76.2%) for the use of the Institutional repository thus, an increase of 13 (10.3%) and 15 (11.9%) respectively. An increase in these services were also recorded: Off-campus access 31 (24.6%), Ask a librarian 43 (34.1%), Ask a librarian 36 (28.6%), Research guides 21 (16.7%), Past exams papers 15 (11.9%), Article request 25 (19.8%), Renew library items 21 (16.7%) and Online training sessions 54 (42.9%) during the COVID 19 era. The incorporation of new online services by academic libraries during COVID 19 era was also

indicated for E-Books 28 (22.2%), Room reservation 8 (6.3%), and an increase from 0 to 72 (57.1%) for Information regarding COVID 19 services.

Interestingly, although the Covid-19 pandemic has had a tragic impact on some library services, the outcome of the findings shows that, academic libraries in Sub Saharan African countries had largely increased the incorporation and implementation of Virtual Reference Services in the library. The graph also revealed that the highest virtual reference service integrated and implemented during the COVID era was the Information regarding COVID 19 service 72 (57.1%), followed by Online training sessions 54 (42.9%), Ask a librarian 43 (34.1%), Chat to a librarian 36 (28.6%), Off-campus access 31(24.6%), E- book 28 (22.2%), Article request 25 (19.8%) and a 21 (16.7%) increase for both Renew library items and Research guides service. During COVID 19 era, these service thus, Online catalogue, Institutional repository, Past exams papers, Databases / E- Journals, Room reservation had low implementation because most of these academic libraries had already implemented them in their VRSs.

Patronage level of VRSs before and during the COVID 19 pandemic

The outbreak of COVID 19 should carve a niche for academic libraries to increase VRSs provided for remote users during the closure of institutions. Some studies believe that some users and libraries had little knowledge and little use of VRSs before COVID 19. The researcher wanted to ascertain whether the outbreak of COVID 19 had created an increase in patronage of VRSs in academic libraries resources or not.

The level of patronage was measured using a four-point Likert scale ranging from 1- No patronage, 2- Low patronage, 3- Average patronage to 4-High patronage. The overall means representing the levels of patronage are presented in the table below.

Table 4: Patronage level of VRSs before and during the COVID 19 pandemic

Virtual References Services	Before Covid-19		During Covid-19	
	Mean	SD	Mean	SD
Online catalogue	2.86	.907	3.00	1.007
Databases / E- Journals	3.10	.710	3.41	.862
Institutional repository	2.64	.936	2.99	1.000
Off-campus access	2.52	.990	2.98	1.045
Ask a librarian	2.33	.939	2.79	1.052
Chat to a librarian	2.28	1.001	2.71	1.073
Research guides	2.28	.966	2.62	.945
Past exams papers	2.65	1.076	2.85	1.108
Article request	2.70	.933	3.13	.963
Renew library items	2.33	1.019	2.72	.979
Online training sessions	2.24	.955	2.71	1.046
E-Books	2.71	.945	3.11	.939
Room reservation	2.01	1.000	2.27	1.114
Info regarding COVID 19	1.90	1.097	2.65	1.082

Note: N= 126

Variable	Patronage of VRS		t	df	Sig
	Mean	SD			
Before Covid-19	34.439	8.769	7.036	140	.000
During Covid-19	39.943	10.546			

Note: N= 126

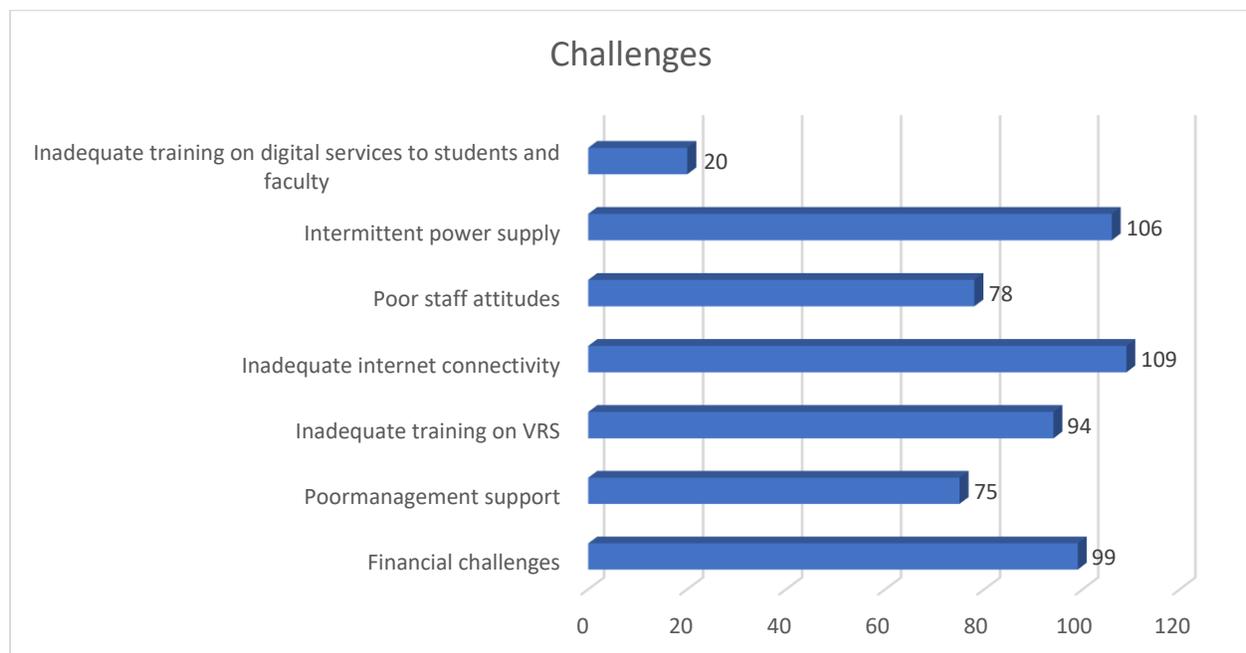
A paired-sample t-test was conducted to evaluate the impact of COVID-19 on the patronage of Virtual Reference Services provided by libraries. There was a statistically significant increase in patronage of VRS from before Covid-19 (M = 34.439, SD = 8.769) to during the Covid-19 pandemic (M = 39.943, SD = 10.546), $t(140) = 7.036$, $p < .001$ (two-tailed). The mean increase in VRS patronage was 5.503 with a 95% confidence interval ranging from 3.957 to 7.050. The eta squared statistic (.26) indicated a large effect size. Cohen (1988) proposed that an effect size of .14 or more represents a large effect. Thus, the Covid-19 had a large effect on the increase in the patronage of Virtual Reference Services rendered by academic libraries in Sub Saharan Africa countries.

This finding is in concurrence with a study by Abubakar (2021) who opines that academic libraries in developing countries had recorded medium success in the implementation of VRSs during the COVID 19 era. The finding has also shown that the COVID 19 pandemic has impacted positively in the rapid development and implementation of VRSs in academic libraries in Sub Saharan Africa. The findings also show that most users of academic libraries in Sub Saharan Africa patronize Databases / E- Journals more than any other VRSs. Likewise, from the table, others services such as Article request, E- Books, Online catalogue, Institutional repositories, Off -campus access and Past question were highly patronized to meet the high expectations of users in these academic libraries during the COVID19 period. The COVID 19 outbreak has showcased VRSs into the full glare of users and made known the enormous benefits it offers.

Challenges academic libraries encounter in rendering VRSs for users

Like all other services provided by academic libraries, VRSs come with its own challenges in accessing and sustaining its operation. For long term preservation of these services, it is imperative for librarians to identify potential challenges that could impede the effective running and usage of the services. As presented in Figure 4, the respondents were asked to outline some of the challenges they encounter in their quest to provide VRSs in their libraries.

Figure 4: challenges academic libraries encounter in providing VRSs to users



Note: N= 126

The corollary from **Figure 4**, shows 109(86.5%) respondents indicated inadequate internet connectivity while 106(84.1) stated intermittent power supply. Respondents also indicated challenges such as financial challenges 99(78.5%), inadequate training on VRSs 94(74.6%), poor staff attitudes 78(61.9%), poor management support 75(59.5) and 20(15.8%) for inadequate training on digital service to students and faculty.

The findings were in line with studies by Madu et al., (2020), Abubakar (2021) and Abdullahi & Mamza (2014), that plethora of challenges in operating VRSs in Sub Saharan Africa academic

libraries are due to inadequate internet connectivity, intermittent power supply, financial constraints, inadequate VRSs training for staff, users and faculty, etc.

Strategies to enhance VRSs

The rapid growth in the implementation of VRS in academic libraries are becoming more prevalent especially during the outbreak of the COVID 19 pandemic. For Sub-Saharan African libraries to benefit from VRSs, they will need to invest in digital resources and also boost their infrastructural capacities for an easy transition to digital mode. Finally, respondents were asked to indicate the strategies used to enhance VRSs to meet the information needs of library users. This was well captured in the responses by the librarians:

... *“Change of attitude to look at technology as an enabler for librarians to perform their tasks better and increase trainings for librarians, academic staff and students”*

... *“Improve on library budgets and encourage trainings for both staff and students”*

... *“More sensitization needed for both staff & students so that they become aware of the purpose of these services”*

... *“Physical and Online training for student, staff and faculty members on usefulness of VRS to enhance their research output”*

... *“More sensitization needed for both staff & students so that they become aware of the purpose of these services”*

... *“Multi sectoral approach. All stakeholders need to be sensitized on the need to enhance VRSs”*

... *“Improve ICT infrastructure and Awareness of available services, and recruitment of staff”*

... *“The institution should provide a separate budget for virtual library support especially in terms of IT support”*

... *“Effective training, avail adequate fund, ensure more advocacy programs and support from top management”*

... *“Management should augment to assist staff engaging in the VRS do Internet subscription, and the nature of erratic power supply be enhanced”*

... *“Fund should be made available for the library to provide alternative source or independent power supply”*

... *“Change of attitude to look at technology as an enabler for librarians to perform their tasks better, increase trainings for librarians, academic staff and students and increase capacity of generator for the library to increase power supply”*

... *“Staff training on digital skills should be encouraged, increase electricity supply, investing more on virtual reference services tool to enhance proactive service delivery”*

... *“Off-campus access should be provided to remote and distance students and physical or online training for student, staff and faculty members on usefulness of VRSs”*

Conclusion

VRSs are worthwhile services for academic library users both locally and remotely and as such, academic libraries in Sub-Saharan Africa should warmly embrace its use to meet the information seeking behaviour patterns of library users. The analysis of the findings suggests that, there is a high rate of VRSs implementation among academic libraries in Sub-Saharan Africa despite the plethora of challenges related to it. The correlation analysis to determine the patronage of VRSs before and during the COVID 19 outbreak established that, there was an increase in the implementation and integration of these services during the pandemic than before. From the study, inadequate internet connectivity, intermittent power supply, financial challenges, inadequate staff training on VRSs, poor staff attitudes, poor management support and inadequate training on digital service to students and faculty were the major challenges in operating VRS.

Recommendations

The following are some recommendations made based on the findings above:

Academic libraries in Sub-Saharan Africa should design workable disaster management plans and services, which will serve as a guide to cater for future calamities and institutional lockdowns.

This will ensure that library services will not be interrupted or closed down when there is a calamity or disaster.

African universities should invest in internet access and bandwidth (from kilobits to megabits or gigabits) for fast and reliable internet connectivity. High cost of telecommunication for universities can be solved when universities form a consortium and incorporate bandwidth management in their institutional goals and objectives. Appropriate structures should also be put in place to deal with problems of bandwidth optimization and management for staff, users and faculty members through training support.

One current panacea for the provision of VRSs for academic library users is the intermittent power supply in most African countries. This has endangered the effectiveness and efficacy of the VRSs provided by academic libraries to their users. Academic institutions should provide adequate funding for power supply, alternative power supply (solar, biogas, inverter, power plant, generator, etc.) and regular maintenance for alternative power supply for effective provision of VRSs to users.

Training and re-training support for staff, users and faculty members on VRSs should be a continuing process to help achieve organizational goals. Policies should be developed for training needs of staff and users of academic libraries to enhance their use of technological innovations to have a positive attitude on the services and also improve their scientific research needs.

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