

ASSESSMENT OF ATTITUDE AND USE OF TECHNOLOGIES FOR INFORMATION DISSEMINATION DURING THE COVID-19 PANDEMIC BY LIBRARIANS IN BENUE STATE

Ngozi B. Ukachi

Medical Library, University of Lagos, Yaba, Lagos, Nigeria

Email: nukachi@unilag.edu.ng

Philomena O. Gbemi-Ogunleye

Main Library, University of Lagos, Yaba, Lagos, Nigeria

Email: pgbemi-ogunleye@unilag.edu.ng

Manasseh Tyungu SAMBE CLN

Department of Library and Information Science

Benue State Polytechnic, Ugbokolo

Email: sambemanasseh@gmail.com.

Abstract

The importance of the adoption of technological tools such as smartphones and computers in academic libraries cannot be over-emphasized in the era of covid-19 pandemic. This study which is focused on assessing the attitude and use of technological tools for information dissemination during the COVID-19 pandemic by librarians in Benue State was carried out adopting the descriptive survey research method. The population of the study was 100 and, data were collected using a questionnaire. Descriptive statistics such as frequencies, mean, and standard deviation were used in analyzing the data. Results show that technological tools such as cell phones, computers, and printers were available and used by all public academic library professionals in their information dissemination during the COVID-19 pandemic in Benue State. It further reveals that academic librarians have positive attitudes towards the use of technological tools for information dissemination during covid-19 pandemic while social media, blogs, websites, email, and SMS notifications constituted the channels of information dissemination. The study recommends that additional channels of information dissemination medium such as television, radio, QR codes, webchat, and other messaging apps should be used for enhanced information dissemination even in the post-COVID-19 pandemic era.

Keywords: Academic librarians, Technological tools, Attitude, Information dissemination, Academic libraries, Benue State

Introduction

One of the health challenges that has recently been discovered and described as a global health emergency and a global pandemic is Covid-19. Coronaviruses are large families of viruses that are known to cause illnesses ranging from the common cold to more severe diseases such as Middle East Respiratory Syndrome (MERS) and Severe Acute Respiratory Syndrome (SARS) (World Health Organization, 2021). According to Davis (2020), it is a deadly respiratory infection that originated in Wuhan City, China in December 2019. It spreads through droplets of saliva or discharge from the nose when an infected person according to Mestri (2020) coughs or sneezes and there are droplets on any surface. According to him, the droplets remain an active area for transmission of the disease for a period ranging from 24 hours to 72 hours. Its common symptoms include: fever, tiredness, and dry cough as well as shortness of breath, aches and pains, sore throat, and very few people will report diarrhea, nausea, or a runny nose. To curtail the spread and the rising number of death cases recorded daily, public institutions including academic libraries suddenly and unexpectedly were forced to lock down and suspend their traditional face-to-face service delivery to avoid physical contact with users.

The unexpected closure of public institutions including academic libraries, however, forced librarians to devise new and effective means of disseminating information to users during the covid-19 pandemic. Dadhe and Dubey (2020) assert that the sudden and unexpected outbreak of the virus forced library professionals to ascertain ways of working in a rapid time frame by shifting to a digital platform where they can provide remote services to the users. The scenario catapulted into the adoption and use of technological tools by academic librarians in information dissemination during the pandemic period.

Technology has created an innovative and novel environment that is capable of enabling and strengthening information dissemination in academic libraries during and after covid-19 pandemic without having physical contact with users. This work does not present the concept of information dissemination and technology as novel concepts but as exemplary and user-friendly measures employed by academic librarians for effective information service delivery to their community of users.

Statement of the Problem

The emergence of COVID-19 has no doubt thrown unique challenges to academic libraries. This sudden and unexpected emergence of the pandemic challenged academic librarians to ascertain

efficient ways of disseminating information to the academic community while staying at home during and after the pandemic.

In consideration of this solemn need to attend to the information and research needs of the academic community while they are still at home during the lockdown period, investigation of attitudes of library and information professionals towards the use of technological tools in information dissemination during COVID-19 pandemic needs to be designed and implemented for the provision of baseline data for adequate and appropriate intervention.

More so, it has also been observed that no empirical investigation of academic librarians' attitudes toward the utilization of technological tools in information dissemination during and after the COVID-19 pandemic has been carried out in Benue State. This study is therefore carried out to reveal the academic librarians' comfort level with the use of technological tools in information dissemination during and after the COVID-19 pandemic in Benue State.

Objectives of the Study

The general purpose of this study is to investigate the attitudes of academic librarians toward the use of technological tools in information dissemination during the COVID-19 pandemic. Specifically, the study will

1. Identify the types of technological tools available for use by academic librarians in their information dissemination during the COVID-19 pandemic.
2. Assess the attitudes of academic librarians towards the use of technological tools in information dissemination during and after the COVID-19 pandemic.
3. Investigate the channels adopted by academic librarians in disseminating information during the COVID-19 pandemic.

Research Questions

The following research questions were formulated based on the objectives of the study.

1. What are the types of technological tools available for use by academic librarians in their information dissemination during the COVID-19 pandemic?
2. What are the attitudes of academic librarians towards the use of technological tools in information dissemination in their libraries during the COVID-19 pandemic?
3. What are the channels adopted by academic librarians in disseminating information during the Covid-19 era?

Review of related literature

Academic libraries are libraries found in tertiary institutions of learning to support teaching, learning, research, and community services. They are the providers and disseminators of information to the academic community. Dhawan (2018) sees information dissemination as a proactive information service designed to educate and inform various groups of users on social, economic, and educational issues, problems, and opportunities of interest to them. It requires systematic planning, collection, organization, and storage of information for its delivery to the target audience. However, the challenges brought about by the emergence of covid-19 pandemic forced libraries in general and academic libraries, in particular, to lock down to minimize the spread of the virus thereby, creating the need for the use of technological tools as a convenient way of disseminating information. Poslad (2009) defined technological tools as electronic devices, generally connected to other devices or networks via various wireless protocols, such as Bluetooth, Zigbee, Wi-Fi, LiFi, 3G, and 4G networks which can operate interactively and autonomously to some extent. Similarly, Azolo (2019) described technological tools as those electronic devices that use artificial intelligence to access and process data via Internet protocol. Technological tools are capable of utilizing sensors to capture physical data and deliver it for analysis and utilization.

However, academic librarians' attitude plays a significant role in the availability and usage of these technologies for information dissemination during the COVID-19 pandemic. Attitude is defined by Ramzan, Asif, and Ahmad (2021) as the perceptions, beliefs, and opinions of an individual librarian towards the impact, cost, resource allocation, training needs, and general effects of information technology applications in academic libraries. In the context of this study, attitude, therefore, is the academic librarians' perceived beliefs and opinions towards the cost and influence of technological tools in personal and interpersonal interactions within and outside the academic library. Academic librarians are librarians who create and offer services to the academic library community to meet their information wants and needs.

Academic librarians need to possess a positive attitude towards technological tools to enable their effective adoption in their information service delivery. It is because of this that Dadhe and Dubey (2020) opined that library professionals have demonstrated their skills, empathy, and flexibility during lockdown to respond to the rapidly evolving situation.

Studies have shown that there exists literature on the use of technological tools for information dissemination, librarians' attitudes towards information dissemination during the COVID-19

pandemic as well as strategies for information dissemination during covid-19 pandemic. For instance, Kumar and Kumar (2019) studied the application of technological tools in libraries. They identified the available technological tools in use in libraries to include: Radio Frequency Identification (RFID), Artificial Intelligence (AI), and Robotics and Augmented Reality (AR). Azolo (2019) in their study of the use of technological tools in university libraries, identified technological tools being used in university libraries as: computer systems, computer accessories, Cell phones or Smartphones, and other communication devices including video conferencing devices, projectors, scanner, printer, photocopying machines, digitizing machines, Microsoft printers, radio-electronic copiers, Easy-to-read-books, assistive learning systems, decoder machines with built-in telephones that convert the electronic signals of a close caption video system into words written on a screen along with the video images for the hearing impaired library users. These technologies are used to enhance information dissemination in libraries. Another study carried out by Abubakar, Babafemi, Nallah, and Oyeyemi (2019) on librarians' attitudes towards the use of information and communication technology (ICT) in selected academic libraries in Kwara State showed that computers, projectors, OPAC among others are the ICT facilities available in the selected libraries. In a survey of attitudes towards ICTs and the use of ICTs for service delivery by librarians in university libraries in Edo state, Aiyebilehin and Okpetu (2017) found that the majority of librarians used computers (100%), Telephone (97%) and Printers (85.7%).

Attitudes are very important in technologies' availability and use. Idiedo (2020) investigated the attitude of librarians toward social media use for information dissemination in South-South Universities in Nigeria. The result indicated that librarians possess a positive attitude towards social media use for information dissemination in university libraries in South-South Nigeria. In another study on librarians' attitudes towards the application of information technology in academic libraries and the interrelationship between their attitudes and different factors of their professional and personal traits carried out by Ramzan, Asif, and Ahmad (2021), respondents showed slightly positive attitudes towards information technology. Furthermore, Ubogu (2012) examined the attitude of professional librarians towards the use of ICT in libraries in some selected universities in Edo and Delta States Nigeria. Results revealed that librarians under study have positive attitudes toward the implementation and use of ICT. Another study by Ukachi, Onuoha, and Nwachukwu (2014) on students' attitudes and their use of electronic information resources

(EIRs) in university libraries revealed that there is a significant relationship between undergraduate students' attitude and their use of EIRs provided in the library.

Information during pandemic times could be disseminated through various channels. Across Europe, Allen (2010) in a survey on the use of social media in over 1200 libraries revealed that social media platforms like Facebook, blogging, widgets, and microblogging were used by libraries to maximize library exposure, modernize library image, and promote specific content offers. In America, Cook (2015) reported that American Public Universities used social media to connect online students with library resources. In a related development, Constantinescu-Dobra and Mădălina-Alexanda (2021) in their analysis of digital communication channels identified digital communication channels to include: websites, sales pages, social media platforms, as well as e-mail marketing, and blogs while Ifijeh and Yusuf (2020) stressed that many university libraries have also embraced the use of social media platforms in information and reference services delivery. Despite the available literature on librarians' attitudes towards information dissemination during covid-19 pandemic, no investigation has been found on the attitudinal assessment of academic librarians towards the use of technological tools in information dissemination during covid-19 pandemic in Benue State. This creates a lacuna in the literature that this study is designed to fill.

Methodology

The study adopted a descriptive research design. The population of the study is made up of the 100 professional librarians working in the libraries of the 10 institutions of higher learning established by the government in Benue State. Since the entire population is small, the entire 100 professional librarians constituted the study sample. This was appropriate because Nworgu (2006) noted that if the population of a study is small, the entire population should be used. Data was collected through a questionnaire and analyzed using descriptive statistics such as frequency, mean, and standard deviation. The questionnaire items were presented on a Likert-type four-point scale with average mean scores of 3.50-4.00 as Strongly Agree (SA), 2.50-3.49 as Agree (A), 1.50-2.49 as Disagree (D), and 0.50-1.49 as Strongly Disagree (SD). This implies that only means of 2.50 and above were acceptable while the ones below 2.50 were not acceptable. Keys to point values attached to the statements are SA=4, A=3, D=2, and SD=1.

Questionnaire distribution

A total number of 100 questionnaires were distributed to the academic librarians in these institutions. At the point of questionnaire collection from the respondents, only 98 which is 98% of the entire questionnaire distributed were returned.

Results

The study results are presented and analyzed in line with the research objectives and questions that guided the study. The results are tabulated and analyzed as shown below.

Table 1: Technological tools Availability and Usage by Academic Librarians in Information Dissemination during Covid-19 Pandemic in Benue State

S/N	ICT fac.	UAM	BSU	BSP	COE k/Al a	COE Oju	AOP Yandev	AATP Mkd	SON Mkd	SOM W Mkd	SOHT Agash a	AU	ANU	NA	AF total
1	Cell phone	√	√	√	√	√	√	√	√	√	√	10	0	0	10
2	Computers	√	√	√	√	√	√	√	√	√	√	10	0	0	10
3	Projectors	√	√	00	00	00	00	00	00	00	00	2	8	0	2
4	Video conferencing devices	√	√	00	00	00	00	00	00	00	00	2	8	0	2
5	Photocopiers	√	√	00	00	00	00	00	00	00	00	2	8	0	2
6	Printers	√	√	√	√	√	√	√	√	√	√	10	0	0	10
7	Digitizing machines	√	√	00	00	00	00	00	00	00	00	2	8	0	2
8	Scanners	√	√	√	√	√	x	x	x	X	√	6	4	0	6
9	Audio books	00	00	X	x	x	x	x	x	X	x	0	2	0	0
10	Assistive listening system	00	00	X	x	x	x	x	x	X	x	0	2	0	0
		10/10	10/10	8/10	8/10	8/10	8/10	7/10	7/10	7/10	8/10				
	AU	9	9	4	4	4	3	3	3	3	4				
	ANU	2	2	5	5	5	5	4	5	5	5				
	NA	1	1	3	3	3	4	4	4	4	3				
<i>University of Agriculture Makurdi (UAM), Benue State University (BSU), Benue State Polytechnic (BSP) Ugbokolo, College Of Education (COE) Kastina Ala, College of Education (COE) Oju, Akperan Orshi Polytechnic (AOP) Yandev, Alfred Akawe Tokula Polytechnic (AATP) Makurdi, School of Nursing (SON) Makurdi, School of Midwifery (SOMW) Makurdi, School of Health Technology (SOHT) Agasha,</i> <i>**AU, Available and Used (√), ANU, Available but not Used (∞), NA, Not Available (x)</i>															

Table 1 presents researchers' findings on the availability and use of technological tools by academic librarians in their information dissemination during COVID-19 in Benue State. The result indicated that cellphones, computers, and printers were available and used by the entire libraries studied. This is expected because cell phones and computers were the commonly available tools used in information dissemination during the social distancing period. Scanners also got about 60% use acceptance among the libraries. The possible reason for this could be attributed to the fact that since libraries were not physically open for users to come in and borrow books, scanning and emailing such documents was the alternate option. The outcome of the study also revealed that even though audio books and Assistive listening devices were available in two of the libraries studied (UAM and BSU), they were never used during the period.

Table 2: Responses on the Mean Ratings of Academic Librarians' Attitudes Towards the Use of Technological tools in Information Dissemination during Covid-19 Pandemic

S/N	Library Professionals' attitudes	SA	S	D	SD	$\bar{X}$	Std Deviation	Remark
11	I am passionate about the use of technological tools in sharing reliable information with users during covid-19	48	30	11	9	3.19	.97026	Agree
12	My use of technological tools is a reflection of my proactive professional approach to information dissemination during covid-19	39	39	11	9	3.13	.93599	Agree
13	I am compassionate in using technological tools for sending available sources of information on COVID-19 to users	39	36	14	9	3.07	.95518	Agree
14	I am comfortable with the use of technological tools for information dissemination to users during and after the COVID-19 pandemic	37	36	19	6	3.06	.90607	Agree

15	I am not relaxed while using technological tools for information dissemination during covid-19 pandemic	13	29	27	29	1.97	.94137	Disagree
16	I am not passionate about the use of technological tools for information dissemination during covid-19 pandemic	12	25	34	27	1.93	.92854	Disagree

Table 2 presents respondents' attitudes toward the use of technologies in information dissemination during the COVID-19 pandemic in Benue State. From the analysis, it is observed that items 11-14 which have information indicating positive attitudes towards technological tools' use were generally accepted by being skewed to the affirmative while information provided in items 15 & 16 which portrays negative attitudes were rejected. This result indicates that the academic librarians studied in the work have positive attitudes toward the use of technological tools in disseminating information to their users.

Table 3: Responses on the Mean Ratings of Channels of Information Dissemination during the Covid-19 Pandemic

S/N	Channels of Information Dissemination	SA	S	D	SD	$\bar{X}$	Std Deviation	Remark
17	Social media	74	22	2	0	3.73	.48802	Agree
18	Blog	62	35	1	0	3.62	.50798	Agree
19	Website	60	42	7	0	3.58	.55471	Agree
20	Email	33	47	11	7	3.08	.85763	Agree
21	SMS notifications	46	30	16	6	3.18	.92332	Agree
22	Television	15	27	17	26	2.36	1.10029	Disagree
23	QR codes	9	12	42	23	2.08	.91027	Disagree
24	Webchat	11	8	16	52	1.74	1.06987	Disagree
25	Radio	6	9	25	47	1.70	.91645	Disagree

Table 3 indicates respondent responses on the mean ratings of channels adopted for information dissemination during the COVID-19 pandemic by academic librarians in Benue State. From the

analysis, respondents accepted social media with mean and standard deviation scores of 3.73 (.48802) as the highest utilized channel for their information dissemination during the period. This is followed by the blog, 3.62 (.50798), website 3.58 (.55471), Email 3.08 (.85763), and SMS 3.18 (.92332). On the other hand, channels such as; Television, QR Code, Webchat, and Radio received low acceptance ratings as channels of information dissemination to library users during the pandemic period. Their mean and standard deviation scores are respectively as follows; 2.36 (.110029), 2.08 (.91027), 1.74 (.06987), and 1.70 (.91645).

Discussion

The results of this study are discussed in line with the three research questions that guided the study. On the issue of technological tools availability and usage by academic librarians in their information dissemination during the COVID-19 pandemic in Benue State, the study reveals that technological tools such as cell phones, computers, and printers are available and were used by academic librarians in their information dissemination during the period. It also revealed that even though projectors, video conferencing devices, photocopying machines, and digitizing machines were available in all the libraries, it was only two libraries that used them in their information dissemination to users during the pandemic period. This finding corroborates with Azolo and Nwako's (2019) findings which revealed that computer systems, computer accessories, smartphones, and other communication devices were used for information dissemination in the university libraries that they studied. This result is not surprising as cell phones and computers are the most common and most handy tools that could be used in sending out quick messages and emails to users. The implication of this is that academic librarians were able to effectively render information services to their users from the comfort of their homes. This study has shown that the adoption of technological tools during the COVID-19 period influenced an increased focus on virtual information service delivery with stepped-up interaction and communication between librarians and library users. The other tools such as projectors, photocopying machines, and digitizing machines which were not effectively used during the period, could have resulted following the fact that their use requires the physical presence of the users which social distancing disapproves.

Given the attitudes of academic librarians towards the use of technological tools in information dissemination during the COVID-19 pandemic in the state, the results show that the majority of

the academic librarians were passionate about the use of technological tools in disseminating information to users during the COVID-19 pandemic. They were comfortable and positively disposed to the use of technological tools for information dissemination to users during the COVID-19 pandemic. This outcome of the study implies that academic librarians demonstrated positive attitudes towards the implementation and use of technological tools in information dissemination during the COVID-19 pandemic in the state. This result is in agreement with the findings of Ubogu (2012) who reported that librarians they studied have a positive attitude toward the implementation and use of ICT. It also corroborates with the outcome of studies carried out by Idiedo (2020) and Awoyemi and Shoyemi (2020) which respectively revealed that librarians possess a positive attitude toward social media and mobile technology adoption in their information services delivery to their users. The inference being drawn here is that academic librarians are positively disposed to the provision of information services to their users to ensure that no gap is left in satisfying their information needs.

The findings on the channels of information dissemination adopted by academic librarians during the COVID-19 pandemic revealed that social media, blogs, websites, email, and SMS notifications were mostly utilized in disseminating information to users. This finding is in agreement with Ifijeh and Yusuf (2020) who stressed that many university libraries have also embraced the use of social media platforms in information and reference services delivery. The findings also corroborate with Ishtiaq et al. (2020) result which revealed that the librarians in university libraries in Sindh, Pakistan disseminated information to library users during the pandemic through emails, mobile applications, live chats, and social media such as Facebook, YouTube, LinkedIn and Instagram. Constantinescu-Dobra and Mădălina-Alexanda's (2021) findings that digital communication channels such as websites, social media platforms, e-mail marketing, blogs, as well as sales pages are channels utilized for information dissemination in their study further validate this result. Another study by Omeluzor, Nwaomah, Molokwu, and Sambo (2022) revealed that the tools mostly adopted by libraries in disseminating information to their users during the COVID-19 era were emails, social media platforms, and WhatsApp messages via mobile phones. This result is not unexpected as these are globally acknowledged tools commonly deployed in disseminating information and engaging library users. The outcome of this study has revealed the ability of technological tools to transcend the limits of physical space and distance and enable more efficient

dissemination of information including the media and communication formats that could be adopted.

Recommendations

Based on the outcome of this study, the following recommendations are made:

1. Other technological tools available but not used by other academic librarians should be used for information dissemination even in the post-covid-19 era
2. Other academic librarians who demonstrated negative attitudes towards the use of technological tools in information dissemination during the COVID-19 pandemic should change their attitudes towards the use of the technologies for effective information dissemination even in the post-COVID-19 pandemic era.
3. Academic librarians should utilize more channels of information dissemination such as television, radio, QR codes, webchat, and other messaging apps for enhanced information dissemination even in the post-COVID-19 pandemic era.

Conclusion

In the era of the COVID-19 pandemic, the importance of utilization of technological tools such as smartphones and computers among others in academic libraries cannot be over-emphasized as they facilitate effective information dissemination. However, the availability and utilization of these technologies are determined by the attitudes of academic librarians. The study, therefore, concludes that technological tools are available and used by the academic librarians in the libraries under study and their attitudes toward the use of technological tools translate to effective information dissemination during the covid-19 pandemic.

References

- Abubakar, H., Babafemi, G., Nallah, J. & Oyeyemi, F. O. (2019). Attitude of librarians towards the use of information and communication technologies in selected academic libraries in Kwara State. *Library Philosophy and Practice*. Retrieved from <https://digitalcommons.unl.edu/libphilprac/3753/>
- Aiyebilehin, J. A., Ikenwe, I. J. & Okpetu, C. (2017). Survey of Attitude Towards ICTS and Use of ICTS for Service Delivery by Librarians in University Libraries in Edo State. *Journal of Applied Information Science and Technology*, 10 (2), 42
- Allen, K. (2010). Survey reveals attitudes towards social media in European libraries. Retrieved from <https://www.infotoday.eu/Articles/Editorial/Featured-Articles/Survey-reveals-attitudes-towards-social-media-in-European-libraries-72075.aspx>
- Awoyemi, R. A. and Shoyemi, O. D. (2020) Mobile technology adoption by librarians in colleges of education in South West, Nigeria. *Library and Information Perspectives and Research*, 2(2), 38-46. Retrieved from <http://doi.org/10.47524/lipr.v2i2.6>.
- Azolo, E. M. (2019). Use of smart technology in university libraries in covid-19 era. *Library Research Journal*, 4 (1). Retrieved from <https://journals.unizik.edu.ng/index.php/lrj/article/view/557>
- Cook, B. (2015). Social media helps online students connect with library resources. Retrieved from <https://onlinelearningtips.com/2015/04/social-media-helps-online-students-connect-with-library-resources/>
- Constantinescu-Dobra, A & Mădălina-Alexanda, C. (2021). Communication channels. In F.Pollák., J., Soviar and R. Vavrek (eds.), *Communication management*. Retrieved from <https://www.intechopen.com/chapters/77371>. DOI:[10.4314/ijjkm.v10i1.4](https://doi.org/10.4314/ijjkm.v10i1.4)
- Dadhe, P. P. & Dubey, M. N., (2020). Library services provided during covid-19 pandemic: content analysis of websites of premier technological institutions of India. *Library Philosophy and Practice (e-journal)*. 4445. Retrieved from: <https://digitalcommons.unl.edu/libphilprac/4445>

- Davis, C. P. (2020). Respiratory illnesses: 13 types of lung infections. Retrieved from https://www.rxlist.com/12_causes_respiratory_infections_slideshow_picture/article.htm
- Dhawan, S. M. (2018). Basics of information dissemination. Retrieved from: [https://aladin.uil.unesco.org/paldin/pdf/course 02/unit 05.pdf](https://aladin.uil.unesco.org/paldin/pdf/course%2002/unit_05.pdf)
- Idiedo, V. O. (2020). Attitude of librarians' towards social media use for information dissemination in universities in South-South, Nigeria. *Library Philosophy and Practice (e-journal)*. 3851. Retrieved from <https://digitalcommons.unl.edu/libphilprac/3851>
- Ifijeh, G & Yusuf, F (2020) COVID – 19 pandemic and the future of Nigeria's university system: The quest for libraries' relevance. *Journal of Academic Librarianship*, 46(6). Retrieved from [https://www.ncbi.nlm.nih.gov/pmc/articles/PM C7426696/](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7426696/)
- Ishtiaq S, 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)*: Article 4280. Available at: <https://digitalcommons.unl.edu/libphilprac/4280>
- Kumar, N & Kumar, P. (2019). Application of smart technologies in libraries. 3rd DLA-RSFLA Summit 2019. Retrieved from <https://www.researchgate.net/publication/338645332>
- Mestri, D. D. (2020). Reopening libraries in COVID 19 pandemic: challenges and recommendations. *IP Indian Journal of Library Science and Information Technology*, 5 (1), 16-23
- Omeluzor, S. U., Nwaomah, A. E., Molokwu, U. E., & Sambo, A. S. (2022). Dissemination of information in the COVID-19 era in university libraries in Nigeria. *IFLA Journal*, 48(1), 126–137. <https://doi.org/10.1177/03400352211037700>
- Ramzan, M., Asif, M. & Ahmad, S. (2021). Librarians attitudes towards application of information and communication technology in academic libraries in Pakistan. *Information Research* , 26 (1),. Retrieved from <http://informationr.net/ir/26-1/paper887.html>
- Poslad, S. (2009). Ubiquitous computing smart devices, smart environments and smart interaction. Wiley. ISBN.978-0-470-03560-3.

- Ubogu, J. U. (2012). Attitude o f librarians towards the use of Information and Communication Technology in some selected Nigerian Universities in Edo and Delta State, Nigeria. *The Information Technologist*, 9 (2). Retrieved from <https://www.ajol.info/index.php/ict/article/view/87095>
- Ukachi, N. B., Onuoha, U. D. & Nwachukwu, V. N. (2014) Students' Attitudes as a Determining Factor to Electronic Information Resources Use in University Libraries in South-West, Nigeria DESIDOC Journal of Library & Information Technology, 34 (4), 333-341 DOI: 10.14429/djlit.34.6269 DESIDOC
- WHO (2021). Corona virus. Retrieved from https://www.who.int/health-topics/coronavirus#tab=tab_1