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## The Impact of COVID-19 on University Library Services: A Systematic Literature Review

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# The Impact of COVID-19 on University Library Services: A Systematic Literature Review

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## Abstract

The impact of COVID-19 on university library services is a less researched area. For the systematic literature review, the researchers searched Scopus, Web of Science, and Google Scholar. Initially, the researchers found 903 potentially relevant citations. From 903, 427 duplicate citations were removed. The remaining 476 articles were rechecked for relevance. There remained 34 full-text papers that were assessed for eligibility. Only 13 of these studies fulfilled the eligibility criteria to provide information on university library services in the pandemic era. PRISMA guidelines are followed in this study.

The findings of this systematic literature review contribute towards a better understanding of the impact of coronavirus on university library services. These are also useful for academic librarians to facilitate their patrons by improving their electronic resources during the pandemic situation of COVID-19. This study provides guidelines and systematic steps for evaluating the impact of the pandemic situation on university library services. This review also aids university libraries in making decisions on the adoption of digital and electronic services to support students' e-learning programs. Through exploration and reflection, this review contributes to a newly emerging body of knowledge on university library services during the outbreak of coronavirus.

**Keywords:** COVID-19, Coronavirus, Pandemic, University library services, Systematic literature review, PRISMA.

## Introduction

In December 2019, the novel Coronavirus (COVID-19) disease spread from Wuhan, China (Kandola, 2020). According to Chisita (2020), the disease has a high incidence rate and has had such serious effects that it has been declared a global epidemic. These impacts have greatly affected all kinds of libraries in a way that has not been seen before in history. As a result, collaborative attempts have been made to address the global challenge of preventing contagion, with one of the most successful approaches being the restriction and supervision of academic activities during the time of lockdown with social distancing (de los Ángeles Ortega-Martínez *et al.*, 2021). Many governments are putting limits on restricting the number of people who congregate in public spaces. To stop the spread of the pandemic, steps like social distancing,

isolation, self-quarantine, and lockdown were implemented (WHO, 2020). In this situation, academic institutions were seriously affected to provide educational opportunities to their students in a conventional way. They mostly introduced alternative approaches that allowed students to continue their lessons without having to leave their homes. In this situation, the most effective way of learning is online education (Odili, 2020).

The researchers from all professions had been working to alleviate the pandemic's varied and complex implications and ramifications owing to the world's continuing lockdown. There were already a variety of papers regarding contributions to e-learning, expanding digital services, and providing alternative tactics and services to serve the public remotely in the field of library and information science (Machin-Mastromatteo, 2021). Wang (2017) highlighted that libraries are vital social institutions that enable citizens to get access to a variety of information resources. Libraries have evolved in lockstep with the advancement of information technology, significantly expanding library facilities and improving their quality and effectiveness.

University libraries have abandoned their traditional methods since students have deserted their campuses due to the COVID-19 pandemic. Universities have started to offer online teaching and learning approaches to keep students interested at home and fulfill their academic cycles. Following COVID-19, some universities are considering adopting a hybrid teaching technique that combines traditional and online approaches. As a result, university libraries' traditional methods of serving users' information needs (which require actual interaction between the library and users) have become obsolete during the present epidemic (Ifijeh & Yusuf, 2020). The concept of online education is not new to universities in the developed world such as Europe, North America, and parts of Africa and Asia. The outbreak of the COVID-19 epidemic, on the other hand, has forced universities all over the world to adopt online education (Czerniewicz, 2020). This study is particularly focusing on the impact of COVID-19 on the university library services and how they managed it in this situation.

### **Objectives of the Study and Research Questions**

The primary objective of this review is to find out the impact of coronavirus on university library services. This objective can be interpreted in the following research questions.

RQ1. What is the status of research on university library services in the era of COVID-19?

RQ2. What is the impact of COVID-19 on university library services?

### **Methodology and Limitations**

Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines (Wittorski, 2012) were followed in this study. The absence of awareness of shared principles that make systematic reviews reproducible and scientifically adequate is common. PRISMA is a peer-reviewed standard that employs a guideline checklist (Pussegoda et al., 2017), which has been followed in this study to contribute to quality assurance.

**Data sources and search strategy.** The researchers conducted a thorough search of Scopus and Web of Science databases and Google Scholar (for cross-referencing) for the years 2020 and 2021. We looked for peer-reviewed research with English-language papers. We searched databases to find as many relevant studies as possible and we expanded our search terms and techniques. As follows, search keywords were modified in combination with informatics and mixed with Boolean operators.

impact AND (COVID-19 OR corona\*) AND (university AND librar\*) AND service\*

The search strategy used is shown in Table 1. A manual search based on review articles was also performed. A backward and forward search approach on Google Scholar was also used to broaden the selection of literature.

*Table 1. Search Strategy for Selection of Relevant Articles*

Search by Keywords	Scopus		Web of Science	Google Scholar
	All fields	Title-Abs-Key	Topic (Title-Abs-Key)	
impact AND (COVID-19 OR corona*) AND (university AND librar*)	302	2	65	Nil
(COVID-19 OR corona*) AND (university AND librar*) AND services	366	0	22	Nil
impact AND (COVID-19 OR corona*) AND (university AND librar*) services	116	0	20	Nil
Total	784	2	107	10
Total (without duplication in the same database)	406	0	64	6
Total (without duplication in all databases)	476	Nil	Nil	Nil
Total (after keywords, title, and abstract assessment)	34	Nil	Nil	Nil
<b>Total (after assessment of entire manuscript)</b>	<b>13</b>	<b>Nil</b>	<b>Nil</b>	<b>Nil</b>

**Selection of studies.** The researchers separately assessed titles and abstracts to find paper eligibility for inclusion in the study using the above-mentioned criteria. For final inclusion, the whole text of possibly relevant articles was reviewed.

**Data extraction process and quality assessment.** Data were extracted and the article's quality was assessed. An evidence table was created to keep track of the information gathered from each study. The data was collected from primary studies. Any inconsistencies were resolved by expert consensus.

**Eligibility criteria.** Three rounds of selection were used to choose the articles to be reviewed. The title and abstract were screened in the first round of analysis. The articles were then analyzed in the second phase. The selection criteria were determined based on the research question and the results were arranged in a table. We didn't include research that didn't have a full text available. In the third phase, we read all of the results and combined them into a single document. Before being considered for inclusion in our study, articles from this round were retrieved for a thorough review. We excluded all publications that did not express research exploring the impact of COVID-19 on university library services in the epidemic period to

satisfy our specific research goals. We developed the inclusion criteria list by following the methodology of (Durach *et al.*, 2017), which is shown in Table 2.

Table 2. Inclusion Criteria and Rationale

Inclusion criteria	Rationale
Peer-reviewed articles.	Published peer-reviewed articles enhance the quality of the manuscript (Tranfied & Danye, 2009).
Selection of papers published during 2020-2021.	Current research is related to the era of COVID-19, which was begun in December 2019, and after that research on the said topic was started.
The summary must include the impact of COVID-19 on university library services.	The review aims to synthesize and analyze the impact of COVID-19 on the services of university libraries.
The article must be written in English.	English is the major research language in the field of LIS.

**Study selection and data extraction.** The PRISMA diagram in Figure 1 indicates the search of a total of 903 articles based on the inclusion criteria and the process of screening with reasons for exclusion. After two steps of screening (title, abstract and full text), 34 articles were selected for inclusion. After full-text assessment for eligibility, only thirteen studies were selected for final review. For each eligible study, a data extraction table was created to gather information on the author(s), year of publication, and other pertinent details, i.e., journal title, country, population, sample size/technique, research design, the method used and the impact of COVID-19 on university library services.

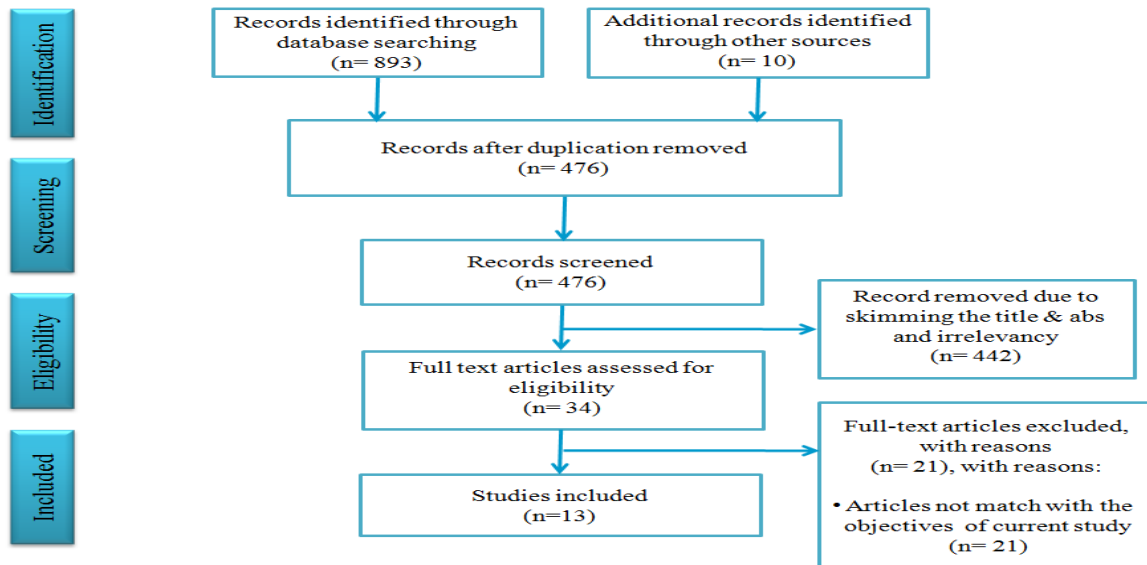


Figure 1. The PRISMA flow diagram for article selection (Shamseer *et al.*, 2015)

## Results

The results were divided into two parts. The first section focused on the primary research objective: to determine the status of research on this topic, as well as a description of the papers included. Part two delved deeper into a subsection of those studies' findings to investigate the second study objective: to determine the impact of coronavirus on university library services. The meta-analysis on specific online services provided by university libraries in the pandemic era to the students and faculty were presented in detail.

RQ1. What is the status of research on university library services in the era of COVID-19?
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### *Status of research: Description of included studies*

The literature was searched through two databases and a search engine, i.e., Web of Science, Scopus, and Google Scholar respectively, resulting in 903 articles. Thirty-four studies were found after a cursory review of titles and abstracts. Finally, 13 studies met the criteria for inclusion and provided the impact of COVID-19 on university library services. Twenty-one studies did not fulfill the requirements of research questions. These studies were excluded after a full-text review. Table 3 describes the summary of data extracted from selected studies and Table 4 depicts the impact of COVID-19 on university library services. The year of publication of the research ranges from 2020 to 2021. The majority of the works were published in publications related to library and information science, although some were also published in publications related to other disciplines. Two studies were conducted in Pakistan and the USA each; and one each was published in Australia, Brazil, Indonesia, Kuwait, Lesotho, Mexico, Spain, Sweden, and Zimbabwe.

Table 3. Characteristics of Included studies

Sr#	Study	Journal	Country	Population	Data Source	Method Used
1	Connell, Wallis, and Comeaux (2021)	Information Technology & Libraries (ITAL)	USA	3 university libraries	Web contents	Qualitative
2	de Lima Paula, da Silva, and Woida (2020)	Digital Journal of Library and Information Science	Brazil	7 university libraries of the northern region of Brazil	Web contents	Qualitative
3	Hendal (2020)	Digital Library Perspectives	Kuwait	Faculty of Kuwait University	Questionnaire	Quantitative
4	Ishtiaq, Sehar, and Shahid (2020)	Library Philosophy and Practice	Pakistan	29 university libraries	Questionnaire	Quantitative
5	Kelly, Johnston, and Matthews (2020)	Studies in Self-Access Learning Journal	Australia	Self-access services	University library portal	Quantitative
6	Martínez-Cardama and Pacios (2020)	El Profesional de la Información	Spain	56 libraries	11,867 tweets and re-tweets	Mixed
7	Mbambo-Thata (2020)	Digital Library Perspectives	Lesotho	Digital library of the university	Digital content	Quantitative
8	Mehta and Wang (2020)	Digital Library Perspectives	USA	Digital library of the university	Digital content	Quantitative
9	Rafiq et al. (2021)	The Journal of Academic Librarianship,	Pakistan	Head of seven university libraries	Interview	Qualitative
10	Saavedra-Alamillas et al. (2020)	Digital Library Perspectives	Mexico	6 Mexican university libraries	_	Qualitative
11	Temiz and Salelkar (2020)	Digital Library Perspectives	Sweden	39 university libraries	Web contents	Qualitative
12	Tsekea and Chigwada (2020)	Digital Library Perspectives	Zimbabwe	50 university librarians	Questionnaire	Quantitative
13	Winata, Fadelina, and Basuki (2020)	Digital Library Perspectives	Indonesia	126 university librarians	Questionnaire	Quantitative

RQ2. What is the impact of COVID-19 on university library services?

*Table 4. Studies on Impact of COVID-19 on University Library Services*

Sr#	Study	Impact of COVID-19 on University Library Services
1	Connell, Wallis, and Comeaux (2021)	<ul style="list-style-type: none"> <li>a. E-mail and Google Meet appointments (subject librarian) for online reference service.</li> <li>b. Electronic interlibrary loan service</li> <li>c. Online databases access such as EBSCO and ProQuest.</li> <li>d. List of the entire database (A-Z).</li> <li>e. Contents related to subject and instructions.</li> <li>f. The discovery tools/catalogs.</li> <li>g. Webinars for academic libraries, their administrators, and their staff members to exchange their experiences, compare notes, and help one other navigate the new norms.</li> <li>h. Distance learning services may become a more prominent focus.</li> </ul>
2	de Lima Paula, da Silva, and Woida (2020)	<ul style="list-style-type: none"> <li>a. Fostering academic activities through innovative ideas in today's society, such as providing a diverse range of services and information goods, such as virtual training, live events, and webinars, among others.</li> <li>b. Routine activities such as cataloging requests, collection consultations, home loans, research laboratories (virtual research), access to Capes' Portal, access to books and online journals, technical orientation/academic work, bibliographic commutation, and user training are all listed in some libraries' websites. CAPES Periodical Portal; Catalographic Sheet; Preparation Guide for Academic Papers; Institutional Repository; Open Book Portal; Digital Library of Monographs.</li> </ul>
3	Hendal (2020)	<ul style="list-style-type: none"> <li>a. Databases, e-journals, e-books, OPAC, videos, theses and dissertations, unified search, open access journals, open access books, and subscribed journals are examples of electronic resources.</li> </ul>
4	Ishtiaq, Sehar, and Shahid (2020)	<ul style="list-style-type: none"> <li>a. The library offers mobile application services such as live chat, social networking sites, email management, and document delivery over VPN.</li> <li>b. Reports on similarity checks, VPN access to digital resources and literacy sessions general online sessions internet teaching tools library literacy sessions</li> <li>c. At-home activities crisis literacy sessions: webinar e-books, library instruction manuals, articles, plagiarism report mobile application, web-based live chat, Facebook, Skype, LinkedIn, Instagram, mobile application services handling this query mostly e-books, library instruction manuals, articles, plagiarism report mobile application, web-based live chat, Skype, Facebook, Instagram, LinkedIn, mobile application services handling this query Messengers keep track of data on social media sites, manage emails and so forth.</li> <li>d. Libraries provide both services, such as Google class or virtual class instruction, VPN access to library resources, and document delivery.</li> </ul>



5	Kelly, Johnston, and Matthews (2020)	<p>a. New self-access tools and films for preparing to learn online, as well as videoconference appointment possibilities with learning experts and librarians and peer-to-peer virtual aids to online learning, are also available. Short video instructions, flexible online individual support choices and ways to interact with peers for technical help are all available.</p>
6	Martínez-Cardama and Pacios (2020)	<p>a. All essential library activities, such as borrowing and timely reminders to extend return dates, practical information, such as VPN installation and database access, and the maintenance of electronic interlibrary loans, as well as the migration of activities such as training courses and reading clubs to the digital world.</p> <p>b. It also contains a variety of activities to popularize this new manner of providing services, such as explainer films, info-graphics, and even more inventive choices like direct posting from their Instagram account, which might spark a WhatsApp conversation. Likewise, some libraries asked their users whether they lacked any services and how to improve them through a survey.</p> <p>c. The distribution of library-subscribed digital collections and online resources.</p>
7	Mbambo-Thata (2020)	<p>a. a. The library has built its institutional digital library, which includes locally generated papers and theses by subscribing to some platforms and databases of e-books and e-journals. There are twelve interdisciplinary and multidisciplinary digital collections in all.</p> <p>b. The Library and Information Consortium makes digital materials available to libraries for free to aid teaching, learning, and research.</p> <p>c. The Library had purchased a subscription to Remotex, a service that allows off-campus users to access digital materials/library.</p>
8	Mehta and Wang (2020)	<p>a. Libraries provide reference services, bibliographic instructions (BI), e-resource access and use multiple digital initiatives such as institutional repositories.</p> <p>b. Research consultations, LibChat, and LibAnswers are among the library's online reference services. In addition to some open resources, free e-Textbooks, and open educational resources materials, primary e-resources include proprietary databases, journals, e-books, streaming videos, and films. Students now have more access to e-Textbooks than ever before. Online vital resources include e-Textbooks, Science Direct, Pearson's digital materials, and Cambridge Textbook Collection.</p> <p>c. The library integrates open educational resources (OER) content into Blackboard, including databases, e-books, and online research aids. Virtual Commons (VC) is an open-access repository for scholarly works, research, publications, creative activities, newsletters and reports produced by faculty, students and staff, references, institutional repository, BI, the provision of subscribed e-resources, and course reserves produced by faculty, students and staff.</p>
9	Rafiq et al. (2021)	<p>a. The library provides VPN Server access, plagiarism services, article delivery, online tutorials for resource access, subject guides, email, and a website e-book repository, theses repositories open access resources that include e-books, particularly textbooks.</p>
10	Saavedra-Alamillas et al. (2020)	<p>a. Document Delivery Service (DDS), an interlibrary loan (ILL) service for books, book chapters, theses, journal articles, and conferences, is provided by the library.</p> <p>b. Remote access to digital libraries increased the number of databases or information in the digital collections as a whole.</p>
11	Temiz and Salelkar (2020)	<p>a. The library provides electronic interlibrary loans, a digital library service, and digital tutoring via zoom, skype, or telephone to assist all students with their academics. They used Zoom to automate their "information desk" and they offered automatic "Book renewal" by mailing books to borrowers' homes.</p>

12	Tsekea and Chigwada (2020)	<ul style="list-style-type: none"> <li>a. The library offers a digital library as well as e-learning.</li> <li>b. The technologies include WhatsApp, Facebook, Twitter, YouTube, and Skype as well as library websites, email lists, blogs, the digital library, and learning management platforms.</li> <li>c. E-journals, e-books, past examination papers, online public access catalog, institutional repository, “ask a librarian” and research guides services are available to patrons.</li> </ul>
13	Winata, Fadelina, and Basuki (2020)	<ul style="list-style-type: none"> <li>a. During the visitors' restriction, book delivery services and zero library loans are available.</li> <li>b. Empowering e-resources for a social restriction research helper. Electronic resources that include e-books, e-journals, journal publisher linkages (national and worldwide), and other databases that are supported.</li> <li>c. Engaging users through social media platforms such as WhatsApp, Facebook, Twitter, YouTube, and Skype.</li> <li>d. Using the "ask librarians" form to maintain a direct connection.</li> <li>e. Activating webinars for organizing events.</li> </ul>

## Discussion

The articles included in this review were from peer-reviewed journals and most of them had impact factors. Seven out of 13 studies were from the journal “Digital Library Perspectives,” which is an impact factor journal of the Emerald Publishing Group. The participants in the 13 studies were library professionals, research scholars, and faculty members at various universities. Eighteen participants out of 35 were teachers, while the remaining respondents were research scholars and library personnel. These participants belong to various university libraries and departments all around the world.

The population of eight studies was found in university libraries, and the remaining five studies relied on digital content, websites, tweets, and self-access services for the population. Four studies used questionnaires to determine the impact of COVID-19 on university library services, while other studies used content analysis and interview techniques. The five studies used a case study research design, while the remaining studies used a survey, exploratory, and descriptive research design.

The thirteen studies were analyzed (Table 4) to find out online university library services based on the following review and meta-analysis to conclude the impact of COVID-19. Selected characteristics of the 13 studies were revealed in Table 3. Figure 2 depicts the online university library services. The impact of coronavirus has been identified in the following themes.

**Off-Campus access to digital resources.** All the studies (Table 4) described that university libraries provided off-campus access to the following digital resources during the pandemic era. University libraries already provided some of these services in the pre-COVID-19 era to students and faculty through on-campus access only. Institutional repositories, databases, e-journals, e-books, videos, theses and dissertations, unified search, subscribed journals, open educational resources (OER), virtual commons, reports produced by the faculty, students, and staff, references, subscribed e-resources, course reserves, free e-textbooks, past examination papers, VPN server access, plagiarism services, articles delivery, online tutorials for resources access, subject guides, website e-book repository, theses repositories, open-access resources inclusion e-books especially textbook availability online, document delivery service (DDS), book chapter, journal article and conference papers are among the online services available. Furthermore, one library out of thirteen had subscribed to Remotex to facilitate users accessing off-campus electronic/digital resources.

**Electronic interlibrary loan service.** Five out of thirteen (38%) studies (Table 4) show that university libraries provided an electronic interlibrary loan service for the students and faculty of other universities to fulfill their education needs during the COVID-19 era. A VPN and an electronic interlibrary loan service are used by libraries to provide access to digital library resources.

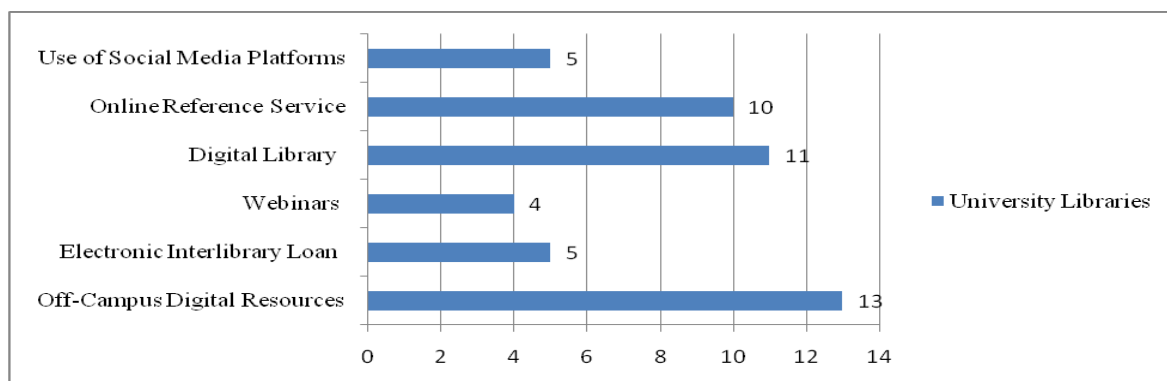


Figure 2. Online university library services due to COVID-19

**Electronic interlibrary loan service.** Five out of thirteen (38%) studies (Table 4) show that university libraries provided an electronic interlibrary loan service for the students and faculty of other universities to fulfill their education needs during the COVID-19 era. A VPN and an electronic interlibrary loan service are used by libraries to provide access to digital library resources.

**Webinars.** Training through webinars (Table 4) was highlighted in four out of thirteen (30.7%) research studies. University libraries have arranged various webinars for the training of their staff as well as for the training and guidance of students and faculty for the use of online digital resources in the pandemic era.

**Digital library.** The digital library is an important component of all university library services. A majority of eleven out of thirteen (84.6%) studies (Table 4) show that university libraries provided digital library services in the pandemic era to facilitate their users. Libraries offer both subscriptions and free electronic books, journals, and other digital resources.

**Online reference service.** The most important service in university libraries is the reference service. From Table 4, it is shown that ten out of thirteen (76.9%) university libraries provided online reference services during the COVID-19 era. Students and faculty were directed to use email or set up subject librarian Google Meet appointments for those questions where they usually had to visit the information desk. Some libraries offer 'ask a librarian' services to help their users with reference services. Some libraries use social media platforms for the provision of reference services to their users.

**Use of social media platforms.** Social media platforms play an important role in teaching and learning. Five out of thirteen (38%) studies (Table 4) revealed that university libraries communicate and provide information to their users through social media platforms such as Facebook, WhatsApp, Skype, Twitter, and YouTube. Libraries used these platforms to inform their patrons about online library services during the pandemic era.

## **Conclusion**

The pandemic of COVID-19 has increased the demand for serving faculty and students, who are more aware than ever of the importance of electronic and digital library services. The library has always been at the forefront of digital service provision. In many ways, the global pandemic has had an impact on university library services and the library professionals who offer them. For its services, the library has adopted a new paradigm that it has never used before. The problems that both in-house and home-based employees face are not insignificant. Some of the problems have provided opportunities for library personnel to learn and improve their technical skills and be more creative and collaborative. Actively reaching out to students and faculty and engaging them through online library services is of utmost importance and a significant challenge. The findings of this study revealed that the pandemic situation reshaped all aspects of life and the style of working changed in the lockdown from the traditional system of education to e-learning. University libraries have tried their best to provide online services to meet the requirements of their users.

University libraries have worked hard to respond to these unusual circumstances and to continue providing these services to their patrons. Aside from the immediate response to the epidemic, the library has been taking precautions by adjusting its current practices and launching new initiatives in the form of online digital resources such as subscribed journals, virtual commons, references, subscribed e-resources, videos, unified search, past examination papers, VPN server access, plagiarism services, article delivery, online tutorials for resource access, subject guides, website e-book repositories, theses and dissertation repositories, conference papers, e-journals, and e-books databases.

The COVID-19 problem has thrown digital libraries into the spotlight because of the numerous benefits they provide that were previously unnoticed or non-existent. The digital services of university libraries are demonstrating their potential by providing more rich and free e-content as well as more high-quality online services. The use of digital library services will continue to rise tremendously in the future. The global pandemic has not and will not detract from the critical function of a university library in providing support for staff and students. University libraries facilitated teaching and learning on and off campus before, during, and after the global crisis. Finally, university libraries have proved that in the face of major events and health emergencies, like the COVID-19 pandemic, they have deployed the latest technology to meet the challenge of providing for their users' information needs.

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