Postgraduate students' access and use of digital information resources and services for research in university libraries in Kaduna State

Dr. Adamu Jibrin
Kashim Ibrahim Library,
Ahmadu Bello University, Zaria
adamujibrin@abu.edu.ng

Prof. Zakari Mohammed
Department of Library and Information Science,
Ahmadu Bello University, Zaria

Dr. Lawal Umar
Department of Library and Information Science,
Umaru Musa Yar'adua University, Katsina
lawal.umar@umyu.edu.ng

Dr. Maifata, Nurudeen Mu'azu
University Library,
Nasarawa State University, Keffi.
maifata22@gmail.com

Abstract
This study was carried out to investigate the Postgraduate Students' Access and Use of Digital Information Resources and Services for Research in University Libraries in Kaduna State. In order to achieve this, two research questions and one null hypothesis were formulated and tested to guide the study. These include: the types of digital information resources and services accessed and used for research by postgraduate students in the university libraries in Kaduna State, Nigeria and the extent of which Postgraduate Students access and use digital information resources and services for research in the University Libraries studied. Survey research method was adopted for the study. The population of the study consisted of 18,130 postgraduate students from the 3 universities namely; Kashim Ibrahim Library (KIL) of Ahmadu University, Zaria, Kaduna State University (KASU) Library and Nigerian Defence Academy (NDA) Library and 377 of them were drawn as the sample size of the study. It was discovered that that audio visual and communication services, emailing services, printing services, public access catalogue, customer care services, online information search services, and digital document delivery services were the digital information services highly accessible and used by the postgraduate students studied. Also, there is no significant relationship between access and use of digital information resources and services by postgraduate students in the university libraries in Kaduna State. It is recommended that University management in collaboration with university librarian should expand subscription to more online database in order to promote postgraduate students' access and use of digital information resources and services for their research activities.

Keywords: postgraduate students, access, use, digital information resources

Introduction

Advancements in computer and software technologies serve as the foundation for societal enlightenment and rapid growth. The feasibility of future community developments heavily relies on key technologies and their deployments, encompassing computing hardware, the Internet, software and hardware facilities, mobility technologies, storage, system management, and security technology (Leahy & Dolan, 2016). The progress in computer and networking technologies has led to substantial growth and development in the access and use of digital information resources and services not only in Nigerian university libraries but globally as well. Products of Information and Communication Technologies (ICT) such as electronic books (e-books), electronic journals (e-journals), subject databases, and electronic theses and dissertations are collectively referred to as digital information resources. These resources have proven highly relevant for the teaching, learning, and research processes in universities (Okiki & Asiru, 2011), impacting crucial aspects of daily life and extending into areas such as education, health, and production industries.

Today, access and use of digital information resources and services have made it easier for students and researchers to retrieve a variety of digital content from library databases using computers and the Internet. This has empowered university to play significant roles in the management of digital information. The landscape of information resources, coupled with the services offered, extends both within and beyond the operational environment. This shift has led to a decrease in the reliance on printed resources for meeting the digital information needs of clients. Consequently, libraries and information centers are now able to seamlessly integrate the acquisition of both printed and non-printed resources. These resources include CD-ROM databases, e-books, electronic journals, locally stored databases (OPAC), electronic mails, and the internet, addressing the information needs of their clientele (Agboola & Oduwole, 2015).

The significance of digital information resources lies in the essential need for proficiency in digital technology, with services gaining importance as employers prioritize these competences. University libraries' digital information resources play a crucial role in supporting students with tasks requiring intricate interaction activities. This underscores the importance of postgraduates possessing adequate digital literacy competence, as argued by Tsakonas and Papatheodorou, (2010) the ability of postgraduates to access and use digital information resources is contingent upon their comfort with computer usage. Additionally, their capability to navigate through the Internet becomes pivotal. These considerations raise essential questions for postgraduates seeking to use digital information resources in university libraries for their academic endeavors. It is against this background that this study investigates Postgraduate Students' Access and Use of Digital Information Resources and Services for Research in University Libraries in Kaduna State.

Statement of Problem

Digital information resources and services have assumed a crucial role within the academic community, providing timely, relevant, and current information. They empower students to search multiple files simultaneously and access and use information from remote locations. Postgraduate students enrolled in universities with the goal of obtaining certificates and becoming more knowledgeable to contribute to solving societal problems, can significantly benefit from the access and use of digital information resources. Several reasons, including time-saving and credibility, contribute to the purpose of postgraduates using digital information resources in universities.

The advancements, has made it possible for postgraduate students to remotely access and use digital information resources and services through personal computers, smartphones, and tablets, provided they are registered students of their respective universities. The potential for effective learning and research has led universities to offer such remote services to

postgraduate students and despite the availability of vast resources, services, and conducive learning environments (Learning Commons) in university libraries in Kaduna State, the researcher has observed that many among the postgraduate students in the universities studied could not finish their research writing, which access and use of literatures are involved within the minimum period of Two (2) years for academic masters and Three (3) yeas for PhD. This predicament leads to challenges such as increase burden of school fees, frustration, and exit from the programme among others. On this note, the researcher speculates that, could this scenario be as a result of postgraduates' inability to access and use the digital information resources and services available for smooth conduct of their research writing? It is against this development this study was designed to Investigate the Postgraduate Students' Access and Use of Digital Information Resources and Services for Research in University Libraries in Kaduna State".

Research Questions
The following research questions guided this research:
1. What types of digital information resources and services are access and use by postgraduate students in the university libraries in Kaduna State, Nigeria?
2. To what extent do the Postgraduate Students access digital information resources and services available in the University Libraries in Kaduna State, Nigeria?

Hypothesis
The following null hypothesis was tested:
H01: There is no significant relationship between the means of access and use of digital information resources and services by postgraduate students in the university libraries in Kaduna State, Nigeria.

Literature Review

Access to Digital Information Resources and Services by Postgraduate Students in University Libraries
Postgraduate students are formally enrolled in university courses with the goal of obtaining certificates and expanding their knowledge to contribute to solving societal problems. They access digital information resources and services stored in the library, either physically or remotely, for learning and research purposes. According to Nwako (2019), access to digital information resources can significantly enhance postgraduate students' learning and overall academic performance, saving time and adding credibility to their work. Research by Brennan et al., (2002) revealed that faculty members, in their quest for information, make fewer visits to the library and prefer e-journals over print materials. Dilek-Kayaoglu, (2008) supported this transition from print to digital information resources in a study on access to electronic journals by faculty at Istanbul University, Turkey. Also, Obaje and Camble, (2014) reported that CD-ROMs were primarily used for literature searches during project/dissertation and thesis writing in Nigerian universities. Similarly, Omotayo and Akinbola, (2010) found that academics at Obafemi Awolowo University accessed e-journals regularly for literature searches and research-related purposes. Azubogu and Madu, (2017) noted that academics in Nigeria increasingly embrace online resources, as the print counterpart fails to meet their needs. Merritt et al., (2015) emphasized the significance of high levels of teachers' digital literacy in the education industry for academic performance. However, despite substantial investments in digital information resources and services, research findings indicate low patronage.
Access to digital resources depends on their availability and users' awareness. Togia and Tsigillis, (2009) emphasized that the growth of information in digital format necessitates

students' access and learning to find, select, and use a wide variety of resources. Sefeh and Nosrat, (2007) found in a survey at Isfahan University of Medical Sciences that a majority of students had access to digital information resources, and a significant percentage use the resources with positive perceptions of meeting their information needs. The Internet, a major component providing access to digital information resources, is considered the best channel for information retrieval for students' research work (Oyegade, 2016; Ukwoma & Iwundi, 2010). Jogboro and Ehikhamenor, (2013) highlighted the transformative role of the internet in overcoming challenges related to limited access to up-to-date journals and books. Access to digital information resources has simplified research, with documents available in various digital formats. Students can read digital books, access global press, and read national dailies of other countries. Sohail & Ahmeds (2017) identified barriers such as the lack of adequate ICT infrastructure, affordability of online access, and insufficient ICT and information searching skills.

Use of Digital Information Resources and Services by Postgraduate Students in University Libraries

In higher education institutions, particularly for postgraduate students, the utilization of digital information resources for academic activities necessitates awareness of their availability and services through specific mediums. This awareness enables students to identify their information needs, conduct searches, evaluate information, and utilize digital formats for learning, research, and knowledge update. Universities, as centers of advanced learning and research, demand the use of current literature, making digital information resources and services crucial for students.

Numerous studies have explored the purpose and frequency of using digital information resources in professional literature in recent years. Obaje and Camble, (2014) reported that CD-ROMs were predominantly used for literature searches during project/dissertation, thesis writing, and personal research by academic staff in Nigerian universities. Omotayo's, (2010) study at Obafemi Awolowo University revealed that academics regularly used e-journals for literature searches and research-related purposes. Renwick, (2011) found that faculties predominantly utilized digital information resources for research and professional growth. Ozoemelem and Madu, (2017) noted a rapid and continual adoption of online resources by academics in Nigeria due to the inadequacy of print counterparts in meeting personal and professional information needs.

The use of digital information resources and services fosters collaboration among students and researchers. Magara, (2012) highlighted the role of the World Wide Web (www) in enhancing the use of scholarly digital content and promoting computational science. Presently, many university students rely on the web for assignments, term papers, research, and communication with teachers, facilitating the exchange of ideas and digital information to support academic activities. Fakolujo (2015) emphasized the role of digital mails (E-mail) over the internet in overcoming barriers to communication, such as geographic distance and language, enabling virtual study or research teams to form and collaborate.

In the same vein, Ekera and Tiamiyu, (2016) emphasized the speed and cost-effectiveness of communication through digital mails (E-mail) via the Internet. However, it's essential to acknowledge that postgraduate students may not be entirely proficient in digital instruments, particularly in relation to the use of digital information resources such as CD-ROMs, OPACs, and online databases subscribed to by Niger-ian universities.

In their contribution, Ojo and Akande (2015) survey at the University College Hospital (UCH) Ibadan, Nigeria, revealed low levels of utilization of digital information resources by students for academic activities. A significant issue identified was the lack of digital information retrieval skills, leading to a low level of resource access by medical students.

Similarly, a study by Hirsh, (2014) on "digital information resources and services' access and use by the students of Botswana" indicated under-utilization despite accessibility, attributing it to a lack of digital inclination. Several studies suggest that university libraries in Nigeria, including those conducted by Emerole and Ogugua, (2013), Idiodi and Igbinosa, (2013), Abdulsalami, (2014), and Amkpa (2015), are generally under-utilized. The low patronage of library services, especially in the utilization of digital information resources, is attributed to users not fully realizing the potentials of libraries in the digital information age. Students, with diverse information needs, are more likely to use digital resources if equipped with the requisite skills, which influence their utilization and yield maximum results in terms of time and energy expenditure.

Methodology

For the purpose of this study, a descriptive survey research design was used. The population for the study comprised of postgraduate students in public universities in Kaduna State, namely Ahmadu Bello University (ABU) Zaria (9820), Kaduna State University (KASU) (2978), and Nigerian Defence Academy (NDA) Kaduna (5332) with the overall total of 18, 130 postgraduate students. The sample size of Three Hundred and Seventy-Seven (377) postgraduate students were selected using the Krejcie and Morgan sample size table of 1970. However, a structured open-ended questionnaire was developed by the researcher and the questionnaire was administered personally with the assistants of 2 research assistants.

Findings and Discussion

Out of the three Hundred and Seventy-Seven (377) copies of the questionnaire distributed to the postgraduate students across the three Universities in Kaduna State, Nigeria, three hundred and seventy-four (374) copies of them were returned, duly completed and found fit for analysis. This represents 99.2% response rate. The data analysis was firstly done using descriptive statistics such as frequency counts and percentages for the research questions. Thereafter, inferential statistics Pearson Product Moment Correlation (PPMC) was used to determine the relationships between and among variables. The analyses, findings and discussion were presented as follows:

Means of Access to Digital Information Resources and Services by Postgraduate Students in the University Libraries in Kaduna State

The research attempted to find out the various means through which postgraduate students access and use digital information resources and services available for the postgraduate students, to do this, a list of various options was provided for the respondents to tick as many means they employed in their respective university libraries. The table 1 presented the responses of the respondents.

Table 1: Postgraduate Students Means of Access to Digital Information Resources and Services in the University Libraries in Kaduna State

S/N	Means for Accessing Digital Information Resources	University Libraries studied					
		KIL, ABUZ		KASU Library		NDA Library	
		Freq	%	Freq	%	Freq	%
1.	Through Library Website	130	64.0	37	61.2	76	69.1
2.	Through External Hard Wires	48	24.1	6	10.3	18	16.4
3.	Online Public Access Catalogue	130	64.0	37	61.2	76	69.1
4.	Local Area Network	133	65.5	37	61.2	76	69.1
5.	Flash Drive	133	65.5	37	61.2	76	69.1
6.	CD Drive	37	18.2	24	39.3	36	33.2
7.	Through Computers	148	73.4	61	100.0	76	69.1
8.	Smart Phones	133	65.5	49	80.3	84	76.4
9.	Online Reference Desk	48	24.1	7	11.5	28	25.5
10.	Customer Care Unit	148	73.4	37	61.2	84	76.4
11.	Internet Search	147	75.5	37	61.2	98	89.1
12.	Library User Group	27	13.3	12	20.2	20	18.2
13.	Audio-Visual Communication Unit	49	24.1	24	39.3	17	15.5
14.	Library Bulletin Board	33	16.3	12	20.2	25	23.2
15.	E-Mailing	130	64.0	37	61.2	76	69.1
16.	Downloading and Printing	130	64.0	37	61.2	76	69.1

Table 1 portrayed the responses of the postgraduate students on the means they access digital information resources and services in their respective university libraries studied. At the KIL, the postgraduate students indicated that they access digital information resources and services through Library Website 130(64.0%), Online Public Access Catalogue (OPAC) 130(64.0%), Local Area Network 133(65.5%), Flash Drive 133(65.5%), Through Computers 148(73.4%), Smart Phones 133(65.5%), Customer Care Unit 148(73.4%), Internet Search 147(75.5%), E-Mailing 130(64.0%) and Downloading and Printing 130(64.0%) with the highest percentage of over 50% response scores. While, the other means of accessing digital information resources and services as indicated by the postgraduate students with the lowest percentage of less than 50% included CD Drive 37(18.2%), Through External Hard Wires 48(24.1%), Online Reference Desk 48(24.1%), Seminars and Workshops 46(23.1%), Audio-Visual Communication Unit 49(24.1%), Library User Group 27(13.3%), and Library Bulletin Board 33(16.3%) respectively.

At the KASU library, the findings revealed that postgraduate students access digital information resources and services through Library Website 37(61.2%), Local Area Network 37(61.2%), Flash Drive 37(61.2%), Through Computers 61(100%), Smart Phones 49(80.3%), Customer Care Unit 37(61.2%), Internet Search 98(89.1%), E-Mailing 37(61.2%) and Downloading and Printing 37(61.2%) having recorded the highest percentages of over 50% response scores respectively. Whereas, accessing digital information resources and services through External Hard Wires 6(10.3%), Online Public Access Catalogue (OPAC) 28(46.4%),

CD Drive 24(39.3%), Online Reference Desk 7(11.5%), Seminars and Workshops 7(11.5%), Library User Group 12(20.2%), Audio-Visual Communication Unit 24(39.3%), and Library Bulletin Board 12(20.2%) recorded the lowest percentage scores of less than 50% scores.

At the NDA Library, the study found that, Through Library Website 76(69.1%), Local Area Network 76(69.1%), Flash Drive 76(69.1%), through Computers 76(69.1%), Smart Phones 84(76.4%), Customer Care Unit 84(76.4%), Internet Search 98(89.1%), E-Mailing 76(69.1%) and Downloading and Printing 76(69.1%) were the major means through which postgraduate students access digital information resources and services in the library. While, other means of access such as through External Hard Wires 18(16.4%), Online Public Access Catalogue (OPAC) 18(16.4%), Audio-Visual Communication Unit 17(15.5%), CD Drive 36(33.2%), Online Reference Desk 28(25.5%), Seminars and Workshops 39(35.4%), Library User Group 20(18.2%), and Library Bulletin Board 25(23.2%) were among the least means of accessing digital information resources in the library with less than 50% response scores.

This finding is in agreement with Edem & Egba, (2016) who discovered that website, Online Public Access Catalogue (OPAC), Local Area Network, Flash Drive, Through Computers, Smart Phones, Customer Care Unit, Internet Search, E-Mailing and Downloading and Printing were among the major means through which digital information resources and services were accessed and used in the university library Nsukka. They also attributed the reasons due to huge investments made by the university in the building and provision of standard digital library with modern equipment. However, the findings reveal that, most of the postgraduate students in these universities were highly using computers as their means of access to digital information resources. This development is a good omen toward moving from traditional inclination to digital environment of 21st century.

In a similar mode, Oyedapo & Ojo (2013) carried out a study on the means of access to digital information resources at Obafemi Awolowo University, Nigeria and Website, Online Public Access Catalogue (OPAC), Local Area Network, Flash Drive, Through Computers, Smart Phones, Customer Care Unit, Internet Search, E-Mailing and Downloading and Printing were among the means in which postgraduate students highly access digital information resources. However, the finding on this research reveals that, Through Computers found to be a major means of access to digital information resources and services by the postgraduate students in the university under study, while through External Hard Wires and means of accessing digital information resources and services found to be the least regardless of the university.

Extent of Access to Digital Information Resources and Services by Postgraduate Students in the University Libraries in Kaduna State

The researcher attempted to determine the extent of access to digital information resources and services by the postgraduate students in the university libraries studied. To achieve this, a five-point Likert scale was used to collate the opinions of the respondents in that regard. However, the 5-point Likert scale was collapsed into 3 points to ease analysis and comprehension as follows: HA- Highly Accessible; NA- Not Accessible; RA- Rarely Accessible. The responses of the respondents are presented in table 2.

Table 2: Extent of Access to Digital Information Resources and Services in the University Libraries in Kaduna State.

Key: HA– Highly Accessible RA – Rarely Accessible   NA - Not Accessible

Looking at the breakdown of the responses of the respondents based on the three

S/No	Extent of Access to Digital Information Resources and Services	University Library Studied								
		KIL, ABUZ			KASU Library			NDA Library		
		HA	NA	RA	HA	NA	RA	HA	NA	RA
1.	Audio-Visual & Communication	112 (55.2)	47 (23.2)	44 (22.1)	14 (23.0)	21 (34.4)	26 (43.0)	38 (34.5)	29 (26.4)	43 (39.1)
2.	Library Bulletin Board	52 (26.0)	28 (13.8)	123 (65.0)	22 (36.1)	16 (26.2)	23 (38.0)	23 (21.0)	15 (13.6)	71 (65.5)
3.	Bibliographic Digital Information	32 (15.8)	31 (15.3)	140 (69.0)	21 (34.4)	18 (29.5)	22 (36.1)	20 (18.2)	82 (75.5)	8 (7.3)
4.	Digital Based News library	32 (15.8)	37 (18.2)	139 (68.4)	21 (34.5)	15 (24.6)	25 (41.0)	39 (35.5)	17 (15.5)	54 (49.0)
5.	E-Mailing Services	32 (15.8)	27 (13.3)	42 (21.1)	37 (51.0)	8 (13.1)	16 (26.2)	69 (63.2)	13 (12.3)	28 (25.5)
6.	Printing Services	32 (15.8)	28 (13.8)	42 (21.0)	20 (33.0)	22 (36.1)	19 (31.1)	61 (55.4)	24 (21.8)	25 (23.0)
7.	Public Access Catalogue	133 (65.5)	15 (7.4)	76 (37.4)	43 (70.5)	0 (0.0)	43 (70.5)	41 (37.2)	65 (59.1)	4 (3.6)
8.	Online Reference	87 (43.0)	37 (18.2)	79 (39.0)	13 (21.3)	28 (45.9)	20 (33.0)	35 (32.0)	28 (25.5)	47 (43.0)
9.	Customer Care	139 (68.4)	49 (24.1)	38 (19.0)	40 (65.5)	5 (8.1)	16 (26.2)	79 (72.3)	14 (13.2)	17 (15.5)
10.	Online Internet Search	133 (65.5)	41 (20.2)	46 (23.0)	50 (82.4)	2 (4.1)	9 (15.2)	65 (59.1)	31 (28.2)	14 (13.0)
11.	Online Cataloguing and Classification	70 (34.5)	29 (14.3)	104 (51.2)	39 (59.5)	7 (11.5)	39 (59.5)	40 (36.4)	13 (11.8)	57 (52.0)
12.	Awareness and Workshop	66 (33.0)	37 (18.2)	100 (49.3)	19 (31.2)	19 (31.1)	23 (37.0)	18 (24.5)	80 (73.0)	12 (10.9)
13.	News Groups/Dialogue Services	64 (31.5)	45 (22.2)	94 (46.3)	18 (29.5)	19 (31.1)	24 (39.3)	41 (37.2)	19 (17.3)	50 (45.4)
14.	Digital Document Delivery Services	120 (59.1)	29 (14.3)	54 (27.0)	22 (36.1)	19 (31.1)	20 (33.0)	81 (74.0)	15 (14.5)	16 (14.5)

15.	Technical Training on Digital for Staff and Users	93 (46.0)	32 (15.8)	78 (38.4)	18 (29.5)	4 (6.6)	39 (59.5)	25 (23.0)	80 (73.0)	5 (4.5)

   university libraries studied, in ABUZ Library, called Kashim Ibrahim Library, it was evident from the table that postgraduate students indicated that audio visual and communication services, 112(55.2), emailing services, 139(68.4), printing services, 133(68.4), public access catalogue, 112(55.2), customer care services, 116(57.2), online information search services, 116(57.2) and digital document delivery services were the highly accessible digital information services available in Kashim Ibrahim Library. Regrettably, a majority of the postgraduate students in KIL indicated that library bulletin board services, 123(65.0), bibliographic digital information services, 140(69.0), digital based news library services, 139(68.4) and online cataloguing and classification services were the digital information services rarely accessible for use in the library.

   At the KASU Library, the postgraduate students indicated that emailing services, 37(51.0), customer services, 40(65.5) and online internet search services, 50(82.4) were the highly accessible digital information services in the library. Whereas, other digital information services such as public access catalog services, 43(70.5), and online cataloguing and classification services, 39(59.5) were the rarely accessible digital information services by the postgraduate students in the library.

   In NDA library, it was found that emailing services, 69(63.2), printing services, 61(55.4), customer services, 79(72.3), online internet search services, 65(59.1) and digital document delivery services, 81(74.0) were the highly accessible digital information services by the postgraduate students in the library. Conversely, it was revealed that bibliographic digital information services, 82(75.5), public access catalogue services, 65(59.1), awareness and workshop services, 80(73.0) and technical training on digital information services, 80(73.0) were the digital information services not accessible by the postgraduate students in the NDA library.

   Also, table 2 shows the responses of the postgraduate students on their extent of access to digital information services available in university libraries in Kaduna State. From the table, it can be seen that customer care is the service with the highest frequency and percentage regardless of the university, of 139(68.4%). This is above the bench marks of all the three Universities having 50% of their responses.

   The findings corroborated the findings of Otumba, (2020). In their study, they examined the extent of access of digital information services by postgraduate students of Faculty of Education in Imo State University, Owerri Library. The study revealed that 74.6% of postgraduate students indicated that audio visual and communication services, emailing services, printing services, public access catalogue, customer care services, online information search services, and digital document delivery services were the highly accessible digital information services available. In the same vain, Osinulu (2020) carried out a study on the extent of use of digital information services at Obafemi Awolowo University, Nigeria and under-utilization of the digital information services was observed. This implies that bibliographic digital information services, rarely accessible for use by the postgraduate students in the library among the others. Similarly, the variable with the least response regardless of the universities studied is public access catalogue.

Extent of Use of Digital Information Resources and Services by Postgraduate Students in the University Libraries in Kaduna State.

The researcher tried to determine the extent of use of digital information resources and services by the postgraduate students in the university libraries studied. To achieve this, a five-point Likert scale was used to collate the opinions of the respondents in that regard. However, the 5-point Likert scale was collapsed into 3 points to ease analysis and comprehension as follows: HU- Highly Used; NU- Not Used; RU- Rarely Used. The responses of the respondents are presented in table 3.

Table 3: Extent of Use of Digital Information Resources and Services by Postgraduate Students in the University Libraries in Kaduna State.
Key: HU – Highly utilized   RU – Rarely Utilized   NU - Not Utilized

S/N	Extent of Use of Digital Information Resources and Services	University Library Studied								
		KIL, ABUZ			KASU Library			NDA Library		
		HU	NU	RU	HU	NU	RU	HU	NU	RU
1.	Audio-Visual and Communication	112 (55.2)	47 (23.2)	44 (22.1)	14 (23.0)	21 (34.4)	26 (43.0)	38 (34.5)	29 (26.4)	43 (39.1)
2.	Library Bulletin Board Service	52 (26.0)	28 (13.8)	123 (65.0)	22 (36.1)	16 (26.2)	23 (38.0)	23 (21.0)	15 (13.6)	71 (65.5)
3.	Bibliographic Digital Information	32 (15.8)	31 (15.3)	140 (69.0)	21 (34.4)	18 (29.5)	22 (36.1)	20 (18.2)	82 (75.5)	8 (7.3)
4.	Digital Based News library	32 (15.8)	37 (18.2)	139 (68.4)	21 (34.5)	15 (24.6)	25 (41.0)	39 (35.5)	17 (15.5)	54 (49.0)
5.	E-Mailing	139 (68.4)	27 (13.3)	42 (21.1)	37 (51.0)	8 (13.1)	16 (26.2)	69 (63.2)	13 (12.3)	28 (25.5)
6.	Printing	133 (65.5)	28 (13.8)	42 (21.0)	20 (33.0)	22 (36.1)	19 (31.1)	61 (55.4)	24 (21.8)	25 (23.0)
7.	Public Access Catalogue	112 (55.2)	15 (7.4)	76 (37.4)	18 (29.5)	0 (0.0)	43 (70.5)	41 (37.2)	65 (59.1)	4 (3.6)
8.	Online Reference	87 (43.0)	37 (18.2)	79 (39.0)	13 (21.3)	28 (45.9)	20 (33.0)	35 (32.0)	28 (25.5)	47 (43.0)
9.	Customer Care	116 (57.2)	49 (24.1)	38 (19.0)	40 (65.5)	5 (8.1)	16 (26.2)	79 (72.3)	14 (13.2)	17 (15.5)
10.	Online Internet Search	116 (57.2)	41 (20.2)	46 (23.0)	50 (82.4)	2 (4.1)	9 (15.2)	65 (59.1)	31 (28.2)	14 (13.0)
11.	Online Cataloguing and Classification	70 (34.5)	29 (14.3)	104 (51.2)	15 (25.0)	7 (11.5)	39 (59.5)	40 (36.4)	13 (11.8)	57 (52.0)
12.	Awareness and Workshop	66 (33.0)	37 (18.2)	100 (49.3)	19 (31.2)	19 (31.1)	23 (37.0)	18 (24.5)	80 (73.0)	12 (10.9)

13.	News Groups/Dialogue	64 (31.5)	45 (22.2)	94 (46.3)	18 (29.5)	19 (31.1)	24 (39.3)	41 (37.2)	19 (17.3)	50 (45.4)
14.	Digital Document Delivery	120 (59.1)	29 (14.3)	54 (27.0)	22 (36.1)	19 (31.1)	20 (33.0)	81 (74.0)	15 (14.5)	16 (14.5)
15.	Technical Training on Digital for Staff and Users	93 (46.0)	32 (15.8)	78 (38.4)	18 (29.5)	4 (6.6)	39 (59.5)	25 (23.0)	80 (73.0)	5 (4.5)

Table 3 shows the responses of the postgraduate students on their extent of use of digital information services available in university libraries in Kaduna State. At the KIL, ABUZ it was evident from the table that postgraduate students indicated that audio visual and communication services, 112(55.2), emailing services, 139(68.4), printing services, 133(68.4), public access catalogue, 112(55.2), customer care services, 116(57.2), online information search services, 116(57.2) and digital document delivery services were the highly used digital information services available in Kashim Ibrahim Library. Regrettably, a majority of the postgraduate students in KIL indicated that library bulletin board services, 123(65.0), bibliographic digital information services, 140(69.0), digital based news library services, 139(68.4) and online cataloguing and classification services were the digital information services that are rarely used in the library.

Also, at the KASU Library, the postgraduate students indicated that emailing services, 37(51.0), customer services, 40(65.5) and online internet search services, 50(82.4) were the highly used digital information services in the library. Whereas, other digital information services such as public access catalog services, 43(70.5), online cataloguing and classification services, 39(59.5) and technical training on digital information, 39(59.5) were the rarely used digital information services by the postgraduate students in the library.

On the other hand, in NDA library, it was found that emailing services, 69(63.2), printing services, 61(55.4), customer services, 79(72.3), online internet search services, 65(59.1) and digital document delivery services, 81(74.0) were the highly used digital information services by the postgraduate students in the library. Conversely, it was revealed that bibliographic digital information services, 82(75.5), public access catalogue services, 65(59.1), awareness and workshop services, 80(73.0) and technical training on digital information services, 80(73.0) were the digital information services used by the postgraduate students in the NDA library.

Also, the table 4.9 shows the responses of the postgraduate students on their extent of use to digital information services available in university libraries in Kaduna State. From the table, it can be seen that e-mail is the service with the highest frequency and percentage regardless of the university, of 139(68.4%). This is above the bench mark of all the three Universities having 50% of their responses. Several studies have been carried out in Nigerian universities to examine the extent of use of digital information resources. In a study conducted by Dukper, Sakibu & Arthur (2018), they discovered that regardless of the availability of wide range of electronic resources, the extent of usage by postgraduate students was low. Also, Osinulu (2020) found out that the level of students' use of electronic information resources was low.

On the contrary, Alhassan & Macaulay (2015) in a study revealed that the use of electronic information resources by students in the two universities was very encouraging. More so, Ternenge & Kashimana (2019) discovered that digital information resources are to a great extent utilized by postgraduate students for research. Also, Ndubuisi & Udo (2013) discovered that postgraduate students were motivated to use electronic resources in their

university libraries because they found them to be more informative, easy to access and use, save time, more useful and less expensive. This implies that postgraduate students relied on e-mailing service they used from the universities studied for their postgraduate studies. The reliance might be in the forms of e-mailing services for some postgraduate researches, facilities needed for their researches among others. On the other hand, the variable with the least response regardless of the universities studied is public access catalogue.

Test of Hypothesis
Under this section, inferential analysis was done in order to test the hypotheses formulated for the study with the view to either retain or reject the hypothetical statements made by the researcher. This was done at the fixed alpha level of 0.05.

Hypothesis I: There is no significant relationship between means of access and use of digital information resources and services by Postgraduate Students in the University Libraries in Kaduna State.
This hypothesis was tested with the mean scores on access and use of digital information resources and services by postgraduate students *of* the three universities combined. The test was conducted with the Pearson Product Moment Correlation procedure (PPMC) because of the need to establish the extent of relationship between the two variables. A summary of the result is presented in Table 4.

Table 4: Correlation between access and use of digital information resources and services by postgraduate students.

Variables	N	Mean	Std. Dev.	Std. Error	r-calc.	df	p-value
Access	374	3.06	1.091	0.056	0.948	372	0.000
Use	374	3.02	1.144	0.059			

(r-critical at 372 df and at 0.05) = 0.098

The result in table 4 revealed that accessibility was significantly correlated with use of digital information resources and services by postgraduate students *of* the three universities. The observed coefficient of correlation in the test was 0.948 obtained at 372, degree of freedom (df). The probability level of significance obtained for the test is 0.000 ($p < 0.05$). These observations provided sufficient evidence for the rejection of the null hypothesis. The null hypothesis that there is no significant relationship between access and use of digital information resources and services among Postgraduate Students in the University Libraries in Kaduna State is therefore rejected.

Conclusion
Access to digital information resources and services by postgraduate students has been discovered to be necessary to fulfill their primary aim of obtaining certificates in their area of study. Many of Postgraduate Students in this present age have very low knowledge on digital information resources in the sampled university libraries with a little level of access and use proficiency in the competency. Therefore, postgraduate students need to acquire digital information resources knowledge to enhance their productivity in learning and research.

Libraries of this aged are automated; therefore postgraduate students should endeavor to access and use the services. However, the challenges with access and use of digital information resources should be checked and find the means of curtailing the problems by both the library staff and postgraduate. Addressing the challenges will complement the learning processes of postgraduate students and make them to fit with 21st century development and also to become proactive during their course of study to access and use digital information resources and services in their respective universities.

Recommendations

Based on the findings of the study, the following recommendations are made;

1. The university authorities should acquire modern equipment on digital information resources; hence the provision of such will support both the library staff and student to provide maximum services with maximum satisfaction from students.

2. The library management should introduce more plans and measures that will enlighten and expose postgraduate students on the availability of digital information resources and service and also utilizing such by postgraduate students in the university libraries.

3. Training and retraining of library staff to be acquainted with operation of modern digital information resources and service, couple with digital literacy competence that will boost and make their services very effective.

4. There is the need for alternative power supply in the university libraries to ensure uninterrupted access and use of digital information resources and service.

5. University management in collaboration with university librarian should expand subscription to more online database to postgraduate students for access and use of digital information resources and services.

6. There is need to form a consortium among university libraries in Kaduna State for subscribed to adequate bandwidth for stable and efficiency access to internet services.

7. A course, title Digital information literacy should be introduced as a course unit for all postgraduate students in the university studied.

References

Abdusalami, R.O. (2014). The Use of Library as an Instrument for Self-Development. *Knowledge Review* 1 (1) 40-23.

Agboola, W. & Oduwole, A. A (2015). Accessibility and Retrieval of Electronic Information at University of Agriculture Library, Abeokuta, Nigeria. *Library Review* 52(5), 228-233

Alhassan, J. A. & Macaulay, S. O. (2015). Availability and Utilization of Electronic Resources by University Students in Niger State. *International Conference on 21st Century*, 7(1), 10-19

Amkpa, S. A. (2015). Students' Use of University of Maiduguri Libraries: An Evaluative Study. *Gateway Library,* 2 (3) 70-80.

Azubogu, N. C., & Madu, C. (2017). "Use of Computer and Internet Technology among the Teaching Staff of Imo State University, Owerri". *H-JOLIS (Heartland Journal of Library and Information Science),* Vol. 1(2), pp. 38-49.

Brennan, M., Hurd, J., Blecic, D., & Weller, A. (2002). A Snapshot of Early Adopters of E-Journals: Challenges to the Library. *College & Research Libraries, 63*(6), 515-526. doi: https://doi.org/10.5860/crl.63.6.515

Dilek-Kayaoglu, H. (2008). "Use of Electronic Journals by Faculty at Istanbul University, Turkey: The Results of a Survey". *The Journal of Academic Librarianship*, 34 (3), pp. 239-247

Edem, N. B. & Egbe, N. (2016). Availability and Utilization of Electronic Information Resources by Postgraduate Students in a Nigerian University Library: A case study of University of Calabar, Nigeria*. Information and Knowledge Management*, 6(2), 60-69.

Ekera, O. & Tiamiyu, W. (2016). Users' Perception of the Facilities, Resources and Services of the MTN Digital Library at the University of Nigeria, Nsukka. Library Philosophy and Practice (e-journal). 1390. Available at http://digitalcommons.unl.edu/libphilprac/1390 (Accessed 20th September, 2023)

Emereole, N & Ogugua, J. C. (2013). Library Use Pattern in the Federal University of Technology, Owerri: A survey. *Borno Library, Archival and Information Science Journal*. 6(1) 49-57.

Fakolujo, O. A. (2015). Data Retrieval and Use of ICT in Research Methodology of Basic and Applied Research. Ibadan: Postgraduate School, University of Ibadan: 167 – 178.

Hirsh, K. (2014). Using University-supported Digital library collections in the K-12 Classroom. Durham, NC: North Carolina Central University Technology institute for Educators.

Inskip, C. (2016). Novice to Expert: developing digitally capable librarians. in Mackenzie, A. & Martin, L. (eds.) *Developing digital scholarship: emerging practices in academic libraries.* London: Facet, pp. 59-75

338

Jagboro, K. O. (2013). A study of Internet Usage in Nigerian Universities. A case Study of Obafemi Awolowo University Ile Ife, Nigeria; First Monday. 8. Accessed from http://firstmonday.org/issues/issue_2/jagboro/index.htm. Retrieved on 22/8/,2018

Leahy, A. & Dolan H. (2016). Learning at the digital frontier: A review of digital literacies in theory and practice. *Journal of Computer Assisted Learning,* 28, 547–556. https://doi.org/10.1111/j.1365- 2729.2011.00474.x

Merritt, K. et al. (2015). An Investigation on Self-Reported Computer Literacy: Is it Reliable? *Issues in Information System*, 6(1), pp. 289-295.

Nwankwo, N. G., Ofordile, J. O. & Ofor, N. J. (2019). Librarians' Perceptions of the Role of Information Literacy for Sustenance of a Democratic Nation. *Library and Information Science Digest,* 12, 1-12.

Ndubuisi, C. J. & Udo, N. (2013). Empirical study of motivation, challenges and strategies in the use of electronic information resources by postgraduate library users in South-East Nigerian federal universities. *International Journal of Library and Information Science* 5(11), 468-473.

Obaje, M. A., & Camble, E. (2008). "Use of CD-ROM Database by Staff and Students in the University of Jos Library". *The Information Technologist*: An International Journal of Information and Communication Technology (ICT) 5(1), pp 7-8

Ojo, R. A. & Akande, S. O. (2015). Students Access, Usage and Awareness of Electronic Information Resources at the University College Hospital, University of Ibadan, Nigeria, *Lagos Journal of Library and Information Science* 3(1): 16 – 24.

Okiki, O. & Asiru, S. (2011). Use of Electronic Information sources by Postgraduate Students in Nigeria: Influencing Factors. *Library Philosophy and Practice (e-journal)* 1.1:3

Omotayo, B.O. and Akinbola, M. (2010). "Access, Use, and Attitudes of Academics toward Electronic Journals: A Case Study of Obafemi Awolowo University, Ile-Ife". *Library Philosophy and Practice*. http://unllib.unl.edu/LPP/omotayo.htm. 6/7/2023.

Osinulu, L. F. (2020). Awareness of use of electronic information resources by students of College of Health Sciences in Olabisi Onabanjo University, Nigeria. *Information Impact: Journal of Information and Knowledge Management, 11*(3), 1-11.

Otuba, N.J. (2020). Access to digital information in Nigeria academic libraries: The role of education trust fund. *Journal of information and knowledge management,* (1), 41-46.

Oyedepo, A.E, & Ojo, R, (2013). Usage of Electronic Information Resources (EIRS) by undergraduate students of Federal University of Petroleum Resources Effurun. Information and knowledge management 5 (4). P 94-103.

Oyegade, E. A (2016). Application of Information Technologies in Nigerian Libraries: Problems and Prospects. Fayose, P. O. and Nwalo, K. I. N. eds *Information Technology in Library and Information Science Education in Nigeria*. Ibadan.

Ozoemelem, O. A. & Madu, (2017). Use of Electronic Resources by Postgraduate Students of

the Department of Library and Information Science of Delta State University, Abraka, Nigeria. *Library Philosophy and Practice*, Retrieved 2nd Jan. 2011 from http://digitalcommons.unl.edu/libphilprac/

Renwick, S. (2011). "Knowledge and Use of Electronic Information Resources by Medical Sciences Students', Faculty of Science in the University of West Indies". *Journal of Medical Library Association.* 93(1), pp. 21-31.

Sohail, M. and Ahmeds (2017). Use of Electronic Resources and services by Faculty Members And students of Fiji National University. Journal of Library and Information Technology. 37(3) 165- 171. Retrieved 25/10/2022 from https/www/researchgate.net/publication/3172

Sefah & Nosrat, W. (2007). Postgraduate students computing confidence, computer and internet Usage at Kuvempu University: An Indian Study. *International Journal of Instruction* 3(2), Retrieved 06/08/18 www.e-yi.net.

Togia, Apasia ans Tsigilis, Nikolaos. (2009). Awareness and Use of Electronic Resources by Education Postgraduate Students: Preliminary Results from the Aristotle University of Thessaloniki. Qualitative and quantitative methods in libraries international conference Chinia Crete, Greece. P.2

Ternenge, T. S. & Kashimana, F. (2019). Availability, accessibility and use of electronic information resources for research by students in Francis Sulemanu Idachaba Library University of Agriculture, Makurdi. *Library Philosophy and Practice (e-journal)*. Retrieved from https://digitalcommons.unl.edu/libphilprac/2352 on 14/05/2022.

Tsakonas, G and Papatheodoru, C. (2010). Analysing and Evaluating Usefulness and Usability in Electronic Services, *A Journal of Information Science.* 32. 5: 400-419. 24/7/2018.

Ukwoma & Iwundu, I. E. (2020). Digital literacy skills possessed by students of UNN: Implications for effective learning and performance: A study of the MTN Universities Connect Library. *New Library World,* 117(11/12), 702-720