



# Pandemic Outbreak Impact on Library Electronic Resources Development: A Case of One University in Zimbabwe

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**Abstract:** Covid 19 brought about challenges as well as opportunities to libraries of the world. It is also critical to note that the strength the library had in terms of technology, innovation and skills before Covid 19 was the one that enabled it to rise above the abnormal learning period of lockdown. Data was collected using questionnaires, interviews as well as document analysis techniques. A Convenience sampling was employed in the study. A quantitative approach was used in this study and survey being the research design. Content validity was used to ensure reliability and validity. Questionnaires, interviews and document analysis were used as data collection methods. A convenience sampling was employed. In this study, data was presented using tables, charts, statistical averages, statistical maps, and narratives. The study's findings showed that both the library and students lacked the necessary infrastructure. The conclusion made was that the library positively responded by maximising the Institutional Repository and linking Koha to Baobab for e books. The findings of the study are in agreement with literature particularly on the lack of infrastructure to support online library especially in developing countries. On challenges faced in the use of e resources the researcher concluded that lack of proper infrastructure on the part of students as well as the library hinders utilisation. It was recommended that the library make its resources available to patrons off campus through Virtual Private Network.

**Keywords:** Pandemic outbreak, Library, Electronic, Resources, Development, Zimbabwe

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## 1. Introduction

World governments took extensive measures to curb the spread of corona virus thus extensive institutional closures were seen during that period. Numerous libraries around the world were closed as well, but this did not imply that they ceased to serve their patrons; rather, it meant that they had to re-evaluate what services, in addition to those already available, could be provided online. When people came in great numbers to libraries for safety and assistance after earlier calamities, the library sector had first-hand knowledge of this phenomenon. Currently, the difficulty was in assisting customers who were far from the library's actual location. The physical aspect of library use abruptly disappeared

at a time when libraries were growing the range of activities that assist to characterize them as third places.

The fact that libraries began to redefine the services they offered at this point had a significant impact on them. The pandemic introduced a new set of concerns for those organizations already undergoing digital change. The pandemic caused many libraries that weren't already developing digital transformation strategies to start doing so (Garcia-Febo, 2021). The results of this process remain to be seen and understood as libraries keep moving to the digital direction.

The Covid-19 has influenced technical trends for many institutions, including libraries (Farooq et al., 2021; Rafiq, Batool, et al., 2021). The adoption and use of academic library technology by librarians and users is

rising because of Covid-19 (Rafiq, Batool, et al., 2021). The Covid-19 outbreak compelled educational institutions to shut down their physical library services and immediately transition to online environments to accommodate library patrons who were located remotely (Fasae et al., 2021; Mishra et al., 2020; Zhou, 2021). Mehta and Wang (2020) noted that the global pandemic had a significant impact on information practitioners, patrons, and facilities.

Harris (2021) claims that there were no pandemic plans, no work-at-home mind-set or training, no resources, no equipment, and no infrastructure for online work. On the other hand, the situation for libraries is made worse by the rapidly shifting information-seeking habits of library patrons and their lack of digital competence (Ameen, 2021; Rafiq, Batool, et al., 2021).

Higher education institutions of Africa opted to change mode of teaching despite the environmental and technological infrastructural challenges. Higher education institutions took measures to continue their academic programmes, most moving to e-learning and remote teaching as per recommendation of UNESCO (2020a, 2020b). As such it was necessary for electronic resources and other like materials to be accessed from a distance as the only means of accessing library resources. Peet (2020) indicates that when physical resources become unavailable or the availability is limited, the need for accessing and using e-resources may become higher. Nevertheless, not all the students are familiar with using multiple library search platforms to find the resources in need. Accessing e-resources off-campus only can increase the challenge because this requires that they should be configured properly beforehand.

It is also regularly noted that in much of sub-Saharan Africa, a lack of current journals is a major constraint on research ([http://www.acu.ac.uk/Arcadia\\_Growing\\_Knowledge.pdf](http://www.acu.ac.uk/Arcadia_Growing_Knowledge.pdf)). Electronic information forms an integral part of libraries assisting the users in learning, teaching and research. Therefore, it is the responsibility of library to keep pace with technological developments and cope up with the users demand for e-information Kumar & Singh (2011).

In a third world country like Zimbabwe however where power supply is a problem; the use of electronic resources has had its own challenges. Covid 19 however brought about a different learning environment where students would be expected to access resources in the comfort of their homes. Learning and accessing of resources is done virtually rather than physically. University libraries in Zimbabwe all belong to a consortium, the Zimbabwe University Libraries Consortium (ZULC). As such they pay for these resources as a consortium. It is also critical note that these resources are very expensive and normally take a huge amount in the library budgets. It is therefore critical for libraries to monitor usage and benefits to patrons

especially during the time of the Covid 19 when the library is only accessible virtually.

## 1.1 Statement of the problem

Based on library records or statistics, there was a notable decrease in the utilisation of electronic resources at a Zimbabwean University between 2020 and 2021. Universities subscribe to electronic resources as a consortium through Zimbabwean University Libraries Consortium (ZULC), because individual subscriptions are very expensive. Consequently, it is essential to keep an eye on their utilisation given their cost. The study therefore will ascertain the causes of this decline. In a study published in 2023, Majola examined the strategies for developing electronic resource collections in two specific university libraries in KwaZulu-Natal, South Africa. The findings showed that academic libraries encounter major challenges with limited library budgets and high subscription costs of e-resources.

## 1.2 Objectives

1. To determine challenges faced by the library in the usage of electronic resources
2. Discover initiatives taken by the library in response to challenges faced.
3. To determine literacy levels of users in the access and utilization of electronic resources.

## 1.3 Research Questions

1. What challenges are faced by the library in the use of electronic resources?
2. What actions have been taken by the library in response to COVID-19's challenges in accessing electronic resources?
3. Have library users received enough training in the use of electronic resources?

## 2. Literature Review

### 2.1 Challenges faced in the usage of electronic resources

The way academic libraries operate and provide services has been greatly impacted by the pandemic. Libraries were forced to close in accordance with the social distancing measures necessary to stop the spread, just as other workplaces. Administrators of libraries and other staff members were unable to prepare for the issues posed by the pandemic (Deol & Brar, 2021). Academic libraries naturally increase the amount and calibre of their work in times of crisis in order to satisfy the needs of the communities they serve. As a result, most of these

academic institutions swiftly adopted cutting-edge technology to guarantee information access (Hamad et al., 2022; Dube & Jacobs, 2023).

Results of a study carried about library services during covid 19 pandemic by Hernández (2023) reveal that the primary obstacles were a lack of digital skills for remote work, a lack of stability in the Internet infrastructure, problems with technology availability, and weaknesses in institutional planning and leadership. Librarians noted that during emergencies, personnel skills and the technology infrastructure presented obstacles and above all the enabling circumstances for remote work associated with working remotely, equipment access and technological proficiency came up as the biggest concerns.

According to Ashiq et al. (2023), the infodemic and changes in information-seeking behaviour, a lack of expertise in technology handling and telecommuting culture, workplace stress and anxiety, leadership, and planning are the main issues facing academic libraries. Budget cuts to address these needs and the growing demand for access to digital resources are additional problems (Chakraborty & Jana, 2021). Technical infrastructure, particularly the availability of dependable technologies, broadband Internet access, and a steady electrical power supply, is a major problem for developing nations (Tseke & Chigwada, 2020; Chakraborty & Jana, 2021).

A study on university students' access to library information resources during the COVID-19 pandemic in Africa was conducted by Shikane, Muneja, and Kassim in (2024). These findings demonstrate that, among the analysed studies, the majority (82.6%) point to restricted internet service availability as the main obstacle preventing students from using remote library resources during COVID-19. Apart from that, ten (10) out of twenty-three (23) reviews indicated that inadequate library e-resources collection was another challenge faced by university students in accessing library resources during the pandemic. This has been impacted by the lack of funding. African academic libraries have to subscribe to additional e-resources in order to fulfil the growing demand for e-resources from students. Additionally, students restricted off-campus access to library electronic resources and their lack of proficiency with digital and information literacy impeded their ability to use library resources remotely during the COVID-19 pandemic. Four out of the 23 evaluated studies identified social distance and lockdown as barriers to engagement between librarians and users, as well as a lack of understanding about remotely accessible library services.

Data is an obstacle to the utilization of electronic resources, as Mbambo (2020) illustrates, particularly in underdeveloped countries in the face of Covi19. According to him, it is crucial to make sure that users of

electronic resources may access data. Some universities in Southern Africa, including Lesotho, had solutions to this problem. The Lesotho government declared during lockdown that it was collaborating with two top cell phone companies to lower the cost of data for students. The National University of Lesotho (NUL) administration, the government, and cell operators reached an agreement to zero-rate students' access to educational platforms through a series of discussions. Due to this procedure, mobile data providers were able to stop charging students who visited NUL websites to make access easier

After China, Italy was the first nation to experience the COVID-19 pandemic. However, Italian libraries were not prepared to respond, in contrast to libraries in China (Ponzani and Maiello 2020). The insufficient quality of library staff and limited funding led to the situation where Italian libraries had not enough equipment to move onto the web (Caselli 2020a, 2020b). As a result, they had to quickly learn how to handle the crisis and reconsider their connection with the communities (Caselli 2020a, 2020b; Cognigni 2020) (Tammaro 2020). The lack of digital infrastructure, devices for accessing content, and digital competencies posed the most challenges (Baldi 2020). The lack of opportunities to communicate and interact with communities became apparent. Another obstacle to digital transformation was copyright (Tammaro 2020). In general, the COVID-19 situation demonstrated the necessity for a plan to transition libraries into digital ones, for a new digital paradigm, and for research into how the public views libraries (Tammaro 2020).

Other challenges included the population's low level of digital literacy and the lack of adequate web connectivity in distant places (Tammaro 2020). In general, libraries in China found the advantages of online work to be so real that it was questioned if they would be able to resume traditional operations once the quarantine was lifted and whether it was even worth returning

According to Kisangiri and Kaijage (2020), libraries all over the world are rapidly changing because of the epidemic and are now utilizing ICT applications. It is crucial to keep in mind that while access restrictions for electronic resources during COVID 19 may vary by university, they are more prevalent in developing nations than in developed ones. The notable obstacles in literature are poor information and digital literacy skills, students' negative attitudes towards electronic tools, poor Internet connectivity, poor ICT infrastructure, lack of generic e-resource portal interfaces, preference for print assets over electronic resources, discouraging e-resource use by academic staff, user authentication, download delay, lack of comprehensive ICT and searching skills among library staff and patrons, high cost of affordable online access, and low organizational budget for library departments.

Most library users prefer popular web search engines to library-driven systems; consequently, most library services continue to be underutilized. Librarians, therefore, need to adjust what they learn, how they function, and their effectiveness. Among the e-resources obstacles is that it requires substantial investment in capital, technology, and manpower to satisfy users.

A study conducted by Abiero and Amunga (2024) about access to electronic information resources in Law libraries in Kenya during covid 19 revealed that some of the challenges to the use of electronic resources were lack of computers, poor Internet connectivity and inadequate search skills which was linked to lack of elaborate training.

Accessing electronic resources outside of the university has been problematic, according to Molepo and Shokane's (2020) assessment for the University of Free State. Ten of the participants' commented that off-campus access needed to be enhanced. There may be issues with connectivity, the devices being used to access the services, and the credentials being used during the authentication process while using UFS LIS services off campus. Again, in order to take advantage of library users' experiences, such information needs to be regularly presented to them. The UFS Library's electronic resources are thus only available to those who are presently enrolled students or employees of the UFS.

In the case of Zimbabwean libraries ZIMLA REPORT (2020) states that there is now a dependency on social media for daily communication with specific Library clientele. Information sharing among librarians is possible through social media groups. However, there are issues with how much network providers charge for data bundles as a result. Few librarians can afford Wi-Fi services in their homes for online browsing and other uses. Most librarians find it difficult to access email services outside of their workplace. Many have stated that although there may be far over 80% of people using mobile devices, this does not necessarily correlate to the number of individuals who can use data plans and smart phones to successfully interact.

On South African perspective, The University World News (2020) states that Universities in South Africa face several challenges due to the high enrolment of first-year students from diverse social backgrounds. A considerable number of these students come from disadvantaged neighbourhoods in townships and rural areas in large numbers. Many come from under-resourced schools with little to no experience with ICT in teaching and learning. Before enrolling in college, many pupils might not have had access to computers.

These traits make it difficult for them to adapt to computer-based learning environments and any kind of online library technology that supports teaching and learning. Despite the notion that the majority of young people in today's society are "digital natives," having grown up with technology like computers and

smartphones, they often struggle to apply this knowledge to online learning. Institutions of higher learning should take the assumption of culture and environment into account. A significant barrier to the use of electronic book formats is the complexity of copyright rules, particularly in African colleges. Mukeredzi (2020) claims that academics and librarians also encounter difficulties with the intricate copyright rules and regulations that restrict access to e-resources.

Inadequacies and limitations in South Africa's copyright law have been brought to light by COVID-19, according to Denise Nicholson, scholarly communications librarian at the University of the Witwatersrand in Johannesburg, South Africa. These issues have a negative impact on access to information, knowledge sharing, and the delivery of pertinent teaching and research, Mukeredzi (2020).

According to Nicholson (2020) "Overnight, e-learning platforms became the virtual classroom for schools and tertiary institutions. Teachers and lecturers had to scan book chapters, articles, photographs, and other instructional materials from personal and borrowed copies and upload them to password-protected e-learning platforms, but they soon ran against the copyright barrier. Another significant obstacle was the academic e-book pricing structure. While widely accessible and affordably priced e-books could assist to improve the situation, the majority of e-books were out of reach for many people.

Since the majority of books that are used as textbooks can't be bought in electronic form, Nicholson (2020) states that access to e-books has been a particular issue for libraries during lockdown. For instance, two South African textbook suppliers only sell directly to academics or students and do not permit libraries to buy e-books. However, the majority of students in South Africa cannot pay e-book pricing, she noted, supporting the idea of "digital natives." The bulk of our first-year students are actually "digital strangers," and transitioning to computer-based and other online-based tools for teaching and learning is extremely difficult for them. Additionally, even when enrolled in universities, students frequently do not get the necessary support.

As a result, this has hindered their ability to successfully transition to university studies, which is a difficult process that calls for learning new skills, utilizing new technologies, and adjusting to a new social situation. The International Coalition of Library Consortia issued a statement in March 2020, asking publishers to temporarily waive some licensing restrictions. In response, numerous publishers provided access to extra content and made some COVID-19-related information freely available.

While others eased limits on concurrent access or permitted remote access, other publishers removed pay

walls from their whole portfolios. However, depending on the publisher and the region, access ended at different periods. The leaders of African copyright offices concurred that their continent lagged the rest of the world in terms of copyright regulations, particularly when it came to the usage of digital content. This was revealed at an African regional seminar put on by the Kenya Copyright Board and the World Intellectual Property Organization (WIPO) of the UN (KECOBO).

There have been a few rare instances reported in numerous African nations. 13 of the 53 African countries assessed, according to American copyright consultant Crews (2020), have no exceptions for libraries. The topics covered by these exclusions include document provision, interlibrary loaning, and reproducing copyrighted works for research and study. The preservation exceptions are the most typical specialized exceptions. Crews (2020), said libraries in 10 other countries have to do with a general exception, usually an exception that does not include specialised library activities.

Kawooya says, "For years, librarians and other partners have pushed for library-friendly copyright laws, the kind that provide broad limitations and exceptions, but the appeals fell on deaf ears (2020). COVID-19 has illustrated the delicate relationship and critical necessity between copyright, information access, and educational resources. The Nairobi summit participants in 2020 agreed that more exceptions are needed to create a correct balance in the copyright system, notably for digital technologies and to permit cross-border use.

## **2.2 Infrastructural Environment supporting use of electronic resources**

Infrastructure is an essential component of the accessibility of electronic materials, especially considering the nature of learning in the COVID era. It was undoubtedly challenging for patrons to access electronic materials without the right resources. The enabling infrastructure is required for access thus proper Wi-Fi connection, data bundles, availability of electronic textbooks, off-campus access, literacy and digital skills, and many more online learning packages.

Kumar (2023) highlights that over time; there have been significant changes in the technology aspect. As a result of the technological development, LIS practitioners now need to obtain familiarity with popular software and hardware, which is essential for teaching and learning methodologies. In terms of effectively utilising ICT services during pandemics. LIS specialists are now more determined to get over any obstacle that can hinder their ability to provide consumers with services. They have always worked to uphold the five rules or principles of Ranganathan in order to preserve the honour and stature of the librarianship profession. Since the library is a

growing organism, according to Ranganathan's fifth law, Library Philosophy and Practice (2011) it grew even during the COVID-19 epidemic. Libraries by so doing strengthen their commitment to straightforward yet creative methods of satisfying customers' information needs—even in the event of a pandemic.

In Pakistan, researchers from two universities—Islamia University of Bahawalpur and Bahauddin Zakariya University of Multan in Punjab—were rated on their satisfaction with ER by Ahmed and Amjad (2019). Most researchers were quite happy with the Electronic Resources they used, and Science Direct and Emerald were the most frequently used databases. However, the participants named the following as the primary difficulties they encountered when looking for these resources: a lack of an internet connection, interface design issues, power interruptions, technical difficulties, a lack of search strategy knowledge, and discomfort with online reading. A study of the usage of ER and services by faculty and students at the Fiji National University Library was carried out in Fiji by Sohail and Ahmad in 2017. Eight out of 16 libraries were surveyed by the researchers, and their findings showed that ER and services are becoming more widely known in the world of scholarly research. Slow downloads and website blocking were the issues that the participants listed.

On issues of infrastructural readiness, Singley and Viser (2020) reporting for Stellebosch University indicate that some of Stellenbosch's students needed additional support from the university. "According to Singley and Viser's (2020) report for Stellenbosch University, some of the university's students required further assistance from the institution in terms of infrastructure readiness. Naomi recalls: "Around 1,700 loan laptops were given to students who needed them, together with a monthly data plan to enable them to access online course materials on their mobile devices. Early in the second term, a strong new computer server was put into operation, and software modifications were made to lessen the dramatically increased network traffic, especially to the Learning Management System." Singley and Viser (2020).

A significant issue was finding and paying for digital versions of the library's printed materials, according to Library Connect (2020). "Even more pressure was placed on our materials budget. E-textbooks presented a significant issue, but thankfully several publishers, like Elsevier and CUP, kept their works readily accessible throughout shutdown.

In addition to on-campus access, students and staff were accustomed to seamless IP access as well as a fast and stable network. Although they were theoretically familiar with the EZ proxy off-campus access, there were still those who didn't "listen, or remember what they were told," says Naomi. Passwords that had expired or were not synchronized across applications were also a problem, as were incomplete roles in the university's

administration system. "Those issues all had to be fixed," she says. Because a few databases were not EZ proxy-compatible, the library was forced to contact the publishers directly. "Fortunately," Library Connect says, "they were all very supportive and quickly provided alternative arrangements" (2020).

Singley and Viser (2020) also note that connectivity issues were also experienced as it wasn't all smooth sailing with the Wi-Fi, fibre, or mobile hotspots provided by students' service providers, while some students on farms and in remote areas faced slow and unstable internet connections.

According to Library Connect (2020) in this library there was a dire need for library flexibility. Faculty librarians had to keep in mind the abnormal hours and circumstances of lecturers and postgraduate students. "We needed to be extra supportive, even to the point of spoon-feeding." Some library staff were among those challenged by a lack of infrastructure, connectivity and workspace at home, which meant that those still working had more to do. They had to learn new skills fast; for example, how to navigate MS Teams and online workshops and tutorials. "Most of all, everyone had to adapt to the individual challenges of our clients and colleagues", Library Connect (2020).

According to Singley and Viser (2020), communication about the availability of electronic resources was done through the Lib guides with tabs for e books and e journals, COVID-19 research, and additional resources were created, such as tools for finding and organizing course content, articles on online learning, and tip to share with students. Total views for the Lib Guide on finding, accessing, and using information effectively increased by 79% during the first month of lockdown compared to the same period in 2019

The library also organized "Smart Researcher Workshops," which were classroom-based training sessions. Since the pandemic, these have moved online, and attendance has nearly doubled. "The trend continues in the second semester, with even higher attendance and registrations. We've also added new topics, such as one on off-campus access to e-resources during lockdown."

### 2.3 Training and digital literacy

Asian Journal of Education and Social Studies (2024) carried out a study to establish the relationship between digital skills and the use of academic libraries in the Anglo-Saxon State Universities in Cameroon during the covid-19 period. The study found a positive correlation between use of academic libraries and digital skills ( $r(329) = .531, p < .01$ ). Regression analysis showed that Digital Skills is statistically a significant predictor of the use of academic libraries ( $\beta = .632, t = 7.269, p < .001$ ). Challenges witnessed in relation to digital skills of library users and staffs include technophobia, software, poor digital skills, and limited access to digital tools and

insufficient equipment. The libraries under study made efforts to manage challenges through networking, training, adopting new software and machines, and IT staff. These challenges therefore served as a barrier to the effective use of academic libraries.

Shikali, Muneja, and Kassim (2024) conduct a study titled Access to Library Information Resources by University Students during the COVID-19 Pandemic in Africa. The study's findings demonstrated that students' lack of digital and information literacy skills, as well as limited off-campus access to library electronic resources, hampered their remote access to library resources during the COVID-19 pandemic. Four out of the 23 analyzed studies highlighted a lack of understanding of remote library services, as well as limited interaction between librarians and users due to social distance and lockout measures.

According to Kisangiri and Kaijage (2020) the absence of training for staff and other library users is a limiting factor in the accessibility and use of e-resources as users face difficulties in assessing services and the staff may lack adequate expertise to assist the users. Ishtiaq (2020) highlights that, findings of the current study in the University of Pakistan indicate that, most of the library staff is using different web tools to deliver messages effectively. The current study results reveal that the private sector university libraries of Sindh are providing awareness programs. These options are being used to interact with their library members to provide the information and to answer their queries such as mobile application, web-based live chat, Facebook, Skype, LinkedIn, Instagram, Mobile Application Services Messengers updates data on social sites, email management, and other. Hence libraries are offering both services like providing instruction through Google class or virtual class, giving access to library resources through VPN and document delivery. Whereas according to the result of the current study yet some university libraries still depend on traditional services. This indicates that digital literacy, the skill level is still moderate among university libraries in the Sindh province of Pakistan. This finding implicates that some university libraries will not be able to manage disasters efficiently until they trained in digital literacy.

### 2.4 Measures taken to make electronic resources available

The literature although indicates that librarians deal with a variety of issues, including Internet access (Winata et al., 2021; Begum & Habiba, 2023), long workdays (Rafiq et al., 2021), and challenges managing and using other technologies and communication platforms (Ayeni et al., 2021). Librarians have proven however to be resilient and devoted despite the pandemic's ups and downs. Radford et al. (2021) state that a large number of librarians were not ready for the shift to working remotely and but acted as change agents in their

organisations by providing services to assist users in adjusting to the new landscape of online learning. Savaré (2023) recognizes that information professionals develop an emotional involvement and engagement with patrons. Consequently, it is undeniable that librarians fulfil their societal duty by making sure that patrons can obtain information during emergencies.

Shikali, Muneja and Kassimm (2024) in their study to ascertain types of services offered by libraries during covid 19 indicate (61%) of academic libraries supported university students' access to library information resources through social media. Consequently, academic libraries are the primary users of social media since it provides a way of communication that does not require physical proximity. Additionally, a sizable portion of academic libraries (57%) favour university students accessing library information resources through the use of library websites. Other technologies, such as Ask a Librarian, live chat, email, the library OPAC, Remotex and EZProxy, and video conferencing, were also used to access library information resources without the need for physical presence in the library.

Following are the adjustments made by libraries as noted by (Ashiq et al., 2023; Ayeni et al., 2021) made during the pandemic to ensure academic libraries could continue to operate: virtual support for teaching information literacy; research support; website reorganisation; provision of information and literacy on public health and safety topics; virtual reference; remote access to bibliographic resources and the creation of thematic guides; wellness and self-care activities; interlibrary loans and resource lending; and digitization of information resources. These initiatives show libraries' dedication to their local communities and confirm the value of libraries in assisting with distance learning and other research, learning, and teaching-related activities.

A study was conducted by Hernandez (2023) to ascertain measures taken by library for continuity of operations in Puerto Rican academic libraries. In an effort to replicate the in-person service hours provided by the library, librarians implemented a shift system for the "Ask Your Librarian" service to cover additional hours, including evenings and Saturdays. This was the second strategy that they identified by dividing up the task among librarians, the shift system allowed for the integration of technology for work organisation and the digitization of documents. In this instance, the inclusion of tools like file storage and sharing systems (Google Drive), web programmes for working with PDF documents (IlovePDF), and mobile scanning apps (CamsScanner) stood out. The ability to utilise and understand these technologies made it easier to organise and distribute resources among staff members as well as to digitise documents

Regarding online learning the National University of Lesotho Mbambo (2020) points out that the library reacted positively. The library, along with other faculties, provided the URLs of learning sites, such as those with e-book and e-journal subscriptions, the library website, the NUL Institutional repository (NULIR), and the online public access catalogue (OPAC). Students who visit the listed sites were not being charged. Popular sites with learning content, such as Facebook and Twitter, were not included in the zero-rating plan. The University has committed to maintaining its zero rating beyond the COVID-19 regulations. The University would cover students' data costs through a process known as "reverse billing," allowing students to continue e-learning.

NUL Library subscribes to several e-book and e-journal platforms and databases, as well as its own institutional digital library, the NULIR, which includes locally produced articles and theses. Lesotho-based institutions acquire resources via a country license through its consortium, the Lesotho Library and Information Consortium. NUL Library subscribes to several e-book and e-journal platforms and databases, as well as its own institutional digital library, which includes locally produced articles and theses. Lesotho-based institutions acquire resources via a country license through its consortium, the Lesotho Library and Information Consortium. Prior to COVID-19, these collections were accessible via the library's website. In addition, the library had subscribed to Remote x, a tool that allows for off-campus access to digital resources. The library had prepared a digital library as well as a tool for making the digital library accessible off-campus. Lesotho's libraries have thus created conditions for access to all library resources, including subscribed ones, through their consortium, Mbambo (2020).

2020; Tongji University Library 2020; Yunnan University Library 2020). The coronavirus pandemic has revealed numerous issues and has accelerated educational institutions' and libraries' digital transition. In China, libraries responded quickly to the pandemic (China Agricultural University Library 2020). More than 94% of quarantined libraries made COVID-19-related information available on their websites in order to reduce the risk of infection and educate visitors on preventative measures (Guo et al. 2020). The remaining 6% were unprepared for the task (Guo et al., 2020). The majority of libraries have gone online, providing remote access to free electronic resources and support services (China Agricultural University Library 2020). Print materials have been digitally converted (Guo et al. 2020). As a result, even in the midst of the pandemic, libraries continued to support universities (Sichuan University Library 2020).

COVID-19 is not China's first pandemic case. In 2003, a respiratory virus known as severe acute respiratory syndrome (SARS) struck, and in response to the health crisis, many Chinese researchers examined library services (Guo et al. 2020). Public libraries were closed at

the time, but they continued to provide necessary services, facilitate communication, and inform the public about the situation (Guo et al. 2020; Tonini 2020). Based on this experience, it was recommended that libraries elevate emergency information services to a strategic level (Tonini 2020) in order to provide accurate and timely information, prevent fear and panic, and fulfil additional roles such as institutional and community supporters, internal planners, government partners, educators, information community organizers, and more (Guo et al. 2020).

During the pandemic, libraries served as social media platforms, disseminating information and maintaining morale (Guo et al. 2020). The emergency response of Chinese libraries has become a model for academic libraries worldwide (Guo et al. 2020). Academic libraries worldwide are encouraged to develop emergency plans in order to carry out in-library safety management, out-of-library disaster relief work, and digital optimization of library services in unexpected situations (Zhengzhou University Library 2020a, 2020b) (Guo et al. 2020; Owusu-Ansah et al. 2019; South China University of Technology Library 2020; Wuhan University of Technology Library 2020a, 2020b).

According to Omane and Nmecha (2020), Artificial Intelligence (AI) will have a significant impact on the future of information provision in libraries. As examples of AI introduced during the COVID-19 pandemic, the authors mention chat bots and shelf reading agents. This is against the backdrop of librarians' concerns that AI will have an impact on their jobs. Guo et al. (2020) identified the measures used in the provision of patron services in Chinese academic libraries during COVID-19. The authors discovered that 92% of Chinese academic libraries disseminated COVID-19-related information via their websites, even as services were transitioned from physical to remote access.

Ifije and Yusuf (2020) investigated the role of academic libraries in the changing paradigm of teaching methodologies in Nigerian universities. The authors advocate "dynamism in library service provision and librarians' acquisition of new skills" (Ifijeh and Yusuf, 2020: 5-6). Landoy and Faerevaag (2020) investigated how the academic library at the University of Bergen in Norway responded to COVID-19 challenges. According to the findings, the library used automated access to electronic resources. The number of remote electronic resource usages is also reported. According to the authors, email and chatbots were used because most librarians worked from home.

A study conducted by Sanjeeva (2023) entitled "Remote Library Platforms at Mungalo University revealed that during the pandemic, librarians were connected to their users through remote access platforms like Knimbus, MyLOFT, RemoteXS, EZproxy, Refread, INFED, OpenAthens, MAPMyAccess, and RemotLog. Digital technology enabled the remote utilization of

subscribed resources through personal computers, laptops, smartphones, and other devices. Librarians have also established user credentials and provided online education to users

According to Kodama (2020), many university libraries were also closed or provided limited services following the lockdown of university campuses. According to a survey conducted by MLAK, 74 of the 86 national university libraries were closed. Various types of information and services were provided via library websites. Kyushu University Library was closed from April 11 to the end of May, with limited service resuming after June. While the library was closed, they provided a service to send faculty members, graduate students, and senior undergraduate students electronic books and copies of articles on request as well as links. In addition, the library launched a new website, "Library Response to Novel Coronavirus (COVID-19)," to provide information, Kodama (2020).

Toeppe, Hui Yan, and Kai Wah Chu believe that this was a watershed moment in the transition from printed books to e-books (2020). Digital content, including e-books, has already been used in higher education institutions in the US. According to a Library Journal (2019), a survey was conducted of 199 faculty members in higher education institutions in the US who were engaged in a wide range of research fields. The results showed that 84% of faculty members used some digital resources (e-books, 54%) for education. The result indicated that many faculty members in the US use digital content such as e-books for their courses.

According to Silva (2020), the introduction of e-books in Japanese educational institutions has also been delayed. According to a 2019 survey conducted by the Ministry of Education, Culture, Sports, Science, and Technology, the total cost of library materials in Japanese universities was 70.8 billion yen, with e-books accounting for only 1.5 billion (2.2%) of that total. According to the research findings, eBooks' popularity increased during the stay-at-home period, but audiobooks' popularity continues to outnumber eBooks in both environments.

The new coronavirus (SARS-CoV-2) has been affecting public life in Slovenia since the beginning of March 2020, when the first infection was confirmed, followed by an official acknowledgement of the epidemic, according to the IFLA Section Academic and Research Libraries. Universities and other institutions of higher learning closed their physical campuses and conducted all academic activities online. Although the Government of the Republic of Slovenia declared the epidemic over on May 31, 2020, the study and research process was mostly delivered remotely until the end of the summer semester (that is, by the end of June).

According to the IFLA SECTION Academic and Research Libraries (2020), at the start of the first wave of



the COVID-19 epidemic in Slovenia, no one anticipated that it would soon cause an almost complete lock-down of public life, and most academic libraries responded quickly to the new situation. They expanded the number of electronic information resources and remote services available to users. During the complete closure of libraries, online help and assistance to users in finding and using information resources was also organized. Negotiations for better access to licensed resources intensified within Slovenian consortia for the purchase of electronic resources. This included low-cost Article Processing Charges (APCs) in open access and hybrid scientific journals, as well as reduced costs for authors.

Students at Louisiana State University were given Covid-specific research guides to help them access library resources during lockdown. LSU Louisiana State University makes use of Springshare's popular Lib Guides product for its database list (Databases A-Z) as well as a platform for research guides. During the COVID period, usage of the Databases A-Z page was minimally impacted. However, overall guide usage increased significantly, reaching 56%. At least some of this can be attributed to the development of a COVID-specific research guide. This guide included descriptions and links to various electronic resources made freely available by vendors during the crisis. During the COVID period, that page alone received nearly 1,700 views. However, there are other pages that have no obvious connection to COVID.

According to North Eastern Illinois University (2020), many libraries used library websites and email to help patrons' access much-needed resources. The chat service at North-Eastern Illinois University Libraries (NEIU) was one of the resources that saw increased usage during the COVID 2020 timeframe. Consultations for research have also increased. Because the physical reference desk was no longer available, students and faculty were directed to use email or set up subject librarian Google Meet appointments for questions that they might have asked at the desk in the past. A 30.5% increase in these interactions demonstrates that users still required librarian assistance with research and course-related questions during the COVID period.

According to Molepo and Shokane (2020) reporting for University of Free State Libraries (UFS), emails, lib guides and newsletters were used during lockdown. Approximately 5.7% of participants report that the copyright process during COVID-19 could be improved. Most of the participants highlighted not being able to access hard copies. The majority suggest that librarians made an effort to scan copy and deliver copies on time whenever needed. Regular communication with library users could also help to improve the copyright process. Communication could take place via library guides, university newsletters under notices, and/or email. More research is required to comprehend library users' communication platform preferences, as well as the

models used by UFS LIS when communicating with users.

### 3. Methodology

The study consisted of 200 post graduate students and data was collected using questionnaires, interviews as well as document analysis techniques. The research strategy adopted for this study was survey research. Survey research designs are procedures in quantitative and qualitative research in which investigators administer a survey to a sample or to the entire population of people to describe the attitudes, opinions, behaviours, or characteristics of the population. A convenience sampling was employed. According to Sage Science Direct (2017) Convenience sampling a non-probability sampling method of collecting samples by taking samples that are conveniently located around a location. Reliability was improved by writing items clearly, making test instructions easily understood, Validity will be ensured by content validity. Data presentation methods in this study were in form of tables, charts, statistical averages and statistical maps. Participation in this study was voluntary and participants were free to discontinue at any point. Participants were given information in a comprehensive manner without inappropriate inducement or duress. The information also included the research procedure, risks and purposes and anticipated benefits as well as the freedom to ask questions. Standards of integrity, quality and transparency were met.

#### 3.1 Research Design

Quantitative design was adopted for this study. Quantitative research design is aimed at discovering how many people think, act or feel in a specific way. Quantitative projects involve large sample sizes, concentrating on the quantity of responses, as opposed to gaining the more focused or emotional insight that is the aim of qualitative research, <https://www.djsresearch.co.uk/glossary/item/Quantitative-Research-Design>. According to a Vosko Survey Methodologies (2018) Quantitative research is referred to as the process of collecting as well as analysing numerical data. It is generally used to find patterns, trends, averages, predictions, as well as cause-effect relationships between the variables being studied. It is also used to generalise the results of a particular study to the population in consideration. Quantitative market research is widely used in science, both natural and social sciences. The design is suitable for this study since the study seeks to determine levels of access and utilisation of electronic resources. That can be done effectively using numerical methods e.g. percentages, graphs and pie charts in order to clearly indicate findings.

## 3.2 Validity and Reliability

### 3.2.1 Validity

One of the key criteria addressed by positivist researchers is that of internal validity, in which they seek to ensure that their study measures or tests what is intended. Validity is defined by the Association of Qualitative Research (2023) as how well a scientific test or piece of research measures what it sets out to, or how well it reflects the reality it claims to represent. Like reliability, validity in this sense is a concept drawn from the positivist scientific tradition and needs specific interpretation and usage in the context of qualitative research. Content validity will be used. Scribb (2023) states that content validity assesses whether a test is representative of all aspects of the construct and to produce valid results, the content of a test, survey or measurement method must cover all relevant parts of the subject it aims to measure. If some aspects are missing from the measurement (or if irrelevant aspects are included), the validity is threatened and the research is likely suffering from omitted variable bias.

Thus the researcher endeavoured to ask questions that would clearly show whether the e resources had been utilised or not. External Validity was also employed. Scribb (2019) points out that External validity refers to the extent to which results from a study can be applied and (generalized) to other situations, groups, or events. External validity in simple terms refers to the extent to which the results of a study can be generalized beyond the sample. Thus you can apply your findings to other people and settings. How well do the research results apply to the rest of the world? A laboratory setting (or other research setting) is a controlled environment with fewer variables. External validity relates to how well the results hold, even in the presence of all those other variables.

### 3.2.2 Reliability

Reliability relates to the consistency of a measure. Business Research Methodology (2019) describes Reliability as to whether you get the same answer by using an instrument to measure something more than once. In simple terms, research reliability is the degree to which research method produces stable and consistent results. A specific measure is reliable if its application on the same object of measurement number of times produces the same results. A participant completing an instrument meant to measure motivation should have approximately the same responses each time the test is completed. Although it is not possible to give an exact calculation of reliability, an estimate of reliability can be achieved through different measures, Heale (2010). Reliability can be improved by writing items clearly, making test instructions easily understood, and training the raters effectively by making the rules for scoring as explicit as possible (Nunnally, 1978), for instance. The

principal method to make tests more reliable is to make them longer, thus adding more items. For reliability and other reasons in psychometrics, the maxim holds that, other things being equal, a long test is a good test (from Nunnally, p. 243). However, the longer the test, the more likely that boredom and fatigue, among other factors, can produce attenuation (reduction) in the consistency of accurate responding (Rosenthal & Rosnow, 1991). In order to ensuring reliability of results the researcher clearly wrote questions clearly in order to attract required information.

## 3.3 Population and Sampling

The target population in this particular study are the all Post graduate students. The accessible population are Post graduate students in the Faculty of Business and the Library Staff members. The number of the whole sample was 200. The Post graduate students have been suitable for this study on the premise that they have received training during before unlike undergraduate students. The researcher made arrangements with librarians on campus that is where she got to know that some employees are also students, thus all statistics on e - resources was prepared as well email addresses of off campus students and finally Library staff members who provide the researcher with usage statistics. The researcher frequently interacted with one of the librarians who had been instrumental in providing information required by the researcher.

## 3.4 Data Presentation and Analysis Procedures

Data presentation methods in this study were in form of tables, charts, statistical averages and statistical maps and narratives Data visualization according to Tulane University libraries (2023) is the creation of tables, graphs, and other visual aids to represent the trends, features, and other information gleaned from data analysis. Data visualizations should be selected based on data type and business/academic need. Islam & Jin (2019) indicate that patterns, trends and correlations that might go undetected in text-based data can be exposed and recognized easier with data visualization software. Data visualization is the presentation of quantitative information in a graphical form. In other words, data visualizations turn large and small data-sets into visuals that are easier for the human brain to understand and process. Data visualizations are surprisingly common in our everyday life, but they often appear in the form of well-known charts and graphs. It can be used to discover unknown facts and trends

## 3.5 Ethical issues

Research ethical issues had been addressed so far. The researcher managed to get permission to conduct research and six ethical considerations such as voluntary

participation, informed consent, confidentiality and anonymity, the potential for harm, communicating the results, will be strictly followed

## 4. Results and Discussion

This chapter presents the findings of the study. Responses from the data collection methods (questionnaires, interviews, and document analysis) were grouped into categories to identify common patterns. This approach helped derive meaning from

what seemed like unrelated and diffused responses. An exploratory data analysis was adopted for the study, which involved summarizing the data in the form of graphs and tables to clearly visualize the results. The findings are presented in this chapter, based on the analysis of the data collected through the various techniques used.

### 4.1 What challenges are faced by the library in using electronic resources?

**Table 1: Challenges faced by the library**

Lack of Wi-Fi connectivity	Costly data bundles	Some e resources not accessible off campus	Hardware challenges e.g. Lack of hardware gadgets to access e resources and space problems in phone and other types of gadgets.	Power cuts and load shedding	Lack of connectivity at home as such they move to areas to connect either by paying or in workplaces	Poor network problems
25	15	11	21	34	25	13

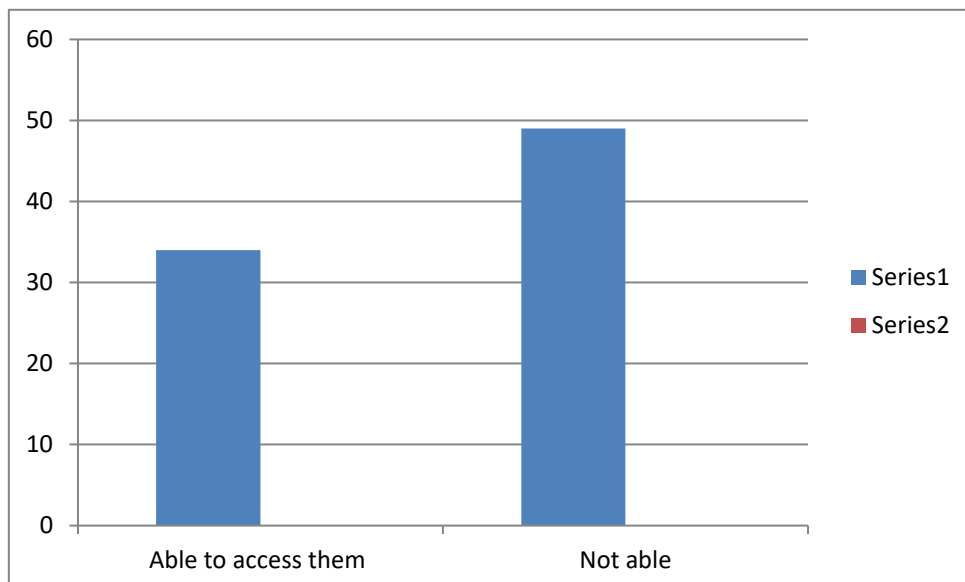
A multiplicity of challenges was recorded such as lack of Wi-Fi connectivity especially were students reside, costly data bundles was mentioned in all questionnaires, most e resources wanted are accessible on campus, lack of hardware gadgets to access them and the problem of power cuts was mentioned mostly by urban respondents unlike those in peri urban. Almost

Respondents faced challenges as a result of their locations. Only 5 respondents had no such problems and these were in peri urban locations. Although most of

them mentioned power cuts especially in rainy seasons. Those in peri urban areas also mentioned the travelling of longer distance mainly in search for power and connectivity. Some respondents notably in peri urban locations mentioned poor network problems making it difficult to download documents.

### 4.2 Ability of respondents to access e resources off campus

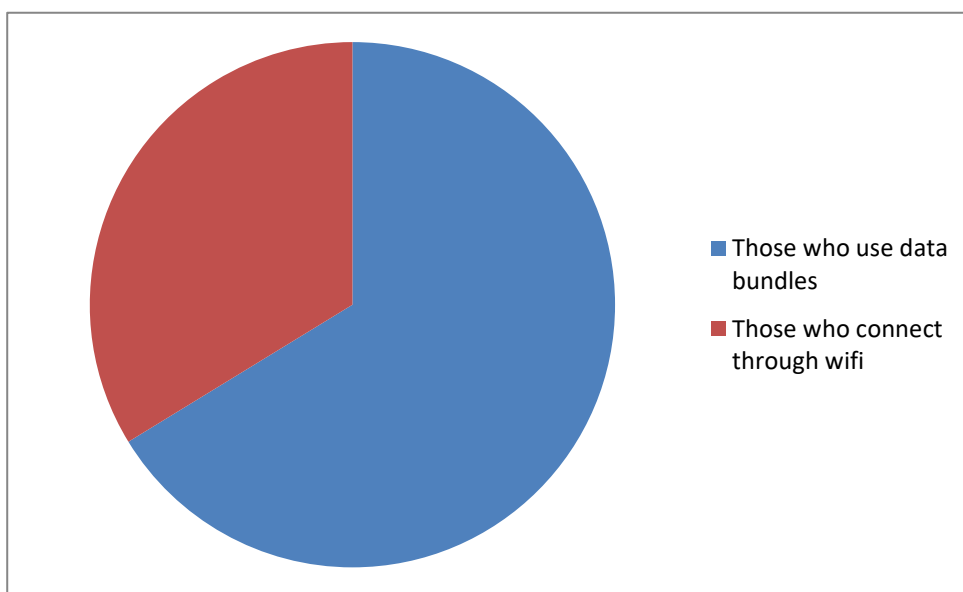
**Table 2: Ability of Respondents to access e resources off campus**



The researcher noted the different types of locations from which the respondents came from. Most respondents from rural areas were not able to access any resources. Most respondents recorded were from urban and peri urban locations. 34 respondents were able to access them on their locations and 49 were not able to access them. These findings concur with those of Abiero and Amunga (2024) about access to electronic information resources in Law libraries in Kenya during covid 19 revealed that some of the challenges to the use of electronic resources were lack of computers, poor Internet connectivity and

inadequate search skills which was linked to lack of elaborate training. On the African perspective again, The University World News (2020) indicates that Universities in South Africa faced several challenges due to the high enrolment of first-year students from diverse social backgrounds and some from remote areas where connectivity was a challenge.

### 4.3 Types of connectivity used



**Figure 1: Wi-Fi and data bundles**

Fifty-five (55) respondents pointed out that they would use data bundles in connecting to e resources. 28 of them indicated that they use Wi-Fi mainly in their workplaces. 32 of those who use data bundles pointed also lamented the cost of data especially with regards to online learning and as a result it was difficult to access library resources. However, this was not the case with other libraries notably in South Africa. Singley and Viser (2020) reporting for Stellebosch University indicate that some

of Stellenbosch’s students needed additional support from the university. Naomi recalls: “Around 1,700 loan laptops were delivered to students in need and a monthly data package to help them access online learning material from their cell phones. A powerful new computer server was commissioned early in the second term, and software changes were made to eases the drastic increase in network traffic, especially to the Learning Management System.

#### 4.4 Usage of subscribed resource declined as shown by library statistics below

Table 3: Library statistics for Dec 2019– July 2020 and May-July 2021

HST Henry Stewart	-	6	-	-	-	-
	Dec 2019- Feb 2020 Faculty Number of Downloads	Dec 2019- Feb 2020 Students Numbers of Downloads	March – July 2020 faculty	March – July 2020 Students	May-July 2021 Faculty numbers of Downloads	May-July 2021 Students Numbers of Downloads
Jstor	25	65	24	22	28	19
Ebsco host	31	54	33	31	28	11
OECD Library	22	42	20	15	19	8
Springer e-journals	15	44	17	12	16	13
Taylor and Ebrary	33	45	30	11	29	7
Hinary	15	36	18	9	21	
Geological Society	18	33	17	6	18	
IET Digital Library	11	17	8	-	12	
IMF Library	3	5	8	2	5	-
Cochrain	-	8	-	-	-	-
	2	6	-	-	-	-

Library statistics was also consulted. According to the statistics e- resources were effectively used in 2019 up until 2021. The resources such as Jstor, emerald, Ebsco, Taylor and Francis journals had always been effectively used. A sudden drop was experienced in March to July. March and April 2020 was notably a period when lockdown began. The librarians indicated that the online learning began in May to July 2020. Very few e- resources were utilised during that time. It becomes clearer therefore that there are challenges in utilising e- resources from off campus. Information from statistics therefore links well with responses received from. Challenges indicated that respondents faced challenges accessing these resources from off campus. Network problems, power cuts or load shedding, cost of data and lack of appropriate hardware resources to for use were seen to be the main hindrances to the access of e- resources during that time. In May 2021 the statistics continued to go down as it was noted by the Systems librarian that students were only on campus for some few weeks and had to continue their learning on line. According to fig 1 above 55 respondents pointed out that they would use data bundles in connecting to e resources. 28 of them indicated that they use Wi-Fi mainly in their work places. Electronic resources were heavily utilised

notable in Chinese libraries and many parts of the developed world. In Southern Africa however utilisation was however minimal due to poor infrastructure.

#### 4.5 What actions have been taken by the library in response to COVID-19's challenges in accessing electronic resources?

In order to establish the responses taken in response to covid 19 the researcher had to interview the library staff members.

According to interviews held with librarians, 8 of them indicated that the library adopted the Baobab platform and linked it with KOHA in order to enable the borrowing of e books by off campus students. 6 of them however highlighted that the library had few e books.

The other 7 staff members also indicated that the library had to come up with a library page and where most e resources were found. During the lockdown the library also maximised the Institutional repository to upload more thesis and links. The Systems librarian revealed

that the library also used emails and social media, he however highlighted that most of these resources had not been fully utilised as they had been recently introduced and the library also lacked hardware and software resources to extensively market their resources. Thus, he mentioned the need for remote x facility to enable the access to off campus students. The library also lacked appropriate gadgets such as laptops iPod and smart phones to enhance the training and utilisation of its resources especially off campus.

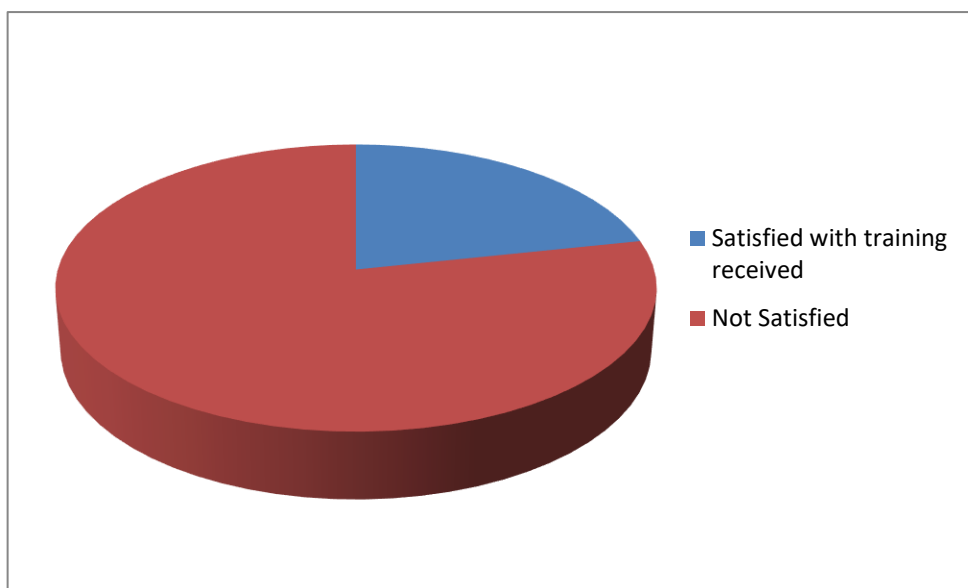
Results of a study done by Shikali, Muneja and Kassimm (2024) to ascertain types of services offered by libraries during covid 19 indicate (61%) of academic libraries supported university students' access to library information resources through social media. Consequently, they also mention that, academic libraries are the primary users of social media since it provides a way of communication that does not require physical proximity. Also, their study highlighted, a sizable portion of academic libraries (57%) favour university students accessing library information resources through the use of library websites. Other technologies, such as Ask a

Librarian, live chat, email, the library OPAC, Remotex and EZProxy, and video conferencing, were also used to access library information resources without the need for physical presence in the library. The conclusions drawn by Shikali, Muneja, and Kassimm (2024) are consistent with the findings of this study

#### 4.6 Have library users received enough training in the use of electronic resources?

25 Respondents indicated they received training on the first day of orientation as they came to the university and one stated he received training “Through the course Information Technology which is compulsory to all first year students.” 31 students were able to use them whilst 52 were not very sure on how to use them.

#### 4.7 Where they were satisfied with the training received



**Figure 2: Satisfaction with training**

Eighteen (18) respondents indicated that they were satisfied with the training received. 65 of them were not satisfied with the training received. One responded indicated that refresher sessions were necessary especially now that online learning seemed to be the way of learning in this university. Five respondents lamented the way in which training was done indicating that it was not very efficient. One respondent indicated displeasure in the inaccessibility of some resources off campus. One responded noted that “I think more resources are required so as to have a comprehensive learning environment and to be competitive.” In Pakistan, Ahmed and Amjad

(2019) evaluated the satisfaction level with ER of researchers from two universities: The Islamia University of Bahawalpur and Bahauddin Zakariya University of Multan in Punjab. The majority of the researchers were very satisfied with their use of the Electronic Resources, and the most frequently used databases were Science Direct and Emerald. A study however done by Mbambo (2020) at National University of Lesotho (NUL) about electronic resources usage revealed dissatisfaction by students on the usage of these resources.

Mbambo (2020) noted that they had to learn to use Thuto, the Learning Management Systems and access digital collections with minimal instruction. The frequently received question “How do I access Remotex” despite sending several notices, reflected just how much instruction students needed. The digital natives were thrown into the deep end and they had to adapt. It was their willingness and adaptability that enabled them to make the shift to e-learning.

## 5. Conclusion and Recommendations

### 5.1 Conclusion

On challenges faced in the use of e resources the researcher concluded that lack of proper infrastructure on the part of students as well as the library hinders e resources utilisation and that these resources are better utilised when students are on campus than in their own settings. The conclusion also is in line with the literature reviewed where Hernández (2023) in a study conducted to ascertain measures taken by library for continuity of operations in Puerto Rican academic libraries the findings revealed that the primary obstacles were a lack of digital skills for remote work.

On mitigating challenges faced the conclusion made was that the library positively responded to the pandemic challenges by means of creating library page, linking Koha Integrated Library System to Baobab for e books and utilising the Institutional repository. This also links well with the studies done previously notable by Mbambo (2020) regarding online learning he points out that the National University of Lesotho points the library reacted positively. The library, along with other faculties, provided the URLs of learning sites, such as those with e-book and e-journal subscriptions, the library website, the NUL Institutional repository (NULIR), and the online public access catalogue (OPAC).

### 5.2 Recommendations

The researcher also recommends that the library source for funding in order to purchase supporting hardware and software requirements to enhance off campus access of library resources. The library is encouraged to make available all its e resources off campus through creation of Virtual Private Network (VPN). The library management as it forges ahead in online library access it should also consider its patronage in poor networked areas and make plans for them accordingly. The library management consider working closely with Econet and negotiate for better data deals to increase access. The researcher recommends that the library embark a thorough training of electronic resources to enable usage

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