Academic library services extension during the COVID-19 pandemic: considerations in higher education institutions in the Gauteng Province, South Africa

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Abstract

Purpose – This paper aimed to determine the extent to which academic libraries and information services were extended due to the emergence of COVID-19 in the Gauteng Province, South Africa.

Design/methodology/approach – Founded on a pragmatism paradigm, the sequential explanatory research design was adopted to engage with participants and respondents on their experience of library services extensions to support users during the COVID-19 pandemic. Data were collected using online questionnaires and interviews. Cluster and purposive sampling were used and data for the quantitative part were analyzed using the Statistical Package for the Social Sciences (SPSS), whilst qualitative data were analyzed manually.

Findings – Findings revealed that academic libraries operating in a higher education environment provided extensive support to remote users during the COVID-19 pandemic. This was done through the utilization of a variety of technology utilization, ranging from traditional e-mail support to the use of technology related to Artificial Intelligence such as the BOTsa, which is a Chatbot aimed to assist users in receiving speedy responses to library-related inquiries.

Originality/value – This study is unique in that it focuses on academic libraries that operate in higher education environments where support for achieving academic endeavors becomes imperative to ensure the smooth execution of teaching and learning activities within the restrictions put in place due to the COVID-19 pandemic. Adaptions and improvements to academic library services during and post-COVID-19 era were successful in ensuring that remote users could obtain similar services and access to information as was the case before the outbreak of the COVID-19 pandemic.

Keywords Academic libraries, COVID-19, Higher education institutions, Library and information services, Library users, Online information resources

Paper type Research paper

1. Introduction

The emergence of the COVID-19 pandemic had a positive and negative impact on higher education, and in particular on the offering of support services such as those provided by academic libraries. Because of the inability of staff, students and researchers to access library services physically, academic libraries were required to introduce new library services,

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considering the use of advanced information technologies to ensure access to information resources and library services whilst complying with COVID-19 protocols. Durodolu *et al.* (2021b) are of the view that when the COVID-19 pandemic hit the world in early 2020, academic libraries worldwide had to revise how library services and access to resources were offered to curb the transmission of the disease. Within the academic context, essential services had to continue to support teaching, learning and research. In addition to existing services and online resource availability, academic librarians had to think of innovative ways in which to expand online services as an elixir to address the imposed restrictions imposed by the COVID-19 pandemic.

Molepo and Shokane (2021) explain that even though such innovations were unique to every higher education institution, based on the information needs and academic culture of individual organizations, there are similarities in ways in which academic librarians aimed to extend service delivery to library users. Aligned to the findings of Talamo (2020) Molepo and Shokane (2021) identified that academic librarians introduced book pickup services and delivery of books at the regional offices to support teaching, learning and research. Other librarians expanded the services offered by academic libraries through the use of more advanced technology tools, such as offering additional website information, online LibGuide access and even utilizing Artificial Intelligence tools such as bots to assist and cater to library users' needs. Balachandar and Ramesh (2019) indicated that information technology-based tools are widely used in academic libraries to facilitate information resource provision, eliminate duplication of efforts, improve the speed of operations, increase access to information resources and improve the quality of information services. What became evident from the extent of services and resources used to support teaching and learning activities, as per the views of Dube (2021a) and Omane and Alex-Nmecha (2020) is that a shift in the manner in which academic librarians had to cater for user needs within the COVID-19 pandemic period, required of them to display advanced skills sets related to the use of technology, innovation and offering of online services.

The study findings by Guo *et al.* (2021) discovered that 92% of academic library services in China migrated from physical to remote access to information resources. This implies that information resources had to be made available either through online purchases or digitalization to ensure online access. Cox and Felix (2021) allude that academic librarians must therefore expand their skills to include digitization competencies, transcription abilities and the utilization of 3-D scanners to name but a few ways in which competencies of academic librarians have to expand. These skills are particularly important to ensure that special collections, archives, rare manuscripts and university historical documents are made accessible to library users in a digital context. In addition, Koop (2020) explains that skills necessary for librarians to offer advanced services and resources accessible to library users must also include learning new knowledge related to the Internet of Things (IoT), the use of Artificial Intelligence tools and managing disruptive technologies. Especially in the post-COVID era, Cox and Felix (2021) are of the opinion that skills and knowledge pertaining to the advanced use of technology to offer services and resources access will become even more prominent as the offering of library services will undoubtedly continue to change to fit the information needs of a variety of library users. Given that many higher education institutions (HEIs) will in the future follow a hybrid or fully online mode of delivery, innovations in terms of services and resource delivery is key to ensure that academic libraries support the vision and mission of HEIs related to teaching, learning and research advancements.

2. Contextualizing the problem

COVID-19 was first discovered in December 2019, in Wuhan, China. This virus is instigated by the spread of the COVID-19 and was declared an airborne that is transmitted through

droplets and human-to-human contact (World Health Organization, 2020). Industries and organizations were severely affected by the COVID-19 pandemic since the beginning of 2020 and affected the social aspects of humans. The HEI and their academic libraries were not an exception whereby their operations and provision of information resources were affected. Academic libraries had to adopt technological trends (Farooq *et al.*, 2021; Rafiq *et al.*, 2021) to ensure that teaching, learning and research do not halt.

Pre-COVID-19 library users from other universities used to choose or have an option to request hard copies via the library catalogue and are sent to them via postal services or courier to their nearest branch library. However, this seems impossible in this knowledge era due to the COVID-19 pandemic because the exchange of hard copies is considered risky to transmit the virus. Simultaneously, the academic libraries are obliged to adhere to the Standards for Distance Learning Library Services, which regulate all higher learning institutions to ensure that library services provided to walk-in clients are equal to library users. In addition, the use of online information resources required minimal information technology skills to at least have the ability to search the library catalog and download information resources necessary for studying, teaching and research. Despite this, some library users affected by the digital divide were disadvantaged in accessing and downloading online library services due to circumstances beyond their control.

The emergence of the COVID-19 pandemic caused academic libraries, including academic librarians and library users to accelerate the acceptance of advanced information technologies such as the Fourth Industrial Revolution (4IR) (Rafiq *et al.*, 2021). To mitigate the spread of COVID-19, HEIs had to close the physical library and migrate to an online platform to enable remote access and use of information resources (Fasae *et al.*, 2021; Mishra *et al.*, 2020; WHO, 2020; Zhou, 2021). Furthermore, the instant change in information-seeking behavior and lack of basic online literacy skills of library users greatly worsened the circumstances for academic libraries (Ameen, 2021; Ocholla, 2021; Rafiq *et al.*, 2021). Academic library management was mainly concerned about the disruption of normal operations of academic libraries, the fear of contracting the virus, maintaining social distancing and introducing new COVID-19 protocols for librarians and the library users to adhere to, and ensuring that online access and provision of information resources becomes a success (Ashiq *et al.*, 2022).

Since the COVID-19 pandemic emerged without warning, academic libraries had no situation crisis plan in place, a lack of equipment and resources for online access and provision of information resources (Harris, 2021); it has become imperative for academic librarians to improvise and become innovators in offering new ways of access to library services and resources to cater to the information needs of library users of HEIs. Academic libraries are at the vantage point to provide scientific information to the university community at the vanguard of ensuring access to precise and appropriate information to aid library users. However, the manner and context within which these innovative services and resources are to be provided have not been predefined; nor have the skills, competencies, technology resources and financial support received any consideration (Molepo and Shokane, 2021). As a result of the speed at which COVID-19 spread and the influence thereof on daily activities, very few academic librarians had time to plan and make provision for alternative access to information and library services to become available to academic users (Abdoulaye and Majid, 2000). The result was that academic librarians had to move forward without prior research on possibilities that would cater to remote access to information and library services.

As a form of reflection, the aim of this article is to determine to what extent academic librarians adapted the offering of access to library services and resources and the extent to which these innovations catered to the needs of academic library users. The research focuses specifically on HEIs in the Gauteng Province of South Africa as this is demographically the

province with the largest student population in South Africa and the most HEIs. Findings of research that predated this article may therefore provide more generic feedback in terms of the innovations that academic librarians applied during the COVID-19 pandemic to offer support and assistance to the HEI community. The value of the research, therefore, relates to determining how academic librarians adapted and provided alternative ways to support user information needs. Subsequently, policymakers, stakeholders and academic library management may utilize the information to consider more improved ways of moving academic library services and resource provision forward to ensure that, irrespective of the conditions surrounding higher education provision, staff, students and researchers can access and utilize the information for the benefit of the continued academic process. In contextualizing the problem, the article focuses on presenting insights relevant to the following research question (RQ):

RQ1. What innovative academic library resources and services have been offered to library users as a result of the COVID-19 pandemic to support their information needs?

Subquestions are as follows:

- What are the new library services introduced as part of managing COVID-19 restrictions?
- Did library users adapt to the newly introduced library services as a new method of accessing information resources?

These RQs were investigated using a post-positivist paradigm, where the constructs of the Standards for Distance Learning Library Services (Association of College and Research Libraries (ACRL), 2008) were utilized to provide a lens to investigate the innovations that academic librarians embarked on to ensure access to information resources and services to library users. Key constructs of the Standards for Distance Learning Library Services (ACRL, 2008) were applicable to this research related to services, facilities, resources, training and making library users aware of alternative ways in which to engage with academic library functions.

3. Information access during the COVID-19 pandemic

The literature on the provision of information resources during the COVID-19 pandemic in South Africa is according to Molepo and Shokane (2021) infrequent. This is because when the COVID-19 pandemic struck the world, academic libraries were not prepared to devise strategies to ensure continuity of information resource provision to library users.

The emergence of the COVID-19 pandemic forced academic libraries to shift their focus from traditional methods of providing information resources to offering information resources only in an online environment (Durodolu *et al.*, 2021a). Even though Wheeler and Kyprianou-Chavda (2021) alluded that the provision of online information resources is not new in academic libraries, the extensive offering of only online information resources to library users is because of the emergence of the COVID-19 pandemic. Academic libraries are not in a position to supply information resources such as books, journals, patents, newspapers, photographs, pictures, motion pictures and music that are not available in the digital format. As library users are unable to visit academic libraries, the availability of these information resources has become obsolete and needs to be replaced by digital and digitized information resources that can be accessed online.

As purported by Patel (2018, p. 16), the era of the academic library's hard copy collection has passed. A shift is required to ensure that all non-digital collections are converted so that

information sources can be made accessible via online modes of delivery (Pawar and Sadashiv, 2014, p. 1). The benefit of online resources is that they never go out of print and are always available to be accessed wherever needed.

Anyira (2011, p. 1) and Deol and Brar (2021) describe 21st-century academic libraries as "libraries without walls." According to the author, library collections do not exist on paper or any other tangible format in a physical space. Rather, library collections are digital and digitized sources that are available online through the Internet and web. Following the principle of libraries without walls, library users can be provided with opportunities to access information resources and services online without physical engagement. Library users can access online databases that academic libraries subscribe to and can, via these databases download online information resources. Paper-based sources can be digitized and made accessible to library users via institutional repositories and other web databases. This implies that library users can access library resources anytime, anywhere and whenever they need access to information. This eliminates the barriers of distance and time as information resources are available online.

The ultimate role of academic libraries is to provide information and serve as hub mediation for information resources (Wójcik, 2016). With the information technology innovation, academic libraries depend more on Information and Communication Technologies (ICTs) and the Internet to accomplish their role for the reason that the Internet is advancing how information is accessed (Thanuskodi, 2012). Subsequently, academic libraries should keep abreast with ICT development to improve the quality of library services rendered to library users (Liang, 2019). Since academic libraries have advanced from traditional methods of providing information resources online libraries provide digitized collection, library and information services, quick searching capabilities, a drop box to manage returns of hard copies after hours and self-issue of hard copies using radio frequency identification (RFID) (Abdoulaye and Majid, 2000). However, information resources such as text documents, audio, image, video and software are getting more fragmented. The adoption of the IoT led to the usage of methods and tools to provide information resources to clients (Fortino *et al.*, 2014) such as online resources, notification services and mobile services. Consequently, online academic libraries are anticipated to have capabilities to collect, manage, preserve and provide specialized library services to clients (Liang, 2019).

Some researchers explored how IoT can be useful in academic libraries. The IoT connects massive decentralized and heterogeneous devices such as actuators, domestic appliances, wireless connections and sensors to the Internet to enhance communication to achieve some objectives (Xu *et al.*, 2018). Academic libraries can use IoT as back-office backing services and processes for library users. Librarians can also be able to perform their duties through the automation of routine services.

Research by Kumar (2017, p. 446) indicates that online information resources embrace many advantages to library users, such as that time, place and distance are not a barrier when library users require information resources. Digital and digitized resources can be made available to library users as and when required, using various technological access points. However, there are disadvantages to making information resources available online such as malfunctioning library systems, uneasiness when reading on the screen, Internet access and speed as well as lack of access to technology tools required to enable information resources access (Dube, 2021b). Within the COVID-19 era, access to relevant technology is a requirement to ensure access to online information resources (Adebayo *et al.*, 2018, p. 2). Online information resources are defined as a resource that needs computer access, smartphones and iPad/tablets that are Internet-enabled to access or download full-text e-journals, e-books, e-thesis/e-dissertation and other online information resources (Patel, 2018, p. 126).

Furthermore, academic librarians were more concerned about their job security as they believe that online platforms will substitute for their work (Tammaro, 2020). Lack of policies,

digital divide, digitization and lack of skilled staff were major concerns affecting academic libraries. Currently, academic libraries have a wide variety of online information resources and e-services which have eased the burden for both the academic librarians and the library users regarding the access and provision of information resources. These alternative improvements and restructuring provided an unexpected opportunity to redesign, reimagine and reevaluate the current academic library services model to improve library users' experiences. This implies that academic librarians must be committed to assisting and easing library users' challenges in accessing and downloading required information resources. Remote information searches and support in obtaining relevant sources can provide great relief to library users in engaging in their academic activities. In addition, Grammarly services, plagiarism checks and assistance in the use of bibliographic organization software such as Mendeley can further assist library users in engaging actively in academic activities (Dadhe and Dubey, 2020). Other essential services that can be offered by academic librarians related to the use of Turnitin to strengthen research outputs. Therefore, the role of academic librarians in the propagation of knowledge became more consolidated with online services being offered remotely using varied technology tools.

The academic librarians' responsibility is to ensure that library users receive the same library and information services (provision of information resources, reference services, bibliographic instruction and interlibrary loan) they received before the COVID-19 pandemic irrespective of geographic location. Regarding providing library and information services to library users, the librarians can provide these services using ICT tools such as telephone, instant messaging, e-mail, reference service request forms, Chatbots and videoconferencing. Librarians should also be responsible for designing, assessing and maintaining library web pages, knowledge bases and user interfaces. However, the ACRL recognizes that library services offered remotely can vary from institution to institution, but they should be developed in compliance with the Standards for Distance Learning Library Services.

4. Information service provision by academic librarians during the COVID-19 pandemic

It is the view of Willenborg and Withorn (2021) that at the advent of the COVID-19 outbreak, academic libraries that had to shut down the library buildings to curb the spread of the virus, were unprepared to offer alternative services to library users to access information resources. Essential academic library services had to continue so that sufficient support was available for teaching, learning and research. To ensure the continuous offering of academic library services, academic librarians introduced online services as an elixir to address the imposed restrictions due to the COVID-19 pandemic. Subsequently, academic libraries explored how services could be rendered online to support the academic endeavors of higher education patrons. As per Guo *et al.* (2020), Cox and Felix (2021), Molepo and Shokane (2021) as well as Willenborg and Withorn (2021), there are a variety of services that academic librarians can engage in within the context of COVID-19 restrictions to offer continuous support to library users. These may include book pickup services, digital library collections, online requests for information resources, assisting library users with scholarly writing and information searches and utilizing IoT technologies to offer services based on Artificial Intelligence.

Patil (2018) opines that academic libraries should offer various contemporary services by transforming the traditional way of providing library and information services into online library services. Online library services emphasize how information is handled, accessed and processed to offer improved access to library users. These services encompass online delivery services, online learning materials, digitized library information resources and electronic publishing of information portals and information resources. The university community can benefit from these services, which will enable them to have access to the required information to meet their information needs (Mafungwa, 2017).

Pertaining to book pickup services Molepo and Shokane (2021), explain that this service may be used to offer library users access to the physical collections of academic libraries. Talamo (2020) explains that book pickup services increase the opportunity for library users to obtain access to information resources that have not yet been converted to the digital format. In the implementation of this service, all COVID-19 protocols must be observed with deep cleaning of physical resources before and after the pickup of the resources by library users.

Related to the offering of digital and digitized access to resources, research by Guo *et al.* (2020) discovered that 92% of academic library services in China migrated from physical to remote access to information resources within a matter of weeks since the outbreak of the COVID-19 pandemic. This implies that information resources can be digitized and made accessed online, as long as copyright and plagiarism legislation is followed. The digitization of library collection can be beneficial for academic libraries as a backup for stolen and damaged information resources thus saving money to acquire new information resources to replace damaged materials. Cox and Felix (2021) explain that academic librarians have employed transcriptions and 3-D scanning of library collections to enable access to valuable information resources such as special collections, archives, rare manuscripts from individuals and organizations, and university history. The COVID-19 pandemic encouraged academic libraries to enhance their transcription and 3-D scanning projects to provide opportunities to access physical sources that would have otherwise not been possible.

In an Online Computer Library Center (OCLC) survey, it was discovered that many academic libraries are accustomed to IoT (Hoy, 2015) and record various means of integrating putting together IoT tools into academic library activities such as mobile reference, inventory control and resource availability (Sheejah and Susan, 2019). The theoretical framework for IoT usage in library services has been proposed by Wójcik (2016) after the literature related to IoT implementation in libraries was reviewed. Ju and Shen (2015) also proposed the "Internet of Knowledge (IoK)" for organizing dispersed resources into valuable knowledge to serve a particular object using the Internet. Makori (2017) alluded IoT has the power to transform and change research and academic libraries to be the source of knowledge thus expanding and facilitating education, information and communication irrespective of distance and time through the Internet. Academic libraries should commit to the implementation of IoT such as smart digital shelves, mobile devices for locating favorite resources and virtual library cards to align with the principles and standards (Sheeja and Susan, 2019).

The IoT can assist academic libraries to provide various personalized services such as delivering information regarding the information resources linked with the current client's interest; integrating smartphones applications with the current library systems; IoT assisting to communicate with a client regarding the newly added resources in the area of interest and related works; and clients to receive notification about the status of their library account and the library events (Sheeja and Susan, 2019). This study focuses on determining the academic library and information services' innovation introduced as part of managing the COVID-19 restrictions in higher education in the Gauteng Province of South Africa.

Library users used to physically visit the physical library to browse the information resources they need. As a result of the COVID-19 pandemic, library users are encouraged to use online requests for information resources as most academic libraries restrict library entry. Online requests for information resources are done through the library catalogs and require library users to be tech savvy (Dube, 2016). Balachandar and Ramesh (2019) indicate that information technology tools are widely used in academic libraries to facilitate information resource provision to eliminate duplication of efforts, improve the speed of operations, increase access to information resources and improve the quality of information services.

5. Theoretical framework: the standards for distance learning library services

This study is anchored by the Standard for Distance Learning Library Services. This made it obligatory to formalize academic librarians' roles, functions and duties. The researcher embraced this standard because of its correlation to the phenomena under study. Applying this theoretical framework (the Standard for Distance Learning Library Services) in this study assured the comprehensive analysis and measurement of the research problem. Furthermore, this theoretical framework is academic library oriented, and it helps address the gaps and weaknesses of this study's phenomena. This enhanced the researcher's understanding and awareness of the Standards for Distance Learning Library Services approved by the ACRL board of directors in 2008. The principle of the Standards for Distance Learning Library Services is that it has been designed and approved by the ACRL board of directors to ensure that library users receive equal library and information services irrespective of distance and location. The Standards for Distance Learning Library Services affirmed that the university community is entitled to library and information services and information resources equivalent to walk-in clients. This affirmation still applies during the COVID-19 era, whereby the librarians and library users are bound to accept and accommodate the 4IR. Irrespective of the changes imposed by the COVID-19 pandemic and the 4IR, academic libraries should provide library and information services to library users to support the curriculum and the institution's objectives by collecting and managing information resources to support teaching, learning and research.

Based on the above statement, it is imperative to outline the guidelines and standards that academic libraries should adhere to as per the Standards for Distance Learning Library Services. This standard is appropriate to this study in the following ways:

- The standard aligns mostly with this study's purpose/aim as it governs the provision of library and information services to library users.
- The information resources and services rendered to library users by the HEI academic library were identified. Identification of information resources and services was to ascertain that the academic libraries adhered to the regulations by the standards by not restricting library users to access information resources to meet their information needs.
- Since academic libraries are taking a different turn whereby they are obliged to solely depend on information technology that is motivated by 4IR to render library and information services this standard assisted the researcher in identifying strategies that academic library services can employ to improve the ability of library users to access information resources during the COVID-19 pandemic era.
- The Standards for Distance Learning Library Services channel all academic libraries to comply with the standard to ensure uniformity, equal access and information provision to benefit library users.

The Standards for Distance Learning Library Services comprise the following constructs: resources, services and facilities (See Figure 1).

Resources: The Standards for Distance Learning Library Services postulated that print and electronic information resources should be available to library users in a suitable format to support teaching, learning and research (ACRL, 2008). However, the emergence of the COVID-19 pandemic reversed the postulation whereby academic libraries must solely depend on information technologies to provide information resources. The situation imposed that academic libraries should subscribe to various databases to access and download information resources such as full-text journal articles, images, audio, video and audiovisual materials

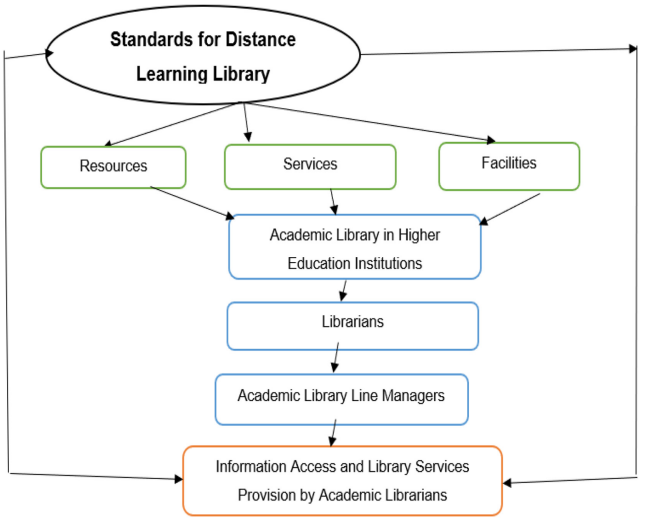

Figure 1.
Theoretical framework road map for this study

(Dube, 2021b). The academic library needs to train library users to use these databases, or the clients may use free information available on Google and other search engines.

Services: Before the COVID-19 pandemic, the library users randomly came to the physical space to loan books, make photocopies, use the computers, use WiFi and study. During the COVID-19 era, the librarians and library users experienced drastic changes where everything has to be done online. In some instances, library users used to make an appointment to meet with the librarians regarding the library services, use the library and request information online via the library catalog. It is now obligatory for library users to consult with the librarian by telephone, email, fax and other ICT tools to curb the coronavirus spread.

Facilities: The library facilities are intended to meet library users' standards and information needs. Even in the COVID-19 era, the librarians should ensure that they should advance their technological skills to be on par with the advancement of the 4IR that has taken over the traditional methods of providing library services. For this reason, guidelines should be drafted to assist academic libraries in aligning with the university's objectives to support teaching, learning and research, considering the advancement of 4IR. Access to sound library services and information resources is vital for accomplishing quality education irrespective of geographic factors and the crisis of the COVID-19 pandemic that has overwhelmed the world. This denotes that library users are entitled to lifelong learning skills provided to walk-in clients through bibliographic and information literacy classes. The library should devise means to ensure that bibliographic and information literacy classes are conducted online to benefit library users who rely on ICTs to connect with the main library.

6. Research methodology

As indicated, the research is founded on the principles of the post-positivist paradigm where the sequential explanatory research design was followed to obtain both qualitative and quantitative data to determine the views of academic librarians and library users on the variety and success with which different services and resources were implemented during the COVID-19 pandemic. Academic librarians were selected from HEIs within the Gauteng Province of South Africa. A questionnaire was shared via e-mail with academic librarians whose key responsibilities included providing information resources to library users. For

interviews, purposive sampling was used to select participants that could shed more light on the innovative ways in which academic librarians provided additional innovative support to staff and students during the COVID-10 pandemic. Overall 45 questionnaires were received, whilst interviews were conducted with three participants (line managers). The data collection process was challenging as most academic librarians were not reporting to work due to lockdown and COVID-19 restrictions. Therefore, most academic librarians did not have access to the Internet while not at the workplace whilst others had problems using their Internet data to answer the online questionnaire. Therefore, the response rate from the selected HEIs within the Gauteng Province that engaged in this research was very low. Ethical considerations were always adhered to. Based on the guidelines provided by Bryman (2012, p. 135), informed consent was obtained from all those who participated in the research; anonymity was ensured, and participation was voluntary.

7. Significance of the study

The significance of this paper contributed to the Library and Information Science (LIS) expertise by facilitating the value and worth of the knowledge base while promoting and enhancing awareness of the new library services introduced because of the COVID-19 pandemic. Academic libraries that operate in a higher education environment can adapt and apply these newly introduced for the benefit of the university community. Subsequently, the policymakers, stakeholders, and academic library management of academic libraries in a higher education environment gained knowledge and understanding; thus, revisiting and reviewing existing policies to cover the dissemination and access to the newly introduced library services. The information and knowledge practitioners and policymakers will draft new guidelines regarding the application of new library services facilitated by the emergence of COVID-19 and advanced information technologies.

8. Findings

To ensure that the HEI continues to be operational, academic libraries in the Gauteng Province of South Africa introduced, redesigned, adopted and aligned the new library services with the advanced information technologies to ensure that teaching and learning continue, instead of permanent closure of the institutions and their academic libraries.

8.1 Newly introduced library services

The questionnaire did not gather much information regarding the new library services that were introduced due to the COVID-19 pandemic to ensure that the information needs of library users are met. The information regarding new library services introduced due to COVID-19 and their positive impacts is presented in Table 1 while new library services introduced due to COVID-19 and their negative impacts are presented in Table 2. Even though these new library services positively impact and facilitate self-sufficiency, digitization of information resources that can secure future safety, and the use of information resources, it was necessary to seek clarity from the respondents regarding the positive and negative impact as a result of the newly introduced library services.

8.1.1 New library services introduced due to COVID-19 and their positive impacts. The respondents were asked to indicate their opinion on the *positive impact of the new services on the* library users on a multiple response scale in Table 1. The result of the analysis showed two areas emerged from the analysis of the positive impacts of the new library services:

a. *Domain 1: technology-related impacts (f = 22, 88.08%) with six indicators; and*

b. *Domain 2: administrative-related impacts (f = 3, 12.0%) with three indicators.*

What are the new library services introduced in your library due to the COVID-19, thus having a positive impact on the library clients?			
Domains (Core ideas)	Categories	Frequency	Percent
Technology-related impacts (f = 22, 88.08%)	Provision of online training to students	15	68.2%
	All academic librarians' training is done online on zoom and MS Teams	3	13.6%
	Provision of data bundles	1	4.5%
	All books launch done virtually	1	4.5%
	Course reserve books uploaded on the electronic booking system for staff and students	1	4.5%
	Requesting e-books	1	4.5%
	Total	*22*	*100.0%*
Administrative-related impacts (f = 3, 12%)	Saves pickup time for clients	1	33.3%
	No more noise in the library	1	33.3%
	Students are sure to get responses from the staff just on the palm of their hand using iPhones	1	33.3%
	Total	*3*	*100.0%*

Table 1.
New library services due to COVID-19 and their positive impacts

Responses
• LM1 – Clients can be self-sufficient
• LM1 – Digitization of information resources
• LM1 – Libraries subscribed to more online databases
• LM2 – Library users can be able to access online information resources and other library services
• LM2 – Library users can use social media platforms for library-related inquiries
• LM3 – No fine was incurred for overdue books

Table 2.
Positive impact that comes with the newly introduced library services

Of the two domains, the positive impacts of the new library services were mostly felt in the area of *technology* (f = 22, 88.08%), followed by *administrative-related impacts* (12%) with three indicators. The result clearly shows the importance of technology in adopting new library services in higher education academic libraries. This result indicates that deliberate efforts have been made by the higher education academic libraries to continuously integrate technology into teaching/learning activities of the daily operations in the library workplace. Among the six indicators of technology captured, provision of online training to students (68.2%) and training of academic librarians via Zoom and MS Teams (13.6%) were the two dominant areas of technology adoption, integration and use where the positive impacts of new library services were more noticeable. Together, these two technology-related factors accounted for 81.8% of technology impacts. This result suggests that the training of academic librarians and students by the higher education academic libraries must be sustained to improve service delivery.

However, the three indicators under the *administrative-related impacts* domain, namely, saving pickup time for clients (33.3%), reducing less noise in the library (33.3%) and ensuring students get quick responses from academic librarians using iPhones (33.3%), shows that the management of higher education academic libraries have made appreciable impacts with the introduction of new library services. Hence, the result suggests that these initiatives must be sustained to enhance the achievement of the vision, goals and objectives of the library.

Furthermore, the participants were asked during the interview to indicate the positive impact that comes with the newly introduced library services. Table 2 indicates the results.

The positive impact mentioned by LM1 is that as a result of the new library services introduced during COVID-19 was that library users became self-sufficient, which is a prerequisite for library users as they are expected to access and download online information resources remotely without the assistance of the academic librarians. As stated by LM2, the positive impact of the newly introduced library services is that library users can be self-sufficient to access online information resources and other library services, considering the COVID-19 protocols imposed by the South African government. In addition, academic libraries were digitizing their library collections and subscribed to more online databases to enable remote access through online platforms. LM2 further attested that the use of social media is becoming more popular in academic libraries of Gauteng in South Africa. Although other participants (LM3) indicated, no new service was introduced.

8.1.2 New library services introduced due to COVID-19 and their negative impacts. The responses were analyzed using multiple response analysis. The result of the analysis showed the negative impacts of the new library services consisted of two domains and 16 categories, and are presented in Table 3:

a. *Domain 1: technology impact (f = 22, 68.8%) with seven categories; and*

b. *Domain 2: management impact (f = 10, 31.2%) with nine categories.*

Table 3.
New library services and their negative impacts due to the COVID-19

What are the new library services introduced in your library due to the COVID-19, thus having a negative impact on the library users?

Domains (Core ideas)	Categories	Frequency	Percent
Technology impact (f = 22, 68.8%)	High cost of Internet data bundles	7	31.8%
	Poor Internet connectivity	5	22.7%
	Some clients do not have access to advanced digital devices to write exams, especially those in rural areas	3	13.6%
	Online service/students failed because of writing exams online	3	13.6%
	Some staff do not have laptops to answer queries promptly leading to slow response of library inquiries	2	9.1%
	Some library users are so poor to afford online resources. e.g. access to the internet	1	4.5%
	The attendance for 2021 is better, but a lot of students do not attend because they need a smartphone or laptop and data to attend this training	1	4.5%
	Total	*22*	*100%*
Management impact (f = 10, 31.2%)	The process of booking appointments first frustrates the students	2	18.2%
	Circulation of books was no longer allowed out to our staff, students and outside partners	2	18.2%
	The library/university introduced a booking system that is not well managed, thus making it difficult for students to access the library	1	9.1%
	Not having access to print copies of sources	1	9.1%
	Closure of the study area and library commons	1	9.1%
	Day visitors and students from other universities were not allowed	1	9.1%
	Students are not allowed to use the library until 16:00 only	1	9.1%
	Having to make an appointment to get hard copies	1	9.1%
	Difficulty in getting inter library loans books, especially those that are out of the county	1	9.1%
	Total	*11*	*100.0%*

Of the two emerged domains, the negative impacts of the new library services were most noticeable in the area of technology (f = 22, 68.8%), followed by management impacts (31.2%) with nine indicators. It could be seen from the result that "technology impacts" accounted for nearly 70% (68.8%) of issues caused by the new library services. This shows that issues stemming from the area of negative impacts technology must be urgently considered for policy actions in the higher education academic libraries in the Gauteng Province, South Africa.

Specifically, under the *technology-impact* domain, the high cost of Internet data bundles (31.8%) and poor Internet connectivity (22.7%) were the two dominant areas where the negative impacts of new library services were more felt among the respondents. Together, these two technology-related factors accounted for a lion's share of 54.5% in the technology dimension. This result suggests that the high cost of Internet data bundles and poor Internet connectivity were key areas of concern among respondents that need urgent attention regarding the higher education academic libraries of the study settings. Top among these issues is the high cost of Internet data bundles (31.8%), poor Internet connectivity (22.7%), library users' lack to the access to advanced digital devices to write exams (13.6%) and failure of online service/students because of writing exam online (13.6%).

Also, under the "management impact" domain, the process of booking appointments first for students (18.2%) and the lack of circulation of books to staff, students and outside partners (18.8%) were the two key aspects where the negative impacts of new library services were more felt. Bot indicators accounted for a larger percentage (36.4%) of the concerns stemming from the management area. This result shows that management has not given serious consideration to addressing the issues of appointment booking for students and the lack of circulation of books to staff and library users.

The researcher asked the same question (to state the negative impact as a result of newly introduced library services) during the interviews to get substantiated the quantitative findings. Additional information was provided as indicated in Table 4 below.

The LM1's responses designate that the library does not have gadgets to use the newly introduced library services. The library clients that have the gadgets experience poor network connectivity and a lack of data. In addition, LM2 designated that adult learners have challenges interacting with information technologies, while other library users are reluctant to use information technologies. Other participants (LM3) indicated that library users kept the issued information resources for a more extended period, which disadvantages other library users because the books are not circulating as usual. In this regard, these library users are not penalized, instead of the automated block renewal kick to avoid registration block.

8.2 Newly introduced library services

During Phase 1 of collecting and analyzing quantitative data, the researcher discovered that the information regarding the newly introduced library services as part of managing COVID-19 restrictions was not sufficient. Therefore, the participants were asked during the

Responses
• LM1 – Library users do not have the gadget to use these services
• LM1 – Poor network connectivity
• LM1 – Lack of data
• LM2 – Adults have challenges interacting with information technologies
• LM2 – Some library users are reluctant to use information technology
• LM3 – Outstanding items which block registration
• LM3 – Clients get to keep a library item for an extended period which disadvantages others

Table 4.
Negative impact that comes with the newly introduced library services

interview to provide newly introduced library services implemented in their academic libraries. Table 5 below presents the responses gathered through the interview.

LM1 revealed that the library had introduced new services during the COVID-19 era to ensure that the information needs of library users are met. BOTsa (a Chatbot) is an online booking system, Library App and a drop box for returning loaned library items. BOTsa is one of the new services that were introduced in January 2020 when COVID-19 emerged. BOTsa is a Tswana word meaning "ask" and was developed to answer basic library-related inquiries automatically. The library-related inquiries that Chatbot cannot answer are automatically redirected to the e-mail boxes of academic librarians to be attended. This Chatbot is available 24/7, and library users can enquire remotely at any time. The idea for introducing BOTsa was to reduce the number of library users flocking to the information desk with the same inquiries (especially the first entering students). This system (BOTsa) became helpful during the lockdown as the university moved to an online platform, and students were restricted from visiting the library premises physically.

As indicated by LM2, another newly introduced library services are the online booking system introduced during the COVID-19 pandemic to minimize and control the number of clients entering the library; and the use of the Library App for self-service such as information resource renewals and requests for information resources.

The COVID-19 protocols require academic librarians and library users to practice social distancing and practice health hygiene to curb the spread of coronavirus. Touching the library items that were in possession of the library users was considered risky or might be contaminated with the coronavirus. In this regard, it was stated by LM3 that the drop box was introduced to quarantine hard copies before being checked in and shelved. Academic libraries have put a drop box at the gate or entrance of the library where the returned books are dropped in a box and quarantined for 72 h before shelving online booking systems and library apps were also introduced to make an appointment before coming to the physical library for any library-related services. These new library services were introduced to mitigate and curb the spread of the coronavirus.

8.3 Adaptation of library users to the new library services

After determining the new library services introduced as a strategy to manage COVID-19 restrictions in academic libraries operating in higher education in the Gauteng Province of

Responses
• LM1 – BOTsa – a library Chatbot, launched officially in January 2020 - It was launched at the time when COVID-19 emerges - BOTsa was developed to answer basic library-related inquiries automatically - Library-related inquiries that Chatbot cannot answer are automatically redirected to the e-mail boxes of academic librarians to be attended - BOTsa is a Tswana word meaning "ask" - Library users can send library inquiries to the library Chatbot 24/7 - The idea of BOTsa (Chatbot) was to reduce the number of library users flocking to the information desk with the same inquiries (especially the first entering students) - This system (BOTsa) became helpful during the lockdown as the university moved to an online platform, and students were restricted from visiting the library premises physically
• LM2 – The library online booking system was introduced during the COVID-19 to manage the number of students entering and using the library
• LM2 – the use of the Library App
• LM2 – the drop box for returning loaned books
• LM3 – Library users can inquire using social media
• LM3 – Block renewals for books issued to students

Table 5.
Newly introduced library services

South Africa it was also imperative to establish whether library users were adapting to the new library services introduced. In response, 44.4% of the 45 respondents to this question indicated that library users were adapting to the new library services introduced; 15.6% indicated "No" while 40% indicated were indifferent (no opinion). The results are shown in Table 6. It is evident from this finding that the higher education academic libraries are to ensure that library users are adapting to the new library services introduced, perhaps through the use of online polls.

To verify, clarify and complement the quantitative findings, participants were during interviews to also indicate whether the library users are adapting to the newly introduced library services. All the participants answered "Yes" as presented in Table 7 below.

Based on the findings presented in Table 7, LM1, LM2 and LM3 have the same sentiment that the library users seem to have adapted to the newly introduced library services as COVID-19 emerged drastically and changed how academic libraries should operate and how information should be accessed.

8.4 Frequency of provision of information resources

Since the above responses indicate that library users are coping with the newly introduced library services a Likert scale was used to evaluate the frequency to which information resources and other library services were provided in the library, and the findings are presented in Table 8. On a scale of 1–3, 1 being "Never" and 3 being "Often," respondents were asked to rate how the frequency to which information resources and other library services are provided in the higher education academic libraries. Overall 45 responses were gathered in this question and presented in Table 9. The result in Table 8 revealed that higher education academic libraries in the study area "often" provide information resources and other library services through areas such as online information programs (mean = 2.51), off-campus (mean = 2.44), social media (mean = 2.36), subscription to open access journals and e-books (mean = 2.36), ask-a-librarian and LibGuides (mean = 2.36) and online library services marketing (mean = 2.27). These results suggest the need to sustain the provision of information resources and other library services in higher education academic libraries by giving attention to the aforementioned areas. However, the low measurement score on areas such as the loan of equipment such as laptops, tablets, iPods and smartphones (mean = 1.27. "Not at all") calls for concern. Hence, this result suggests the need to improve the provision of information resources and other library services in higher education academic libraries by giving serious attention to the issue of the loan.

Based on your interaction with the library users through the ICT platform, does it seem like the library users are adapting to the new library services?

	Frequency	Percent
No	7	15.6
Not sure	18	40.0
Yes	20	44.4
Total	*45*	*100*

Table 6. Adaptation of library users to the new library services

Responses
• LM1 – Yes
• LM2 – Yes
• LM3 – Yes

Table 7. Adaptation to newly introduced library services

Table 8.
Frequency of provision of information resources

To what frequency do you provide the following information resources and other library services? Variables	Never (1)	Sometimes (2)	Often (3)	Mean
Providing online information programs	6 (13.3)	10 (22.2)	29 (64.4)	2.51
Off-campus access to online information resources	6 (13.3)	13 (28.9)	26 (57.8)	2.44
Using social media for interaction and communication with library users	10 (22.2)	9 (20.0)	26 (57.8)	2.36
Subscription to open-access journals and e-books	10 (22.2)	9 (20.0)	26 (57.8)	2.36
Providing online reference services such as ask-a-librarian and LibGuides	8 (17.8)	13 (28.9)	24 (53.3)	2.36
Marketing online library services and information resources	8 (17.8)	17 (37.8)	20 (44.4)	2.27
Loan of equipment such as laptops, tablets, iPads and smartphones	38 (84.4)	2 (4.4)	5 (11.1)	1.27
Weighted mean = 2.22; and remark = often				

Note(s): Decision rule: if mean is 1.0–1.49 = never; 1.50–1.99 = sometimes; 2.0–3.0 = often; and cut-off mean = 2

Table 9.
Level of satisfaction with the provision of information resources

Based on your opinion, rate your level of satisfaction with how the library provides information resources to library users during the COVID-19 era	Frequency	Percent	Mean	Remark
Low (1)	7	15.6	2.22	High
Moderate (2)	21	46.7		
High (3)	17	37.8		
Total	*45*	*100*		

Note(s): Decision rule: if mean is 1.0–1.49 = low; 1.50–1.99 = moderate; 2.0–3.0 = high; and cut-off mean = 2

8.5 Level of satisfaction with the provision of information resources

The level of satisfaction with providing information resources to library users during the COVID-19 era is captured on a three-point Likert in Table 9. The result reveals that higher education academic libraries are highly satisfied with how the library provides information resources to library users during the COVID-19 era, based on the mean value of 2.13. These results suggest the need to continue current academic library operations in higher education academic libraries.

8.6 Offering online information resources during the COVID-19 pandemic

Respondents were asked to respond on what they think about how information resources and other library and information services are provided in the COVID-19 era in Table 10. The result showed that library users have ready access to information sources (28.6%), rely on courier services (21.4%) and useless physical materials to curb the spread of COVID-19 (21.4%). However, fewer respondents expressed their perceptions in areas such as the provision of data bundles to students (7.1%), staff management of the library website (7.1%), standardization of information resources (7.1%) and marketing, awareness and training of students (7.1%).

8.7 Satisfaction level of resource offerings during the COVID-19 pandemic

When asked about online information resources that the higher education academic libraries have for library users in Table 11 and Figure 2, most of the respondents identified electronic

Please provide a detailed description of what you think about the manner in which information resources and other library and information services are provided in this COVID-19 era	Frequency	Percent
From the space on the library website, emails, blackboard and online individual and group training sessions, library users have ready access to information sources	4	28.6%
A lot of our clients are relying on courier services	3	21.4%
There has been less use of physical materials by most libraries in order to curb the spread of COVID-19. This has resulted in less circulation of resources	3	21.4%
More data bundles are provided to students	1	7.1%
Academic librarians are always on the library website and managing it	1	7.1%
Information resources are standardized, and all clientele can easily access the services, especially when library users can be committed	1	7.1%
Marketing, awareness and training of students play a vital role for distance learners	1	7.1%
	14	*100%*

Table 10.
How information resources and other library and information services are provided

Which online information resources does your library have for library users? You can select more than one Online information resources	Frequency
Electronic books	43
Electronic journals	41
Electronic reserves	41
Full-text databases	34
Institutional repository	11
Digital archives	1
Newspapers	1

Table 11.
Frequency analysis of methods of provision of online information resources

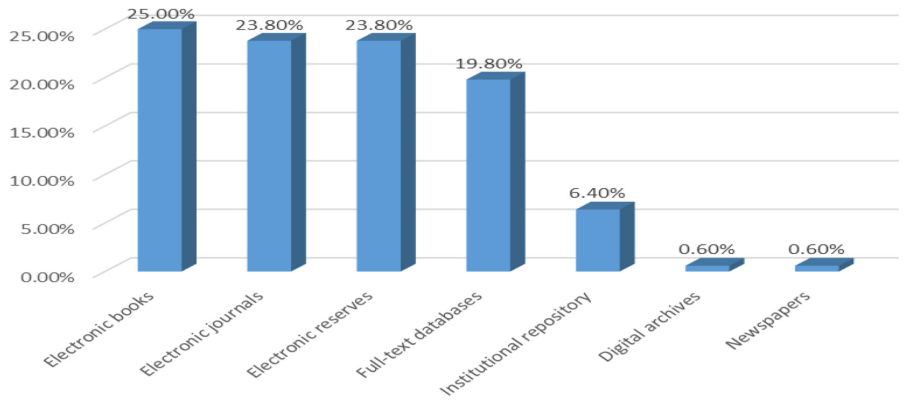

Figure 2.
Frequency analysis of methods of provision of online information resources

books (43), electronic journals' electronic books (41), electronic reserves (41) and full-text databases (34) as the topmost online information resources provided to library users while IR (11), digital archives (1) and newspapers (1) were the least provided online information resources to library users.

The result suggests that consideration should be given to the use of IR repository digital archives and newspapers in reaching the local and international library users accessing information in higher education academic libraries in the Gauteng Province, South Africa.

8.8 Continuity of current academic library operations after the COVID-19 pandemic

A three-point Likert scale was used to examine the continuity of current academic library operations after the COVID-19 pandemic in higher education academic libraries. On a scale of 1–3, 1 being "No" and 3 being "Yes," respondents were asked to rate their opinions in Table 10. The results are presented in Table 12.

The above results indicate that higher education academic libraries wish for the current academic library operations to continue even after the COVID-19 pandemic, based on the mean value of 2.13. This result could suggest that the COVID-19 situation has led to a paradigm positive change in the current academic library operations in higher education academic libraries.

8.9 Reasons for the continuity of current academic library operations

As a follow-up question on reasons for the continuity of current academic library operations, respondents were asked in Table 13 to indicate "Yes" or "No." There were 19 responses to this question from respondents that indicated "Yes." The result showed that the respondents indicated technological advancement (36.8%) and offering library users wider access to resources 24/7 (15.8%) as the major reasons for the continuity of current academic library operations. Other reasons given were the acknowledgment of University of South Africa (UNISA) as an Open Distance eLearning (ODEL) university (10.5%) and the benefits of using a blended approach (10.5%). However, less noticeable reasons for supporting the continuation of current academic library operations in higher education academic libraries were the encouragement of creativity and innovation (5.3%), the benefit of hybrid service (5.3%), clients are not shy to ask questions online (5.3%), the close business relationship between academic librarians and clients (5.3%) and time save timing benefit (5.3%).

Table 12.
Continuity of current academic library operations after the COVID-19 pandemic

Based on your opinion, do you wish for the current academic library operations to continue even after the COVID-19 pandemic?	Frequency	Percent	Mean	Remark
No (1)	16	35.6	2.13	Yes
Not Sure (2)	9	19.1		
Yes (3)	20	42.6		
Total	45	100		

Note(s): Decision rule: If mean is 1–1.49 = No; 1.5–1.99 = Not Sure; 2.0–3 = Yes; Cut-off Mean = 2

Table 13.
Reasons for the continuity of current academic library operations

Why do you wish for the current academic library operations to continue even after the COVID-19 pandemic? Yes, because . . .	Frequency	Percent
It encourages technological advancement	7	36.8%
Online access offers wider access to resources 24/7	3	15.8%
UNISA is an ODEL university	2	10.5%
Universities are using a blended approach	2	10.5%
It encourages creativity and innovative	1	5.3%
because a hybrid service is all-embracing	1	5.3%
Clients are not shy to ask questions online	1	5.3%
Academic librarians and clients contact each other	1	5.3%
To save time by coming to the library	1	5.3%
	19	*100%*

The above result showed that technological advancement and offering library users wider access to resources were the top reasons for the continuity of current academic library operations. The finding suggests that these reasons (technological advancement and offering library users wider access to resources) should be considered to ensure the continuity of current academic library operations in higher education academic libraries in the Gauteng Province, South Africa.

8.10 Analysis of reasons for the discontinuity of current academic library operations

As a follow-up question on reasons for discontinuity of current academic library operations, respondents were provided by the respondents in Table 14. There were 13 responses generated from this question. The result revealed that students' lack of access to the Internet (46.2%) and academic librarians' difficulty working from home (23.1%) were the top reasons for the discontinuity of current academic library operations. However, less apparent reasons for discontinuity of current academic library operations were the preference of library users to read hard copies (5.3%), the benefit of hybrid service (7.7%), lack of resources to work (7.7%), availability of valuable resources are in print (7.7%) and time-wasting while working remotely (7.7%).

The above result showed that students' lack of access to the Internet and academic librarians' difficulty working from home were key reasons, for academic librarians in the higher education academic libraries agitated for the discontinuity of current academic library operations. These reasons should be considered by the management of higher education academic libraries in the Gauteng Province, South Africa.

9. Implications for research

The implication of the study serves as a final interpretation of data collected through questionnaires and interviews. In this study, the contextualization of recommendations relates to theory, practice and the Standard for Distance Learning Library Services whereby the term "implications" is used, rather than "recommendations". Implications of the study serve specific purposes to identify possibilities to be considered in response to the research results. Implications provide explanations for problems and issues emanated from the discussion. In addition, the implication can be used to recommend how academic libraries should implement the new library services and how they should be provided to the university community to enhance teaching, learning and research.

The introduction of new library services due to the COVID-19 pandemic might be perceived as a good initiative; the newly introduced library services posed some challenges, as revealed during the interviews. It was mentioned that library users do not have access to gadgets to access and use online services, poor network connectivity and a lack of data. New

Table 14. Analysis of reasons for the discontinuity of current academic library operations

Why do you wish for the current academic library operations to continue even after the COVID-19 pandemic? No, because . . .	Frequency	Percent
Not all students have access to the Internet	6	46.2%
It is difficult to work from home	3	23.1%
Most library users prefer to read hard copies	1	7.7%
No, because we are not provided with resources	1	7.7%
Some valuable resources are in print	1	7.7%
Working remotely means that time wasted	1	7.7%
	13	*100%*

library services are introduced since these academic libraries operate in a higher education environment where there is a need to be accommodated. The interview revealed that adults experience challenges interacting with information technologies, and some are reluctant to use information technologies.

The COVID-19 pandemic caused academic libraries operating in a higher education environment to introduce new library services to cater to the information needs of library users, and the higher education academic libraries in Gauteng, South Africa, is not an exception. The newly introduced library services are technologically based, and it is evident that deliberate efforts have been made by the higher education academic libraries to continuously integrate technology into teaching/learning activities of the daily operations in the library workplace. The COVID-19 situation has led to a paradigm positive change in the current academic library operations in higher education academic libraries.

Therefore, considering the COVID-19 pandemic and information technologies, it is recommended that academic libraries assist library users affected by the digital divide with laptops/tablets and unlimited data. The need to sustain the provision of information resources and other library services in higher education academic libraries. Library users' wider access to resources should be considered to ensure the continuity of current academic library operations in higher education academic libraries in the Gauteng Province, South Africa.

BOTsa, a library Chatbot (new library service) was officially launched in January 2020 when COVID-19 emerged. This library Chatbot is helpful to answer basic library-related inquiries automatically. Library-related inquiries that cannot be resolved through Chatbot are redirected to the academic librarians' e-mail addresses for attention. Therefore, it is recommended that this Chatbot be adopted in all the academic libraries considering that academic librarians are working from home, rosters, rotations and shifts. It will relieve the academic librarians from handling more library inquiries while focusing on other library services that cannot be automated.

Due to the COVID-19 pandemic, academic libraries operating in a higher education environment introduced a new library service called a drop box. A drop box is effective in minimizing the number of library users entering the library premises. Library users returning the books are not allowed to enter the library. Instead, they put the books in a drop box for 72 h of quarantine. It is recommended that drop boxes should be used to curb the spread of coronavirus. However, this contradicts the Standard for Distance Learning Library Services that ruled that library users should not feel discriminated against, but the drop box is the best solution.

10. Conclusion

This study determined the new library and information services introduced due to the emergence of the COVID-19 pandemic. As this study employed the sequential explanatory research design whereby data were collected in two phases a questionnaire was administered in the first phase, followed by interviews in the second phase. During the first phase, the quantitative data were collected from the academic librarians working in higher education academic libraries in the Gauteng Province in Gauteng. The collected data were analyzed with the frequency counts, percentage, mean and standard deviation statistics and presented in tables. During the second phase, the qualitative data were collected from the line managers from the targeted universities in the Gauteng Province of South Africa and were purposively selected to clarify, confirm and validate data collected from the academic librarians.

This study is anchored by the Standards for Distance Learning Library Services. The researcher outlined the background to the theoretical framework to provide an insight into how the framework is relevant to the phenomena of this study. The Standards for Distance

Learning Library Services are composed of three constructs, that is, resources, services and facilities. This standard regulates and guides academic libraries operating in a higher education environment to provide equal library services irrespective of socio-economic and geographic factors.

The quantitative findings showed that the newly introduced library and information services had a negative and positive impact. The positive impact of the newly introduced library services is that information resources are provided using online channels. The library users affected by the digital divide are mostly affected as the findings revealed that the high cost of Internet data bundles and poor Internet connectivity is a challenge. These findings might reflect a failure on the side of management to address these issues to ensure that library users are catered to as regulated by the Standard for Distance Learning Library Services.

Even though academic libraries operating in a higher education environment were caught off guard by the emergence of the COVID-19 pandemic, the effort was made to familiarize library users with the new library services and services that were improved to be on par with the imposed COVID-19 protocols and the advanced information technologies. The study recommended that library users be provided with laptops/tablets and unlimited data to bridge the gap in the digital divide and enhance teaching, learning and research. It was further recommended that BOTsa (a Chatbot) and a drop box be used to curb the spread of COVID-19. It is imperative that these two newly introduced library services be implemented by all academic libraries in South Africa in support of the 4IR.

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