

## **Virtual Library Services Utilisation in State Universities in Zimbabwe: Library Staff Perspectives**

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### **Abstract**

*In developing countries, universities face unique challenges in providing effective services to their stakeholders. This study investigates library staff's perspectives on the utilization of virtual library services in universities. The study adopted an interpretative paradigm that advocates a qualitative approach. Through telephonic interviews, the study explores the experiences, perceptions, and insights of library professionals working in Zimbabwean university libraries. The researchers interviewed 14 librarians from Zimbabwean universities by phone. They analysed the data using thematic analysis. The findings reveal factors that influence the adoption of virtual library services, including technological infrastructure, digital literacy, budget constraints, and organizational culture. Library staff argue that virtual services improve access to information resources, enhance user engagement, and increase operational efficiency. However, they also identify barriers, such as limited technological capabilities, lack of user awareness, and resistance to change. The study provides valuable insights into the current state of virtual library service utilization from the perspective of library staff. The findings contribute to understanding the challenges and opportunities associated with implementing virtual library services in developing countries, helping policymakers, university administrators, and library professionals. The study informs policy development that promotes the adoption of virtual library services, increasing accessibility and usage for stakeholders. It also highlights the challenges faced by virtual library managers and users of virtual services.*

**Key Terms:** Virtual Library Services; Digital technology; Library Staff; Academic Institutions

## **Introduction**

Various scholars attribute the concept of virtual libraries to Paul Otlet and Henri L Fontaine's Mundaneum, which began cataloging the world's knowledge in Brussels, Belgium, in 1895 (Begum & Habiba, 2023; Hamad, Al-Fadel & Fakhouri, 2023; Hussain, 2023; Jha, 2023; Mamabolo, 2023). Literature indicates that in the 1950s and 60s, Vannevar Bush and JCR Licklider promoted the idea of virtual library services (Hamad, Al-Fadel & Fakhouri, 2023). However, Mamabolo (2023) reports that the Education Resource Information Center in Washington, D.C., was the first virtual library, established in 1964 and went online in 1969. Although the concept of a virtual library existed since 1895, Hussain (2023) notes that the term 'virtual library' became popular in 1994, and the research community started adopting the idea.

Literature shows that scholars use the term 'virtual libraries' as a synonym for digital libraries (Jha, 2023; Mamabolo, 2023). Begum and Habiba (2023) suggest that the rise of the internet and advances in computer networks and software influenced the development of virtual libraries. The introduction of virtual library services brought many challenges despite the benefits (Ummah, 2019). Library users first had to learn how to use a computer, and many people initially had no idea how computers work. Acquiring computers for use added more challenges (Chioma and Obiano, 2021). However, over time, these challenges faded, and library users faced new issues like internet access, the cost of data bundles, and Wi-Fi bandwidth speed, among other problems (Nyemezu 2022). These barriers to virtual libraries are especially more noticeable in developing countries. Barsha and Munshi (2024) argue that virtual library services expanded in universities as a way to improve the quality of education.

In developing countries, the idea of virtual libraries emerged in the late 1960s and early 1970s as a potential solution to their limited resources and infrastructure (Ejegwa & Mnguty, 2023). In 1992, Nancy Schiller described a 'virtual library' as libraries where computers and telecommunication technologies enable access to a wide variety of information resources (Tella, et al, 2023). Scholars note that by 2002, there were more than 150,000 virtual libraries worldwide at the national and institutional levels, with developing countries gradually beginning to adopt this concept (Akbar, et al, 2024; Aruna, 2023; Febriyanti, et al, 2023; Gutierrez & Dominguez, 2024). However, Serrghides, et al (2024) argue that factors such as insufficient funding, inflation, and a lack of information and communication technologies, among others, slowed the adoption of virtual libraries in developing countries during the 1980s and 1990s. Despite these hurdles, Oladokun, Yahaya, and Enakrire (2024) highlight that some developing countries, like Nigeria, recognized the importance of virtual libraries for improving

the quality of education and have initiated projects to establish virtual libraries in higher education institutions.

Scholars report that the first university virtual library was introduced in 1964 and became available online through DIALOG in 1969 (Collado, et al, 2024; Kumar & Ram, 2023). In the early 1980s, many universities replaced traditional cards with digital Online Public Access Catalogs (Kumar & Ram, 2023). Scholars also note that in the 1990s, the term ‘virtual library’ became widely recognized among university stakeholders, and a \$24.4 million NSF-managed program funded research proposals from six universities, including Carnegie Mellon, Stanford, and the University of California-Berkeley, to develop virtual libraries (Collado et al., 2024). Additionally, research from these universities was published in May 1996, showcasing their progress in developing virtual libraries (Collado, et al, 2024). In their study, Tella and Ogbonna (2023) mention that many universities have built virtual libraries that give students access to a broad range of academic texts, articles, and other resources.

Research shows that state universities in developing countries face specific challenges when trying to implement and expand virtual library services (Dube & Jacobs, 2023). Scholars highlight that these universities struggle with infrastructure and connectivity gaps. They often have limited high-speed internet access, and many students live in rural or remote areas where connectivity is a major issue. Additionally, Shahzad and Khan (2023) state that unreliable and slow internet speeds, especially in rural regions, make it hard to access and stream digital content consistently. Moreover, Wilfred and Mwantimwa (2024) contend that unreliable power supplies and frequent outages disrupt access to online resources and interrupt user sessions. Sedyaningsih et al. (2023) note that outdated hardware and computing devices are unavailable to users both at the library and among students, making it difficult to support modern web applications and interfaces. Nguyen and Suthiprap (2024) also point out that limited technical support and lack of IT expertise within the library staff worsen these infrastructure challenges.

Sinn, Kim, and Syn (2023) report that universities face resource and funding constraints. They argue that the lack of sufficient budgets to invest in digital content, platforms, and information technology infrastructure compounds the challenges. In support, Dube and Jacobs (2023) state that developing countries lack a funding model for university education, which makes it difficult for these institutions to implement virtual library services. The universities also struggle to secure long-term funding for ongoing maintenance and upgrades (Sinn, Kim & Syn,

2023). Furthermore, competition with other development priorities for resources creates additional challenges for the adoption and use of virtual library services.

Scholars note that digital literacy and skills gaps create obstacles in implementing virtual library services in universities (Di Nunzio, 2023; Hamad, Al-Fadel & Fakhouri, 2023; Mamabolo & Durodolu, 2023). Previous studies show low levels of digital literacy and comfort with technology among both staff and users, even after rigorous training and workshops. Conversely, a lack of training opportunities and resources to upskill both staff and users on digital competencies hinders the adoption and implementation of virtual library services. Additionally, library staff often lack the necessary skills to effectively manage, curate, and promote virtual library services. Brain drain significantly impacts university libraries in developing countries, as staff with information technology skills leave in search of better opportunities in developed nations. Meanwhile, many library users, especially in underserved communities, have limited experience and comfort with digital technologies (Hussain, 2023). Both staff and users often resist adopting new online tools and services, which negatively affects the smooth and successful implementation and utilization of virtual library services.

Furthermore, scholars point out that content and services mainly available in colonial or dominant languages pose challenges for both library staff and users (Aruna, 2023; Febriyanti, et al, 2023; Withorn, 2023). Virtual library content and interfaces are often dominated by colonial or global languages, which can alienate speakers of local languages. Similarly, a mismatch between virtual library offerings and local cultural contexts and needs creates obstacles (Jha, 2023). Both library staff and users encounter difficulties in building trust and engaging with remote or online services (Cheung, et al, 2023). The lack of content and services tailored to local cultural contexts, interests, and needs creates a gap for both users and library staff. This results in limited representation of diverse local voices and perspectives within the digital content provided.

Literature reveals that the lack of clear national strategies or guidelines for digital library development negatively affects virtual library services adoption and use in universities (Obande & Emmauel, 2023). Many countries lack a clear policy on information technology. In addition, many developing countries have unclear or outdated national policies and strategies for digital library development. On the other hand, restrictive copyright laws and licensing agreements that limit access to electronic resources affect the effective implementation of virtual library services (Ansari & PM, 2023). Many libraries raise concerns about data privacy

and cybersecurity around user information (Owusu-Ansah & Rodrigues, 2023). Furthermore, the lack of interoperability standards and integration with other national or regional digital initiatives compounds the challenges.

In Zimbabwe, the Bulawayo Public Library launched a mobile library program in 1999 to offer library services to schools at a lower cost. In 2007, the University of Zimbabwe established a virtual library despite the challenges of the 2007 national economic decline (Dube & Jacobs, 2023). By 2012, literacy was recognized as vital for socio-economic development, and public libraries became key tools for enhancing literacy (Sivaraj, et al, 2024). In 2017, rural libraries began fostering community development through innovative initiatives. The literature shows that around 2019, librarians in Zimbabwe used various strategies to promote library services in a digital environment (Ikenmwe & Udem, 2023). However, the country faces socioeconomic challenges including inflation, policy uncertainty, foreign currency issues, cash shortages, long hours of electricity load shedding, and poor network connectivity, among other problems (Abdullah, Chawinga & Chipeta, 2023). These issues hinder the implementation of virtual library services by universities.

Addressing these challenges requires a multi-faceted approach that includes investments in infrastructure, capacity building, content localization, policy reform, and strategic partnerships. The researchers highlight that successfully implementing virtual library services in Zimbabwe depends on a strong focus on user-centered design and community engagement to ensure relevance and sustainability. Despite these obstacles, these challenges have sparked scholarly interest in exploring the use of virtual library services in Zimbabwe.

### **Problem Statement**

Universities in Zimbabwe allocate large sums of money to acquire resources and operate virtual libraries. However, factors such as internet access for stakeholders and the availability of computers or gadgets pose challenges for both providers and users. Virtual library services remain an unattainable goal for many university students despite efforts by university library authorities. This is due to socio-economic hardships like lack of data bundles, electricity shortages, and limited funding, among other issues. Moreover, the absence of a university funding model hampers the ability of virtual libraries to provide optimal services. Additionally, adopting innovative technologies like virtual libraries takes time. These challenges motivate researchers to investigate the utilization of virtual libraries at universities in Zimbabwe.

## **Research Objectives**

The study addressed the following objectives:

- To establish the trends in the database searches and downloads done by university students in Zimbabwe
- To determine the behaviour of university students when using electronic borrowing and reading in Zimbabwe
- To ascertain the virtual reference transaction trends done by university students in Zimbabwe.
- To determine university students' attitudes toward using user registration and authentication in Zimbabwe.

## **Literature Review**

The study reviews the literature on current studies to establish the research gap and research hypotheses. This section presents the theoretical framework of the Diffusion of Innovation Theory. In addition, the study reviews the literature on virtual libraries and virtual library utilisation.

## **Diffusion of Innovation Theory**

The study used the Diffusion of Innovation Theory as a theoretical framework. It provided the researcher with a lens to view virtual library services in universities in developing countries (Acikgoz, Elwalda & De Oliveira, 2023; Bokolo, 2023). According to Everett Rogers, as cited by Uzumcu and Acilmis (2023) and Al Breiki, et al., (2023), the Diffusion of Innovation Theory has eight principles: relative advantage, compatibility, complexity, trialability, observability, communication channels, time, and social system. Scholars suggest that relative advantage refers to how much an innovation is seen as better than the idea, practice, or product it replaces (Al-Breiki, et al., 2023). They state that the higher the perceived relative advantage, the faster the adoption rate (Turin, et al., 2023). This involves identifying the unique benefits that virtual library services offer, such as increased access, 24/7 availability, and personalized recommendations. Additionally, the principles explain how adopting virtual library services outweighs the drawbacks or challenges of traditional in-person library services.

Yarbrough (2023) explains that compatibility refers to how much an innovation is seen as fitting with the existing values, past experiences, and needs of potential adopters. The scholar argues that the more compatible an innovation is, the faster its adoption rate. When applied to a virtual library, this means making sure that virtual library services match the current

technological infrastructure, digital literacy levels, and information-seeking behaviors of the user community. Additionally, the design of services should seamlessly integrate with users' existing workflows and preferences to reduce disruption. Moreover, providing training and support helps users overcome any perceived incompatibility or barriers to adoption.

Research shows that complexity refers to how difficult an innovation is perceived to be in understanding and using (Zoubi, et al, 2023). This implies that the simpler an innovation appears to be, the faster it is adopted. Experts recommend focusing on creating intuitive and user-friendly virtual library services with a clear, streamlined interface (Amini & Jahanbakhsh, 2023). Likewise, the library should provide thorough documentation, tutorials, and on-demand support to help users easily navigate and utilize the services. They should also regularly collect feedback and improve the user experience to further reduce perceived complexity.

Qader, et al, (2023) report that trialability as a principle refers to the degree to which an innovation can be experimented with on a limited basis. The scholars further explain that the more trialable an innovation is, the faster its adoption rate. This suggests that university libraries should implement pilot programs or limited-time trials of virtual library services to let users experience the benefits firsthand. Additionally, they should collect feedback from trial participants and use their insights to improve the services before wider deployment. Moreover, they should provide easy access to virtual services, enabling users to explore and test them without significant commitment. Libraries should also create opportunities for users to trial and evaluate virtual services in a low-risk environment, such as through pilot projects or free trials, which can help overcome initial hesitation.

Literature presents observability as another principle (Uyob, et al, 2023). It refers to how visible the results of an innovation are to others. The principle states that the more observable an innovation's results are, the faster its adoption rate (Uyob, et al, 2023). This means universities should showcase success stories and positive outcomes of virtual library services, such as increased user engagement, resource utilization, or positive feedback. Additionally, universities should utilize various communication channels, like social media, newsletters, and library events, to emphasize the impact and benefits of virtual services. The principle also encourages users to share their experiences and success stories, fostering a culture of advocacy and word-of-mouth promotion.

Van Houtven, et al (2023) describe the communication channels principle as how messages about the innovation get from one individual to another. The principle explains that effective

communication channels influence the rate of adoption (Van Houtven, et al, 2023). The principle encourages universities to utilize a mix of formal and informal communication channels such as the library website, social media, email campaigns, and in-person events, to reach and engage with different user segments. In addition, universities need to tailor the messaging and communication approaches to suit the preferences and communication habits of various user groups. They should also leverage both online and offline channels to ensure comprehensive coverage and accessibility.

Time has been identified as another principle under the Diffusion of Innovation Theory. Scholars explain that time refers to the innovation-decision process, the relative time with which an innovation is adopted by individuals or organizations, and the innovativeness of the adopter (Saa, Dulaimi & Gorse, 2023). Scholars argue that when applying the time principle, it means we must recognize that the adoption of virtual library services may occur at different speeds for various user groups and plan accordingly (Saa, Dulaimi & Gorse, 2023). Furthermore, literature indicates that universities should develop a phased implementation plan that allows for a gradual rollout and provides ample support and training to facilitate the transition. Additionally, they should monitor user feedback and adoption rates and be prepared to address concerns and barriers that may emerge over time.

Lastly, the literature shows that social systems are a key part of Diffusion of Innovation Theory. Namirembwe, et al, (2024) say that a social system consists of interconnected units working together to solve problems and reach shared goals. Bokolo (2023) argues that the social system can influence how innovations spread and are adopted. Universities should identify and work with opinion leaders and early adopters within the user community to harness their influence and encourage the adoption of virtual library services (Bokolo, 2023). Supporting this, Namirembwe, et al, (2024) suggest that they should promote a culture of collaboration and peer-to-peer learning, where users can share their experiences and best practices. Additionally, university libraries should seek user feedback and use it to continuously improve virtual library services, which will strengthen the social system.

Research indicates that if university libraries understand and apply these principles, they greatly assist virtual libraries in effectively planning and implementing new services and technologies. The researchers argue that understanding and applying these principles of the Diffusion of Innovation Theory may help universities develop a comprehensive strategy to

effectively plan, implement, and promote the adoption of virtual library services within their user community.

### **Virtual Library Services**

Various scholars offer different perspectives on the definition of virtual library services (Cucksey, Ebertz & Garret, 2023; Collado, et al, 2024; Sun, 2023; Strahan & Blake, 2023). One group describes virtual library services as providing library resources and services in a digital or online format, enabling users to access them remotely without physically visiting a library (Cuckey, Ebert & Garret, 2023; Collado, et al, 2024). Conversely, other scholars believe that the terms virtual libraries and digital libraries can be used interchangeably (Sun, 2023; Strahan & Blake, 2023). However, Sun (2023) defines a digital library as a library where collections are stored in digital formats (as opposed to print, microform, or other media) and accessible via computers or other digital devices.

However, scholars agree on the virtual library services that a university library could offer. Serghides, et al., (2024) highlight that virtual libraries provide online catalogue services. The scholars describe an online catalogue as a system that allows users to search for and access the library's collection of books, journals, and other materials digitally. Additionally, a virtual library might include digital collections (McClure, 2023). McClure (2023) suggests that this grants access to the library's digital collection of e-books, e-journals, digital archives, and multimedia resources. Literature indicates that virtual library services could also include database subscriptions (Serghides, et al., 2024). This platform offers access to licensed online databases, e-journals, and research tools to which the library subscribes, providing users with a wide range of information resources.

Additionally, scholars agree on the other services a virtual library could offer (Eligan-Lectaoa, 2023; Rojas-Alfaro, 2023). Rojas-Alfaro (2023) describes virtual reference services that a virtual library might provide, such as chat, email, or video conferencing, which enable users to interact with librarians and receive assistance with research, information queries, and other library-related needs. Furthermore, Eligan-Lectaoa (2023) explains that virtual libraries provide interlibrary loans, allowing users to request and access materials from other libraries through an online system. The virtual library also offers virtual instruction (Rojas-Alfaro, 2023), including tutorials, webinars, or instructional videos that help users navigate and use the library's resources effectively. Similarly, virtual libraries offer digital preservation, referring to efforts to digitize and preserve rare or historical materials for remote access. Kampa and Gouda

(2023) also note that virtual libraries provide remote access, enabling the university library to grant users access to resources like e-books, databases, and other digital content through authentication methods such as user accounts or IP-based access. Overall, scholars agree that virtual library services make it convenient for users to access resources and services from anywhere with an internet connection, expanding the library's reach and accessibility beyond its physical location. However, they do not offer solutions to the challenges that hinder the effective implementation of virtual library services.

### **Virtual Library Services Trends**

Literature displays the various efforts made by libraries worldwide to enhance virtual library services. Anees, M., & Yadav, U. (2024) report a growing emphasis on developing digital collections and providing access to e-books, e-journals, databases, and other online resources in libraries in developing countries. However, the scholars did not specify the funding models used by these libraries for such developments. Nonetheless, Anees, M., & Yadav, U. (2024) note that many libraries collaborate with international organizations and publishers to expand their digital offerings.

Similarly, Petersen (2023) posits that libraries implement more virtual services such as, online reference assistance, digital interlibrary loans, and virtual programming, to enable remote access. This supports distance education and e-learning initiatives in regions with limited physical library infrastructure. Although this move promotes the implementation of virtual library adoption, the scholar does not provide the solution to the challenges hampering progress in developing countries and universities.

Conversely, Puri and Hernawan (2024) suggest that the spread of smartphones and mobile internet in developing regions has prompted libraries to create mobile apps and optimize services for mobile devices. This enables users to access digital collections, request materials, and communicate with librarians remotely. However, libraries need to address the challenge of digital literacy and skills development to successfully adopt this approach. This means libraries should focus more on digital literacy programs to assist readers, especially those from underserved populations, in developing the skills required to effectively navigate and use online resources and services. Therefore, training on digital research, information evaluation, and technology would become a key priority.

Building on the discussion, Parangu, Yunita, and Parangu (2023) recommend that libraries in developing countries should increasingly pursue partnerships with technology companies,

NGOs, and international development organizations to secure funding and resources for expanding virtual services. This includes equipment, connectivity, content licensing, and technical support. However, institutions in some developing countries like Zimbabwe, which faces political sanctions, encounter challenges in forming such private partnerships. Other scholars point out that despite these trends, many developing regions still face significant barriers such as unreliable internet access, electricity shortages, and weak technological infrastructure that hinder the full implementation of virtual library services (Gutierrez & Dominguez, 2024). These scholars emphasize that overcoming these obstacles remains an ongoing challenge.

Contributing to the discussion, Ylippuli *et al.* (2023) explain that libraries should build up electronic books, electronic journals, and database collections through licensing agreements with international publishers and content aggregators. This allows them to provide access to a much broader range of materials compared to their physical print collections. Many libraries digitise portions of their local print collections to make them available online. However, challenges remain around sustainable funding models and navigating complex copyright or licensing landscapes.

Other scholars suggest that libraries should implement virtual reference services, online interlibrary loans, and remote document delivery to serve readers who cannot physically visit the library (Ruthven, Robinson & McMenemy, 2023). Supporting this idea, Grams (2023) and Zook (2023) believe that libraries should host online programs like webinars, workshops, and digital literacy training to reach users remotely. These services support and complement the growth of distance education initiatives in developing regions. However, Ejegwa and Mnutyo (2023) argue that the technical infrastructure, user digital skills, and awareness of these virtual services still act as barriers to full adoption. Conversely, Llesanmi (2023) emphasizes that libraries should develop mobile apps and optimize websites for smartphone access to adapt to the widespread use of mobile internet. This enables users to search catalogs, access e-resources, communicate with librarians, and use other services on the go. Innovative uses of SMS, USSD, and other mobile-friendly technologies are emerging to expand service options. Challenges include limited smartphone ownership, costs of app development, and users' comfort with mobile interfaces.

On the positive side, Lateef and Mairaj (2024) report that libraries implement training programs to help users, especially marginalized groups, develop skills in online research, information

evaluation, and technology use. This includes instruction on accessing and navigating e-resources, as well as broader digital literacy workshops. The librarians aim to empower users to effectively leverage virtual library services and bridge the digital divide. Securing funding and expertise for these programmes becomes a challenge. However, these trends do not provide a clear road map on the strategies that could be used by Zimbabwe university libraries to overcome challenges facing virtual library services implementation. The virtual library services trends report on the efforts being made to expand rather than consolidate the existing position.

### **Virtual Library Services Utilisation**

Literature shows a lack of comprehensive, global data on how often database searches and downloads are used in virtual library services (Lateef & Mairaj, 2024; Sinhabau & Kumar, 2023). Hussain (2023) states that patterns of library use and the adoption of digital resources differ greatly across various regions, countries, and individual library systems. However, Tella, Ajani, and Ailaku (2023) observe that over the last decade, there has been an increasing shift towards using electronic databases, journals, books, and other digital content in libraries around the world. This trend has been sped up by the COVID-19 pandemic, which led many libraries to depend more on virtual services and remote access to their resources.

Similarly, Mashiyane and Makhurupetsi (2023) postulate that the adoption and utilization of virtual library services tend to be higher in developed regions and in academic or research libraries, where greater access to high-speed internet and funding for digital resources exist. Developing regions and public libraries face challenges in providing robust virtual library services due to infrastructure, funding, and digital literacy constraints. Ejegwa and Mngutyo (2023) report that many libraries and library consortia do track various usage metrics for their virtual services, such as the number of database searches, full-text downloads, and electronic book or electronic journal access. Nevertheless, scholars report these metrics at the individual library or regional levels, making it difficult to compile comprehensive global-level data.

According to Safadel, Hwang, and Perrin (2023), organizations like the International Federation of Library Associations (IFLA) and industry analysts periodically publish reports that offer insights into global trends and usage patterns related to digital library services. However, Noh (2023) argues that these reports suggest that the overall utilization of virtual library services has been growing, but the specific levels of database searches and downloads vary significantly depending on the local context. Furthermore, in the absence of definitive global data, the general trend indicates an increasing reliance on and use of virtual library

services, including database searches and downloads, especially in regions and library systems with the infrastructure and resources needed to support these digital offerings. Nevertheless, the specific levels of usage differ widely across different contexts.

This study makes the following propositions:

***Proposition 1: There is an increase in database searches and download utilisation in Zimbabwe.***

Many scholars observe that the trends in electronic borrowing and reading (e-borrowing and e-reading) in libraries have steadily increased over the past decade, with notable shifts and accelerations in recent years (Dube & Jacobs, 2023; Espinoza & Kohler, 2023; Jinendran & Kumar, 2023; Syn, Sinn & Kim, 2023). According to Dube and Jacobs (2023), electronic book lending through libraries has grown significantly, as many libraries expand their digital collections and invest in electronic book platforms and services. Studies indicate that electronic book borrowing has increased by 20-30% annually in many library systems worldwide (Espinoza & Kohler, 2023). This trend is driven by the growing popularity of electronic readers, tablets, and smartphones, along with the convenience and accessibility of electronic books. However, the scholars' focus is on a global perspective. When it comes to developing countries, especially in Africa, the trend appears to differ.

Research shows that, in addition to electronic books, the demand for electronic audiobooks has increased rapidly in recent years (Collado, et al, 2024). Scholars argue that many libraries expanded their digital audiobook collections and experienced double-digit annual growth in electronic audiobook lending (Rojas-Alfaro, 2023; Ruthen, Robison & McMenemy, 2023).

Various studies indicate that the flexibility and convenience of accessing electronic audiobooks contributed to their growing popularity (Mashiyane & Makhurupetsi, 2023; Zook, 2023). Other scholars attribute the growth to the COVID-19 pandemic which further accelerated the adoption and utilization of electronic borrowing and electronic reading services (Tella, Ajani & Ailaku, 2023). With physical library closures and restrictions, library users increasingly turned to digital resources, leading to a surge in electronic book and electronic audiobook lending. In that regard, some libraries reported up to a 50% increase in digital circulation during the pandemic (Hussain, 2023).

According to Sinhababu and Kumar (2023), the range of digital content available for borrowing has expanded beyond just electronic books and audiobooks. Literature shows that many libraries offer access to digital magazines, newspapers, comics, and even educational resources

and online courses through their virtual services (Noh, 2023). The scholars argue that the diversification of digital content helps meet the varied needs and preferences of library users (Safadel, Hwang & Perrin, 2023). Studies show that users generally express high levels of satisfaction with the convenience and accessibility of e-borrowing and e-reading services (Tella, Ajani & Perrin, 2023). In their argument, Espinoza and Kohler (2023) explain that the ability to access library resources remotely and at any time becomes a significant factor in the growing popularity of these virtual services.

Overall, research shows that the usage of electronic borrowing and reading in libraries has been steadily increasing, with the COVID-19 pandemic further speeding up this shift toward digital access and consumption. As technology and user preferences continue to develop, libraries are likely to see sustained growth in demand for their virtual lending and reading services if they can overcome existing challenges. However, now that COVID-19 is behind us, additional analysis of usage trends is necessary. Therefore, the study suggests that:

***Proposition 2: There is an increase in utilisation of electronic borrowing and reading through virtual library services in Zimbabwe.***

The studies show that the use of reference transactions in virtual library services steadily grew in recent years, driven by several key factors (Cucksey, Ebertz & Garret, 2023). According to Collado, et al, (2024), as more library operations shifted to virtual and digital platforms, the volume of reference transactions through online chat, email, and video conferencing increased significantly. Scholars link this shift to the COVID-19 pandemic, which forced many libraries to depend more on remote service delivery. However, since COVID-19 is now under control, it remains to be seen whether the use will continue to rise.

According to Petersen (2023), virtual reference services allow library users to access assistance and expertise from librarians remotely, without the need to physically visit the library. This increased accessibility and convenience makes virtual reference services more appealing to users, leading to higher utilization. In support, Ylipulli, et al (2023) report that library users, particularly younger generations, come to expect and prefer the option of instant, on-demand access to reference assistance through digital channels. This put pressure on libraries to invest in and promote their virtual reference services to meet the changing needs and expectations of their user base (Ruthen, Robinson & McMenemy, 2023).

According to scholars, the technological advancements enable a more seamless and engaging experience for both librarians and users (Kampa & Gouda, 2023). In addition, Parangu, Yunita,

and Parangu (2023) suggest that as library collections and services become more complex with the growth of digital resources and databases, the need for personalized, expert-driven reference assistance increases. Furthermore, Strahan and Blake (2023) report that virtual reference services allow users to connect with librarians who provide in-depth, specialized guidance on research, information discovery, and resource utilization.

Sun (2023) highlights that during the COVID-19 pandemic, when physical library access was limited, virtual reference services saw a significant increase in usage as the main way for users to connect with librarians. Furthermore, Sun (2023) reports that this temporary surge in demand has led to a lasting rise in the overall use of virtual reference transactions. The perception should be tested, especially in developing countries. In support, McClure (2023) adds that although specific usage data vary across different library systems and regions, the overall trend shows that virtual reference services are becoming an increasingly vital part of library services, with growing user reliance and expectations driving higher utilization over time. Therefore, the study proposes that:

***Proposition 3: There is an increase in virtual reference transaction utilisation in virtual library services in Zimbabwe.***

According to Grams (2023), the trend of using user registration and authentication in virtual library services has steadily grown over the past several years, driven by several key factors. Scholars point out that as library services expanded their digital collections and online offerings, the need for user registration and authentication also increased (Syn, Sinn & Kim, 2023). Literature indicates that patrons require secure access to e-books, e-journals, databases, and other virtual resources provided by the library (Dube & Jacobs, 2023; Espinoza & Kohler, 2023). According to Tella, Ajani & Ailaku (2023), this shift has led to a greater reliance on user registration and authentication mechanisms to verify user identities and grant access to virtual library services.

Studies show that many virtual library platforms offer personalized features, such as customized recommendations, saved searches, and usage history tracking (Ejegwa & Mnguty, 2023). Scholars emphasize that user registration and authentication enable patrons to access these personalized services and maintain a consistent user profile across multiple sessions. Grams (2023) reports that as libraries manage more sensitive user data and digital resources, the focus on strong security and privacy protocols increases. Additionally, Hussain (2023)

argues that user registration and authentication systems help libraries verify user identities, control access, and safeguard the confidentiality of user information.

Safadel, Hwang and Perrin (2023) report that in academic and public library settings, user registration and authentication need to be integrated with broader institutional or community-wide identity management systems. They further explain that this integration enables seamless access to virtual library resources for authorized users, contributing to higher utilization. In support, Noh (2023) postulates that the proliferation of mobile devices and the demand for remote access to library resources have increased the reliance on user registration and authentication. Noh (2023) further explains that users expect to be able to access virtual library services securely from anywhere, driving the need for reliable user verification mechanisms. Iisanmi (2023) argues that while specific utilization data may vary across different library systems and regions, the overall trend indicates a growing reliance on user registration and authentication in virtual library services. Scholars argue that the trend continues as libraries strive to provide secure, personalized, and accessible digital offerings to their users (Ejegwa & Mngutyo, 2023). However, they based their arguments on the perceptions of the global trend. The situation in the developing countries may be different due to a plethora of challenges. Therefore, the study proposes that:

***Main Proposition: There is an increase in user registration and authentication utilisation in virtual library services in Zimbabwe.***

### **Research Methodology**

The study adopted an interpretative paradigm that supports a qualitative approach. The researchers gathered the perceptions of librarians regarding virtual library service utilization in Zimbabwe. They interviewed 14 librarians from universities across Zimbabwe. The selection of these librarians was deliberate, focusing on those from state universities. The researchers arranged the interviews and obtained consent from the participants. Each interview lasted about 45 minutes on average. The study focused on variables such as database searches and downloads, electronic borrowing and reading, virtual reference transactions, and user registration and authentication as indicators of virtual library service use. Thematic analysis was employed to analyze the qualitative data collected from the telephone interviews with the librarians. The results are presented through narratives reflecting the librarians' perceptions of virtual library service utilization.

## **Results and Discussion**

The results and discussion are organized around themes derived from the research objectives: database searches and downloads, electronic borrowing and reading, virtual reference transactions, and user registration and authentication. The researchers share narratives of the librarians' perceptions.

### ***Database Searches and Downloads***

Participants argue that university libraries face challenges with limited internet access, unreliable connectivity, and inadequate digital infrastructure that hinder the adoption and usage of virtual library services. Participants argued that University libraries operate with tighter budgets and fewer resources, which restrict their ability to subscribe to extensive digital collections and provide robust virtual services. One of the participants summed it up by saying:

Although virtual library service utilization increased during the COVID-19 pandemic, the trend is now declining. Students and other users are facing challenges. Zimbabwe is experiencing socioeconomic issues that include long hours of electricity load shedding, expensive data bundles, and low incomes. These problems have led users to limit their access to virtual library services. It's very costly in Zimbabwe to download anything, especially reading materials. Additionally, 50% of the Zimbabwean population lives in remote rural areas without electricity and internet connectivity.

These sentiments by the participants revealed that virtual library services utilisation was heavily affected by socioeconomic factors, hence, the utilisation trends declined.

Furthermore, participants argued that lower levels of digital literacy and technological fluency among some populations in Zimbabwe limit the effective use of virtual library resources and services. According to them, the virtual library content and interfaces are always available in foreign languages, creating accessibility barriers for certain user groups. Additionally, participants highlighted the issue of a lack of awareness and promotion of available virtual library services, leading to underutilization by potential users. They opined that ensuring equitable access to virtual library resources and services, especially for marginalized or underserved communities, remains an ongoing challenge in Zimbabwe. Participant 2 said this:

Although Zimbabwe has a high literacy rate, this has not translated into a computer literacy rate. Many stakeholders do not understand how to navigate a computer when they want to search or download something. Many students are unaware of the various databases available at their university library. This negatively affects database searches

and download utilization. A person can't download from a database they do know,” (Participant 2).

The results revealed that computer literacy negatively affects virtual library services. In addition, libraries did not do enough to make stakeholders aware of its existence.

Participants noted that libraries in Zimbabwe face budget constraints that limit their ability to subscribe to extensive digital collections and provide comprehensive virtual services. They also mentioned that lower levels of technological fluency and digital literacy among some user groups in Zimbabwe could hinder their capacity to navigate and use virtual library resources. According to the participants, if virtual library content and interfaces are not available in local languages used in Zimbabwe, it creates accessibility issues for certain users. Furthermore, participants believed that a lack of awareness or ineffective promotion of virtual library services leads to underutilization by potential users in Zimbabwe. Finally, they argued that ensuring equitable access to virtual library resources, especially for marginalized or underserved communities, remains an ongoing challenge.

These results contradicted the view of various scholars who argued that database searches and downloads increased (Hussain, 2023; Lateef & Mairaj, 2024; Sinhabau & Kumar, 2023). The scholars analyzed the utilization trends of virtual libraries without considering the challenges libraries face, especially in developing countries.

### **Electronic Borrowing and Reading**

The participants argued that electronic borrowing and reading significantly declined shortly after the COVID-19 pandemic. The students began to visit the library in person. Participant 5 shared the following:

In Zimbabwe, people prefer hard copies over soft copies. Many students lack computers or devices to access electronic versions. Others argue that reading on a computer causes health issues, especially eye problems. Additionally, data bundles for electronic borrowing are very costly. If they do borrow, their devices may need electricity, but in Zimbabwe, power outages often last for hours. Many readers favor textbooks or printed copies instead of reading online,” (Participant 5)

These sentiments expressed by participants indicate that electronic borrowing and reading declined due to readers' perceptions and the nation's economic challenges. However, these findings differ from those reported by other scholars (Dube & Jacobs, 2023; Espinoza & Kohler, 2023; Jinendran & Kumar, 2023; Syn, Sinn & Kim, 2023). These scholars noted that

electronic borrowing and reading increased significantly and linked this rise to the COVID-19 pandemic. However, in developing countries, especially Zimbabwe, the use of electronic borrowing and reading decreased due to numerous challenges highlighted by the librarians.

### **Virtual Reference Transactions**

The participants generally agreed that there has been an increased emphasis on providing remote and virtual reference services by libraries and information centers, in response to changing user needs and the effects of the COVID-19 pandemic. However, they noted that in Zimbabwe, the use of virtual reference transactions has decreased. The participants concurred that virtual reference services, such as chat, email, or video consultations, can offer greater convenience and accessibility for users, especially those who may find it difficult to visit physical library locations. Nonetheless, socioeconomic challenges faced by Zimbabwe negatively impact the use of virtual library services. Participant 12 remarked that:

*“In Zimbabwe, it boils down to the issue of funding model used for higher education learning. Students are struggling to pay fees, and one can’t expect them to avoid data bundles and other requirements which come with virtual library services utilisation. The usage of virtual library services is going down in Zimbabwe. Unfortunately, the authorities are doing nothing about it” (Participant 12)*

These sentiments show how desperate librarians become regarding virtual library services. University students face many challenges stemming from their socioeconomic environment. Implementing virtual library services requires a sustainable funding model, especially in developing countries. Without a clear funding plan, it remains a distant goal.

Participants argued that the effective utilization of virtual reference services was influenced by users' levels of technological fluency and comfort with navigating digital interfaces and communication channels. Unfortunately, the universities do not have funds to ensure that potential users are aware of available virtual reference services and how to access them can be an important factor in driving usage. Participants argued that the integration and seamless transition between virtual and in-person reference services impact the overall utilization patterns. Participants also highlighted that it was difficult to cater for individual user preferences, as well as their expectations around response times. The quality of virtual reference interactions can influence their desire to utilize these services.

These results differ from those obtained by other scholars (Collado et al., 2024; Cucksey, Ebertz & Garrelt, 2023; Sun, 2023; Strahan, 2023). These scholars reported that the utilization

of virtual reference transactions was increasing. They even attributed this to the COVID-19 pandemic. However, the results of this study indicate that in developing countries, the situation was different. Libraries experienced a decline in the use of virtual reference transactions by university students.

### **User Registration and Authentication**

The participants report that virtual libraries in Zimbabwe offer various authentication methods, such as username/password, student/staff ID, or even social media logins, to meet different user needs and technological capabilities. Participants argued that there is a trade-off between implementing strong security measures for user authentication and keeping the registration and login process accessible and user-friendly, especially for users with limited digital literacy. However, participants lamented that the number of new user registrations is declining, as shown by the login records. Participant 7 had this to say:

*“There was an increasing in user registration during the period 2019 to 2022. However, now, rate of user registration and authentication are declining. Students are facing various challenges that affect their adoption of virtual library services adoption. As providers of services, we tried to come up with strategies so that students adopt virtual library services, but constraints hindered our progress. We don't have funding for our programmes. The university has competing needs, unfortunately, virtual library services is not one of the essential services that could be allocated unlimited funds”*  
(Participant 7)

These perceptions by the participants indicated that virtual library services were declining. The users of virtual library services were facing various challenges and unfortunately, solutions were not forthcoming.

However, participants pointed out that they used different methods to assist their clients. They noted that in areas with limited internet access or digital infrastructure, virtual libraries offer alternative offline registration and authentication options, such as in-person sign-ups or paper forms. They also mentioned that some virtual libraries in Zimbabwe can utilize federated authentication systems, enabling users to access resources with their existing institutional or government-issued credentials.

However, participants noted that to accommodate users who might not complete a formal registration process, virtual libraries should provide guest or anonymous access to certain resources with limited features. However, very few users take advantage of this option.

Additionally, the user registration and authentication interfaces should be available in local languages to enhance accessibility and inclusion for diverse user groups. Unfortunately, users in Zimbabwe encounter difficulties providing the necessary identification documents for formal registration, creating a barrier to accessing virtual library services.

These results showed that user registration and authentication declined in Zimbabwe. This contrasts with studies by other scholars (Dube & Jacobs, 2023; Espinoza & Kohler, 2023; & Grams, 2023; Syn, Sinn & Kim, 2023; Tella, Ajani & Ailakn, 2023), who agreed that user registration and authentication were increasing. However, these studies were conducted in developed countries, and their findings might be accurate. In Zimbabwe, a developing country, the results indicated that challenges experienced by people hinder the use of virtual library services.

### **Conclusions**

The results indicated that Zimbabwe faces numerous challenges that hinder university students from adopting virtual library services. The study also revealed that socioeconomic factors negatively impact the implementation of these services in university libraries. The researchers found that activities such as database searches and downloads, electronic borrowing and reading, virtual reference transactions, and user registration and authentication decreased due to socioeconomic difficulties. Additionally, universities lack a funding model to support the deployment of virtual library services.

The study suggests that universities should offer free Wi-Fi for students to easily access virtual libraries. Establishing a physical library equipped with computers would greatly help in addressing the shortage of devices needed for virtual library use. Additionally, universities need to develop a funding model for virtual library services. Developing countries' governments should fund these services, potentially through partnerships with the private sector. The issue of electricity must also be addressed, and using solar energy could be a viable solution, as the sun provides ample sunlight for many hours in most developing countries in Africa.

### **Area for further study**

Researchers could carry out a study that covers more countries. In addition, the study could increase the number of participants so that it has more views on virtual library services utilisation.

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