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Covid-19 and African Libraries: Perspectives Through Literature from the Library Philosophy and Practice (E-Journal)

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ABSTRACT

This study sought to establish how African libraries have been thriving during the COVID-19 pandemic through systematic review of literature from the Library Philosophy and Practice e-Journal (LPP). The PRISMA guidelines were followed to review and select the twelve (12) articles used for qualitative analysis. The study findings established that research productivity pertaining to libraries and Covid-19 is very low in Africa based on LPP e-journal. Nigeria was established to be the most active country in this research phenomenon. Majority, of the studies were conducted in academic libraries, thus creating a gap in research. To sail through the pandemic, libraries are using various social media platforms such as Facebook, Twitter, Instagram, WhatsApp, Zoom, Microsoft teams and Skype to provide virtual reference services. Librarians also, went an extra mile to ensure dissemination of authentic COVID-19 information by collating and verifying information sources for their patrons. Services such as curb-side pick-up have also been introduced in Africa. However, it was not clear whether African libraries are conducting document delivery by scanning or through courier services. Challenges that are likely to fuel the pandemic and inhibit transition of libraries in to the 4IR era include lack of change management, lack of ICT literacy, inadequate ICT infrastructure, and lack of technological support, lack of clear policies, power cuts and financial issues. Research implications to policy makers, librarians and researchers have been established.

Keywords: Africa, Covid-19, Libraries, Pandemic, Social Media, Systematic Literature Review, Service Pattern.

INTRODUCTION

The start of 2020 was not a pleasant one as it knocked on the doors of every country with the disease Covid-19; which caused closure of all business industries worldwide. The corona virus pandemic has caused severe economic losses and even took the lives of many. Hence, the World Health Organization (WHO) imposed a compulsory lockdown on all countries as a way of protecting humanity and curbing the spread of the deadly disease. When countries finally reopened their various business industries in phased approaches, numerous precautions had to be taken in order to ensure safety of employees through social distancing, wearing of masks, and sanitization of hands and working surfaces. However, this has not been a smooth journey, especially for low income countries as many organizations had to adopt the use of Information Communication Technologies (ICTs) to reduce face to face contact and facilitate remote service delivery in numerous sectors (Medawar & Tabet, 2020). The emergence of Covid-19 has also been a blessing in disguise for many developing countries and industries which were lagging behind in digital transformation. Hence, it is vital to study how different industries have been responding to Covid-19 as this will aid in policy reforms and providing case studies for best practices in utilizing the Fourth Industrial Revolution (4IR) technologies. Therefore, libraries cannot be left behind in such investigations as there is need to establish their role in combating Covid-19 and how the library environment has changed.

The library and information science field in most developing countries have been comfortable with traditional/manual information provision methods and has been moving to the virtual environment at a snail's pace. Most libraries have not been able to meet the requirements of the 4IR era, despite their key role in achieving Sustainable Development Goals (SDGs). All industries can operate efficiently and effectively when there is adequate information, provided to the right people, at the right time, in the right format. And this can be adequately achieved if libraries employ the use of ICTs. It is the efficiency and effectiveness of libraries that enhances information flow in various sectors and communities; thus, creating knowledge economies; when citizens have access to timely and quality information. With the existence of Covid-19, it almost became impossible to continue with the mandate of the library as most of its services became crippled due to the lockdown and lack of adequate ICT infrastructure. However, with the push from the novel corona virus and the drive towards the 4IR, information professionals have become innovative and employed copious technologies to survive in the wake of Covid-19 (Carbery, et al., 2020; Guo, et al., 2021; Howes,

Ferrell, Pettys, & Roloff, 2021; Ishtiaq, Sehar, & Shahid, 2020; Ma, 2020; Tsekea & Chigwada, 2021).

On the other hand, Covid-19 has opened doors to new research for many scholars. The terms “Covid-19, pandemic, and corona virus” have become one of the top search trends on google. Hence, most researchers also want to leave their mark in history by conducting research in this area. Moreover, this pandemic is a new phenomenon which has presented various challenges thus, requiring constant research to provide solutions in various industries. Research funding institutions have even set aside budget for research and development in this area. Covid-19 research productivity has been demonstrated by some scholars who have published annotated bibliographies to illustrate and provide quick access to information sources in various disciplines. For examples; Children literature (Stilwell, et al., 2022), Humanitarian aid (Grix, 2021), Legal Literature (Gardner, 2022), Socio-economic and Cultural Impacts of Covid-19 Pandemic (Mthethwa & Nwone, 2021), Clinical research (Jefferson Libraries, 2022), People with disabilities (Association of State and Territorial Health Officials , n.d.), Preparedness and Recovery (Organization of Nurse Leaders, 2020). Despite, the unavailability of an annotated bibliography on Covid-19 and libraries; researchers in the information profession have conducted systematic reviews (Ayeni, Agbaje, & Tippler, 2021) and bibliometric analysis/information mapping (Sheikh, Siddique, Qutab, Khan, & Mahmood, 2021) in the library and information science field. However, there seems to be a gap in terms of enumerative literature on libraries and Covid-19 in Africa. For example; amongst the 23 articles reviewed by Ayeni, Agbaje, and Tippler (2021), only three (3) articles were from African countries (Nigeria, Lesotho and Zimbabwe). Whereas, none of the African countries appeared in the top 15 of the country co-authorship and co-citation in a study by Sheikh, et al. (2021). Therefore, this study sought to establish how African libraries have been thriving during the COVID-19 pandemic through systematic review of literature from the Library Philosophy and Practice e-Journal (LPP). The specific objectives are to:

1. To establish the African research output on covid-19 and libraries based on LPP.
2. To establish the leading African countries in research and development based on LPP.
3. To describe the service patterns and technologies applied by libraries during the pandemic.
4. To establish challenges that are likely to fuel the pandemic and inhibit transition in to the 4IR era.

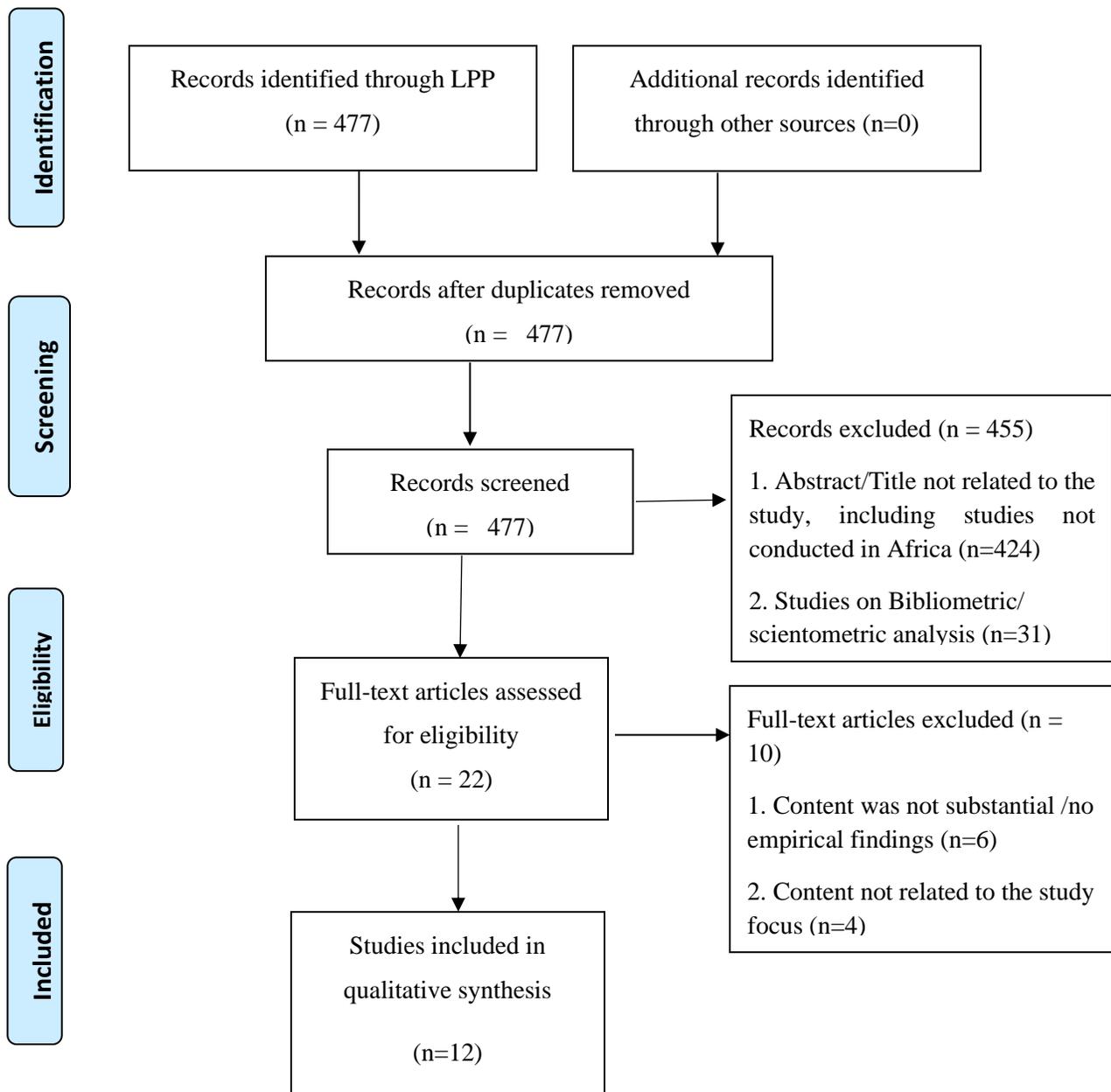
METHODOLOGY

An open access institutional repository (Library Philosophy and Practice e-journal) was chosen for data collection of this study. Due to its open access characteristic, a smaller database like LPP was found suitable to address the objectives of this study. The researcher followed a systematic review approach following the PRSIMA guidelines. The search string “Covid-19 AND Librar*” was used to search the LPP journal under the Library and Information Science category. A total of 477 articles were retrieved. Their publication years were as follows 2022 (11 articles), 2021 (362 articles) and 2020 (104 articles). Figure 1, shows the process followed in screening and selecting the relevant sources analyzed in this study. The exclusion criteria included: bibliometric/scientometric analysis, and studies not conducted in Africa. Full text articles that were excluded, did not have relevant content to the research phenomenon.

LIBRARY PHILOSOPHY AND PRACTICE E-JOURNAL (LPP)

Library Philosophy and Practice (LPP- ISSN 1522-0222) is an open access and peer-reviewed electronic journal owned and published by the University Libraries of the University of Nebraska-Lincoln, Lincoln, Nebraska, USA. The journal was established and has been active since 1998. LPP is indexed by SCOPUS, Library and Information Science Abstracts (LISA) and DOAJ. LPP facilitate the authors to publish their research work without any publication fees (Kumar, Singh, Ranjan, & Rai, 2020). LPP publishes articles exploring the link between library practice, philosophy and theory behind it. These include explorations of current, past, and emerging theories of librarianship and library practice, as well as reports of successful, innovative, or experimental library procedures, methods, or projects in all areas of librarianship, set in the context of applied research. Hence, with its current status, researchers from low income nations should be able to increase their research productivity through this journal. Accordingly, LPP was found to be relevant to achieve the objectives of this study given the time frame to complete the study.

Figure 1: PRISMA Flow Diagram



FINDINGS AND DISCUSSION

The results of the studies included in the qualitative synthesis are presented in Table 1.

Table 1: Summary of Included Articles for Qualitative Synthesis (n=12)

Series	Author	Country	Type of Library	Technology	Services	Challenges
1	(Farag, 2021)	Egypt	Academic library	-Library Webpage - Symphony electronic library system -E-mail marketing Other applications: Microsoft Teams, Zoom, VMWare, Palo alto VPN, OneDrive, Skype, WhatsApp, Twitter, Facebook, YouTube, Chatra	--Increased the number of the employees. -Extending the hours of the “Ask My Office Service” to extend beyond the official working hours. - Extension of external borrowing services. - Sterilization baskets	-Lack of preparedness of workers -Not enough planning
2	(Livina & Mole, 2021)	Nigeria	University libraries	None reported	None reported	- Low internet connectivity, - Lack of Information Literacy skill by Academic staff, - Lack of search skills, - Lack of specialists for assistance, - Frequent power outage - Low bandwidth,

						- Difficulty in Accessing e-resources off-campus
3	(Johnson & Bakare, 2021)	Nigeria	University Library	-WhatsApp, SMS, e-mails, telegram	-Virtual reference services, information literacy services, sorting (data mining), collating of relevant research resources for researchers	- lack of required infrastructures for online library services as well as lack of necessary ICT skills on the part of the librarians
4	(Kasa & Yusuf, 2020)	Nigeria	Academic library	- Telegram	None reported	- Library employees were not equipped with technologies at home to be able to effectively and efficiently work from there. - Inconsistent internet services - Library staff pay for data/bandwidth from their own pockets - Library colleagues not being able to collaborate and support each other on the social network - Many staff became hesitant, irritated and negative emotional feelings set in.
5	(Beetseh, Olise, & Tor-Akwer, 2021)	Nigeria	Academic libraries	-Librarians use social media platforms but examples were not provided.	None reported	- Inadequate facilities - Poor technical know how - Financial issues - Poor power supply - Attitude towards social media usage
6	(Pelemo, Horsfall, & Osedo, 2021)	Nigeria	University libraries	-LinkedIn, Telegram, Instagram, YouTube, Twitter, Facebook, WhatsApp, twitter	- Verifying authenticity of COVID-19 news shared on the library online platforms.	None reported

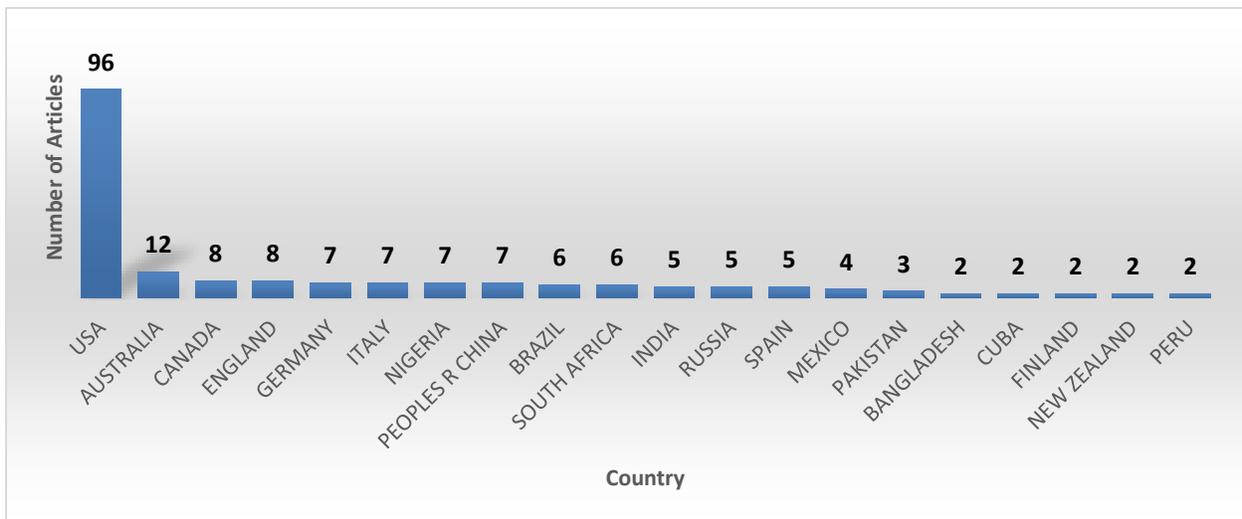
7	(Ebijuwa, Oyelude, Abubakar, Nongo, & Sani, 2021)	Nigeria	University libraries	- Library Web, Blog Post, SMS, Emails	-Virtual reference services (Ask a Librarian reference service) - online story times	- Lack of adequate research information on the COVID-19 pandemic - Lack of timely information on the COVID-19 pandemic
8	(Iroeze & Iroeze, 2021)	Nigeria	University libraries	- Library Websites	-Virtual library services -Click-and-collect or drive-through services in order to allow access to books without human contact.	- Inadequate funding - Poor technological infrastructure - Lack of skilled personnel - Lack of internet Data
9	(Oladapo, Opele, & Adeoye, 2021)	Nigeria	Multi-case from different libraries	Accessibility to Covid-19 information by librarians: WhatsApp, Facebook, E-mails, websites, digital audio files	- Not applicable for this study	- Low bandwidth/ poor internet connectivity - High cost of accessing information online - Difficulty in trusting the credibility of the online sources - Fear of using mobile technologies - Frequent technological changes - Erratic power supply - Poor information searching skills
10	(Mashiyane & Molepo, 2021)	South Africa	Multi case study	- Email -Telephone	- Curbside/book pick-up to facilitate the circulation of print books during the lockdown - Ask a Librarian -Online Request Form	- None reported
11	(Chewe, Zulu, Chitumbo,	Zambia	Academic Libraries	- WhatsApp, YouTube, Face book, Instagram, Wikis, Blogs, Twitter	- None reported	- Lack of a clear policy on social media

	& Musonda, 2020)					<ul style="list-style-type: none"> - Negativity toward social media by academic librarians -Poor ICT infrastructure
12	(Kumah, Ocran, Osman, & Parbie, 2021)	Selected African countries: Ghana, Nigeria, Uganda, South Africa, Tanzania, Kenya, & Botswana	Academic Libraries	- None reported	<p>Virtual References Services:</p> <ul style="list-style-type: none"> - Online catalogue, Off-campus access, Ask a librarian, Chat to a librarian, Online training sessions, Article request, Info regarding COVID 19, Room reservation 	<ul style="list-style-type: none"> - Inadequate internet connectivity - Intermittent power supply - Financial challenges - Inadequate training on virtual reference services - Poor staff attitudes - Poor management support - Inadequate training on digital service to students and faculty

Objective 1: African Research Output on Covid-19 and Libraries Based on LPP

The study sought to investigate the research productivity of African countries in studying how libraries are thriving during the pandemic. The dataset qualitatively analyzed in this study includes eleven (12) relevant articles published about African countries and Covid-19 in libraries. The findings indicate that African research output pertaining to COVID-19 and libraries is very low. This findings corroborate with findings retrieved on a larger database called Web of Science (WoS). The researcher conducted a cross-analysis by searching on WoS using the same search query used on LPP. After title and abstract screening, the results on WoS returned a total of 209 publications. This publications were from 42 countries; and amongst the top 20 countries only 2 African countries (Nigeria (n=7) and South Africa (n=6)) appeared on the list as shown on Figure 2.

Figure 2: Research Output on “Covid-19 AND libraries” Based on WoS Top 20 Countries



Similarly, a study on “A Systematic Review of Library Services Provision in Response to COVID-19 Pandemic” conducted on different databases (LISTA, LISA, Library Science database, WoS and google Scholar); retrieved 23 relevant articles. The leading country were USA (n=6), India (n=4) and China (n=2). The rest of the countries had single articles. Only three (3) African countries (Nigeria, Lesotho, and Zimbabwe) featured in their study (Ayeni, Agbaje, & Tippler, 2021). This findings still indicate that research output in Africa is very low (n=13 on WoS, and n=3 from Ayeni et. al., 2021), as compared to other countries such as the USA (n=96) and Australia

(n=12) on WoS. However, the data from LPP indicated that countries such as India (n=46) and Pakistan (n=31) were leading in Covid-19 and libraries' research.

On the other hand, the dataset on Table 1 shows that majority (n=10) of the studies were conducted in academic/university libraries. Hence, there is a research gap in Africa with regard to public and special libraries. This findings corroborates with a systematic literature review study conducted by Ayeni, Agbaje and Tippler (2021) who also established that out of the 23 articles 19 were research conducted on the academic library service provision during the pandemic. The lack of research productivity on the pandemic and its effects on all types of libraries in Africa creates an information gap which affects nations negatively as there is no best practices established. Research on covid-19 and libraries is very key to establish how libraries are maximizing 4IR technologies to curb the spread of Covid-19 and re-invent their library services. The existence of covid-19 is an opportunity for African libraries to harness the potential of 4IR technologies. However, this can be realized if more research is conducted to influence policy decision makers and provide empirical evidence of best practices.

Objective 2: Leading African Countries in LIS Research Based on LPP

The study also sought to establish the leading African country in research and development. The findings based on LPP revealed that Nigeria is the most active country in LIS research. Table 1 provides evidence that pertaining to Covid-19 research in libraries Nigeria has published eight (8) articles whereas South Africa, Egypt and Zambia has one (1) article each. One article was a multi-case study with responses from different African countries. This findings corroborate with bibliometric studies conducted on LPP journal which also revealed that Nigeria has been the leading African country in LIS research (see Table 2). An extraction from different bibliometric papers as indicated on Table 2, shows that Nigeria has always been the leading publishing country on LPP . And Ghana also featured on the top five (5) leading countries.

Table 2: Bibliometric Analysis Results on Country Productivity Based on LPP E-journal

Country	2005-2014 (Verma, Sonkar, & Gupta, 2015)	2008-2017 (Verma, Yadav, & Singh, 2018)	2014-2018 (Haque, Islam, Hasan, & Akanda, 2019)	1998-2019 (Kumar, Singh, Ranjan, & Rai, 2020)
Nigeria	433	630	380	823
India	267	360	314	808
USA	186	142	61	227

Pakistan	68	92	24	79
Ghana	23	61	68	93

Objective 3: Service Patterns and Technologies Applied by Libraries During the Pandemic

The study further sought to establish the service patterns and technologies adopted by libraries during the pandemic. The findings are presented in two broad categories:

a. Technology Adopted:

According to Frimpong and Addo (2020) the rapid evolution of ICTs has gained popularity in recent times and has primarily affected the way libraries and its users go about their activities, particularly in this COVID-19 era. This is supported by the findings of this study as shown on Table 1. Indeed libraries are sailing in the Fourth Industrial Revolution by adopting numerous social media platforms to thrive through the pandemic. The literature has revealed that African libraries are using applications such as WhatsApp, skype, email, zoom, Facebook and Microsoft teams for responding to inquiries on a larger scale, conducting training workshops and marketing library services (Frag, 2021;). It is evident that libraries are conducting virtual reference services through different platforms however, their rate of technology adoption is still low and very limited. To remain relevant in the Fourth Industrial Revolution libraries need to expand the types of technologies they use to support digital transformation and combat covid-19 as well. For example; the use of drones for document delivery has been suggested in literature (Kunovjanek & Wankmüller, 2021).

b. Services Offered

The findings revealed that services offered during the pandemic are mostly traditional services extended to the virtual environment. Examples include; “Ask the Librarian”, “Chat to a librarian”, online story time and collating of relevant online research resources (Ebijuwa et al., 2021; Farag, 2021; Kumah et al.,2021). It was established that some libraries are providing curbside pick-up services whereby patrons request library material online and the material is checked-out in the absence of the client. Patrons will then come to collect the checked-out material through the driveway or pick-up table placed outside the library in the driveway. This strategy has enabled patrons to have access to books with limited direct human contact (Iroeze & Iroeze, 2021). Some libraries have even resorted to increasing the number of employees so as to enable quick response

to electronic inquiries. While others have extended library service hours. From the findings in Table 1, it is not clear whether African libraries are providing both online document delivery services and physical document delivery through courier services. The findings also established that librarians have been playing a role in combating Covid-19 by collating, verifying and disseminating accurate and up-to-date Covid-19 information (Pelemo, Horsfall, & Osedo, 2021).

Objective 4: Challenges Faced by Libraries During the Pandemic

The lack of current information provided through African empirical research is the first challenge that this study has established as indicated under the discussion of objective one. Sharing of best practices enables other libraries to learn from case studies that have the same background and resources allocation. Without access to such information may limit innovativeness of librarians to re-invent their services to stay relevant in the 4IR era and as well as combating Covid-19 by reducing physical services. Other challenges identified were categorized as follows:

- ***Lack of Change Management:*** digital transformation requires a change of mindset and cultural behavior. And this can be attained through proper planning, communication and training of librarians. However, this study established that librarians had fear, and anxiety (Oladapo, Opele, & Adeoye, 2021). Employees found it difficult to adjust working from home in isolation on virtual environments that they were not previously used to. Hence, some librarians resisted the use of technology (Kasa & Yusuf, 2020).
- ***Lack of ICT Skills:*** due to lack of training both librarians and patrons lacked ICT skills. As a result, many developed negative attitude towards technology while others became frustrated. Kasa and Yusuf (2020) averred that many staff became hesitant, irritated and had negative emotional feelings. In addition, the lack of information literacy skills also compounded the situation as it became difficult to retrieve relevant online resources required by users.
- ***Inadequate ICT Infrastructure:*** This has always been a problem in Africa. Library budget has been dwindling over the years and has never been enough to support digital transformation. This study has also established that some librarians did not have proper technological gadgets to provide efficient and effective virtual services while at home (Kasa & Yusuf, 2020). Low bandwidth and poor network coverage have also been identified as challenges inhibiting provision of virtual library services (Livina & Mole, 2021).

- ***Lack of clear and Up-to-Date Policies:*** digital transformation can only be accomplished through proper implementation of policies that govern the use of technology and online information. However, it has been established that African libraries lack up-to-date policies to guide librarians in 4IR era (Chewe et al., 2020). Lack of clear policies will inhibit library services such as online document delivery through scanning as this may infringe on copyrights and other related laws. Policies are necessary so as to enable protection of personal details via online communication transactions between patrons and librarians. Without proper policies, there could be incidences whereby employees may collect patron data for their own personal use. For example; using library social media accounts to market their personal products.
- ***Lack of Technological Support:*** due to lack of skills there is need for 24/7 technical support to librarians. However, the findings from Table 1 shows that librarians are not receiving adequate technological support to facilitate virtual library services (Livina & Mole, 2021).
- ***Power Outage:*** libraries in Nigeria indicated erratic power cuts as one of the main challenges in providing virtual reference services (Beetseh, Olise, & Tor-Akwer, 2021). The 4IR requires network connections with gadgets supported by unlimited power. However, this is not a reality in Africa.
- ***Financial Issues:*** surviving the pandemic by maximizing 4IR technologies requires adequate funds to implement the necessary ICT infrastructure and train employees. However, Beetseh, Olise, and Tor-Akwer (2021) and Kumah et al., (2021) have revealed that libraries are suffering from lack of funds, thus leading to inadequate resources. Some librarians even had to pay for data from their own pockets (Kasa & Yusuf, 2020).

CONCLUSION

This study has achieved its research objective through systematic literature review. Only twelve (12) articles were retrieved from Library Philosophy and Practice e-journal. This indicates low research productivity pertaining to Covid-19 and LIS research. Majority, of the studies were conducted in academic libraries, thus creating a gap in research. Nigeria was established to be the leading country in Covid-19 and libraries research. The study established that African libraries are faced with numerous challenges such as lack of change management, lack of ICT literacy, inadequate ICT infrastructure, and lack of technological support, lack of clear policies, power cuts and financial issues. Despite these challenges, one can conclude that African libraries have put

effort in ensuring that patrons have access to online information resources during the pandemic. This is evidenced by the adoption of social media applications such as Facebook, twitter, Instagram, WhatsApp, zoom, Microsoft teams and skype. This social media platforms are being used to offer virtual reference services and solve user queries beyond library working hours. Librarians also, went an extra mile to ensure dissemination of authentic COVID-19 information by collating and verifying information sources for their patrons. Services such as curb-side pick-up have also been introduced in Africa. However, it was not clear whether African libraries are conducting document delivery by scanning or through courier services.

The Covid-19 pandemic has impacted both positively and negatively on library services. For libraries without adequate resources it has been a nightmare to continue with library services during the lockdown and beyond. On the other hand, for innovative libraries it has been an opportunity for them to maximize their minimal resources and sail through the 4IR wave and withstand the challenges brought by the pandemic. However, African libraries are still far lagging behind to realizing the 4IR revolution as their technology is still limited and they are nowhere near to applying Artificial Intelligence (AI) applications. African libraries need to realize that there is a paradigm shift from manual library system to digitalization, hence the need to revolutionize the library services and remain relevant with the changing times.

RESEARCH IMPLICATIONS

- **To Researchers:** The study findings have revealed low research productivity in Africa. Without evidence based strategies to Covid-19 and effects on library services, it will be difficult to sail through the pandemic. Current best practices should be established through empirical research and provide guidance. Hence, this study challenges LIS researchers to engage more in research and share knowledge on working patterns, services patterns and strategies for combating Covid-19 and through the use of 4IR technologies. The researcher hopes that with the findings of this study, researchers will be encouraged to collaborate from different countries and put Africa on the publication map of LIS research.
- **To Librarians:** Various studies have been conducted in the USA, India, Pakistan, and other countries. It is therefore the duty of librarians to search for these case study and use them to learn and re-invent their local library services. Challenges will always be there but where there is a will there will always be a way. Covid-19 has presented an opportunity for librarians to

harness the opportunities presented by the Fourth Industrial Revolution. However, Africa needs creative and innovative librarians to change the current and future state of our information hubs through Artificial Intelligence and Block Chain technologies.

- **To Policy Makers:** This study calls for policy makers to engage at a continental level to brainstorm and implement strategies that will move Africa in one unity. Harnessing Artificial Intelligence and Block Chain technologies will not be possible with outdated policies on e-resources and e-transactions. Thus, policy makers need to review current policies and pave way for librarians to engage in virtual services freely with proper regulatory framework guiding them on the daily practices. Policy makers also have the capacity to advocate for provision of adequate funds in libraries which will assist in training and implementation of the ICT infrastructure need to support the 4IR.

LIMITATIONS AND RECOMMENDATIONS

A research gap has been identified in this study. Therefore, it is recommended that future research should look into investigation of public or special libraries and how they are surviving through the pandemic. The findings of this study are limited to publications on LPP online journal only. Hence, there is need to expand the findings of this study with results from other databases such as African journal of Library, Archives and Information Studies, South African Journal of Information Management etc. On the other hand, African researchers are urged to consider publishing in open access journals such as LPP, this will help in dissemination and wide access to their work.

Based on the findings of this study, it is recommended that library managers should focus on change management so as to enable the employees to adapt to the digital transformation practices and hence their productivity as well. Adequate training on ICT is required, together with provision of necessary ICT resources to enable librarians to complete their duties without frustrations. Lastly, it is recommended that African leaders need to recognize the need to support libraries and transform them into knowledge hubs that will create knowledge economies by harnessing the 4IR technologies.

REFERENCES

Articles included for the systematic review are indicated with asterisk *

- Association of State and Territorial Health Officials . (n.d.). *Annotated bibliography: People with disabilities and COVID-19 project*. Retrieved January 20, 2022, from <https://www.astho.org/COVID-19/Annotated-Bibliography-People-With-Disabilities-and-COVID-19/>
- Ayeni, P. O., Agbaje, B. O., & Tippler, M. (2021). A Systematic Review of Library Services Provision in Response to COVID-19 Pandemic. *Evidence Based Library and Information Practice*, 16(3), 67–104. doi:10.18438/eblip29902
- *Beetseh, K., Olise, F. N., & Tor-Akwer, H. F. (2021). Librarians' perception on the use of social media as a tool for preventing the spread of coronavirus (COVID-19) in Benue state. *Library Philosophy and Practice (e-journal)*. Retrieved January 21, 2022, from <https://digitalcommons.unl.edu/libphilprac/5041>
- Carbery, A., Fallon, H., Higgins, M., Kennedy, E., Lawton, A., & McCauley, C. (2020). Irish libraries and COVID-19: first reflections. *Insights*, 33(1). doi:10.1629/uksg.522
- *Chewe, P., Zulu, Z., Chitumbo, E. M., & Musonda, Y. (2020). Enhanced library services through social media in the age of covid-19 pandemic: An anecdote of academic libraries in Zambia. *Library Philosophy and Practice (e-journal)*. Retrieved January 21, 2022, from <https://digitalcommons.unl.edu/libphilprac/4762>
- *Ebijuwa, A. S., Oyelude, A. A., Abubakar, A. M., Nongo, C. J., & Sani, A. H. (2021). Sensitization and promotion of information literacy on covid-19 pandemic by librarians in public university libraries in South-Western Nigeria. *Library Philosophy and Practice (e-journal)*. Retrieved January 22, 2022, from <https://digitalcommons.unl.edu/libphilprac/5462>
- *Farag, H. A. (2021). Electronic management in university libraries under Corona pandemic (Covid-19): Reality and challenges. *Library Philosophy and Practice (e-journal)*. Retrieved January 21, 2022, from <https://digitalcommons.unl.edu/libphilprac/6472>
- Frimpong, A. D., & Addo, G. O. (2020). Students' perception and practices of the use of electronic resources in public university libraries in Ghana. *Library Philosophy and Practice (e-*

- journal*). Retrieved January 21, 2022, from <https://digitalcommons.unl.edu/libphilprac/4403>
- Gardner, R. (2022). *Annotated bibliography of COVID-19 legal literature*. Retrieved January 25, 2022, from <http://austlii.community/wiki/COVID19/Bibliography>
- Grix, C. L. (2021). *Bibliography on Humanitarian aid in the time of COVID-19*. Retrieved January 26, 2022, from <https://www.urd.org/en/review-hem/bibliography-on-humanitarian-aid-in-the-time-of-covid-19/>
- Guo, Y., Yang, Z., Yang, Z., Liu, Y. Q., Bielefield, A., & Tharp, G. (2021). The provision of patron services in Chinese academic libraries responding to the COVID-19 pandemic. *Library Hi Tech*, 39(2), 533-548. doi:10.1108/LHT-04-2020-0098
- Haque, A., Islam, A., Hasan, N., & Akanda, A. K. (2019). Bibliometric analysis of the e-journal of Library Philosophy and Practice during the period of 2014-2018. *Library Philosophy and Practice (e-journal)*. Retrieved January 22, 2022, from <https://digitalcommons.unl.edu/libphilprac/3028>
- Howes, L., Ferrell, L., Pettys, G., & Roloff, A. (2021). Adapting to remote library services during COVID-19. *Medical Reference Services Quarterly*, 40(1), 35-47. doi:10.1080/02763869.2021.1873616
- *Iroeze, P., & Iroeze, P. C. (2021). Strategies academic libraries in Nigeria can adopt to curb the spread of covid-19 and remain relevant in post covid-19 pandemic. *Library Philosophy and Practice (e-journal)*. Retrieved January 21, 2022, from <https://digitalcommons.unl.edu/libphilprac/6690>
- Ishtiaq, S. M., Sehar, N., & Shahid, A. (2020). Information Dissemination during Covid-19 and Lockdown: The Role of University libraries of Sindh, Pakistan. *Library Philosophy and Practice (e-journal)*. Retrieved January 10, 2022, from <https://digitalcommons.unl.edu/libphilprac/4280/>
- Jefferson Libraries. (2022). *Resources for researchers studying COVID-19*. Retrieved January 26, 2022, from <https://jefflibraries.libguides.com/friendly.php?s=covid19/literature>

- *Johnson, A., & Bakare, O. (2021). Covid-19 effects on libraries goes beyond books: Lead City University in perspective. *Library Philosophy and Practice (e-journal)*. Retrieved January 21, 2022, from <https://digitalcommons.unl.edu/libphilprac/6610>
- *Kasa, M. G., & Yusuf, A. (2020). Experience of an academic library during the covid-19 pandemic. *Library Philosophy and Practice (e-journal)*. Retrieved January 23, 2022, from <https://digitalcommons.unl.edu/libphilprac/4456>
- *Kumah, M. A., Ocran, T. K., Osman, I., & Parbie, S. K. (2021). COVID 19 Synchronicity: Evaluating virtual reference services of some academic libraries in Africa. *Library Philosophy and Practice (e-journal)*. Retrieved January 25, 2022, from <https://digitalcommons.unl.edu/libphilprac/6566>
- Kumar, T. K., Singh, K., Ranjan, A., & Rai, S. (2020). Publication trend in Library Philosophy and Practice (e-journal) : A scientometric approach. *Library Philosophy and Practice (e-journal)*. Retrieved January 23, 2022, from <https://digitalcommons.unl.edu/libphilprac/4051>
- Kunovjanek, M., & Wankmüller, C. (2021). Containing the COVID-19 pandemic with drones - Feasibility of a drone enabled back-up transport system. *Transport Policy*, 106, 141-152. doi:10.1016/j.tranpol.2021.03.015
- *Livina, D. C., & Mole, A. J. (2021). Academic staff use of electronic resources (ER) in Nigerian university libraries during the COVID-19 lockdown period. *Library Philosophy and Practice (e-journal)*. Retrieved January 21, 2022, from <https://digitalcommons.unl.edu/libphilprac/5341>
- Ma, L. F. (2020). Academic library services during COVID-19: The experience of CUHK Library. *International Information & Library Review*, 52(4), 321-324. doi:10.1080/10572317.2020.1834251
- *Mashiyane, D., & Molepo, M. (2021). Curbside book pick-up services during a time of crisis in South African University Libraries. *Library Philosophy and Practice (e-journal)*. Retrieved January 21, 2022, from <https://digitalcommons.unl.edu/libphilprac/5808>

- Medawar, K., & Tabet, M. (2020). Library collections and services during Covid-19: Qatar National Library experience . *Alexandria: The Journal of National and International Library and Information Issues*, 30(2-3), 178–190. doi:10.1177/0955749020986377
- Mthethwa, L., & Nwone, S. A. (2021). A bibliography on socio-economic and cultural impacts of Covid-19 pandemic. *Library Philosophy and Practice (e-journal)*. Retrieved January 25, 2022, from <https://digitalcommons.unl.edu/libphilprac/5182/>
- *Oladapo, Y. O., Opele, J. K., & Adeoye, M. O. (2021). Use of mobile technologies for accessing health-related information among librarians in Osun State, Nigeria. *Library Philosophy and Practice (e-journal)*. Retrieved 21 January, 2022, from <https://digitalcommons.unl.edu/libphilprac/6045>
- Organization of Nurse Leaders. (2020). *Introduction to annotated bibliography regarding COVID-19 crisis: Preparedness and recovery*. Retrieved January 20, 2022, from <https://onlnj.org/sites/default/files/content-files/Annotated%20Bibliography%20Regarding%20COVID-19%20and%20Crisis%20Management%20Evidence%20Summary.pdf>
- *Pelemo, G. D., Horsfall, M., & Osedo, O. A. (2021). Roles of librarians in combating misinformation on Corona virus disease (COVID-19). *Library Philosophy and Practice (e-journal)*. Retrieved January 21, 2022, from <https://digitalcommons.unl.edu/libphilprac/5539>
- Sheikh, A., Siddique, N., Qutab, S., Khan, M. A., & Mahmood, K. (2021). An investigation of emerging COVID-19 research trends and future implications for LIS field: A bibliometric mapping and visualization. *Journal of Librarianship and Information Science*, 1–15. doi:10.1177/09610006211053043
- Stilwell, P. A., Munro, A. P., Basatemur, E., Camara, N. T., Harwood, R., & Roland, D. (2022). Bibliography of published COVID-19 in children literature . *Archives of Disease Childhood*, 107(2), 168–172. doi:10.1136/archdischild-2021-321751

Tsekea, S., & Chigwada, J. P. (2021). COVID-19: strategies for positioning the university library in support of e-learning. *Digital Library Perspectives*, 37(1), 54-64. doi:10.1108/DLP-06-2020-0058

Verma, A., Sonkar, S. K., & Gupta, V. (2015). A bibliometric study of the Library Philosophy and Practice (e-journal) for the period 2005-2014. *Library Philosophy and Practice (e-journal)*. Retrieved January 21, 2022, from <http://digitalcommons.unl.edu/libphilprac/1292>

Verma, M. K., Yadav, S. K., & Singh, S. N. (2018). Research publication pattern of Library Philosophy and Practice (e-journal): A bibliometric analysis during 2008-2017. *Library Philosophy and Practice (e-journal)*. Retrieved January 23, 2022, from <https://digitalcommons.unl.edu/libphilprac/1836>

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