AVAILABILITY AND USE OF DIGITAL INFORMATION RESOURCES AND SERVICES FOR ACCESS AND USE BY POSTGRADUATE STUDENTS IN UNIVERSITY LIBRARIES IN KADUNA STATE

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Abstract
This study was carried out to investigate the Availability and Use of Digital Information Resources and Services for access and Use by Postgraduate Students in University Libraries in Kaduna State, Nigeria. 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 available for access and use by postgraduate students in the university libraries in Kaduna State, Nigeria and the extent with which Postgraduate Students use digital information resources and services available 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 CD Rom, e-Journals, Search Engines, Online database, Online Public Access Catalogue (OPAC), Online References, Online Journals, e–Bulletin, Audio and Video Communication, Electronic Table of Contents, Electronic Document, and Blog among others were the commonest type of digital information resources available for Postgraduate Students use and access in the Universities Libraries in Kaduna State. It is recommended that library management should introduce more plans and measures that will enlighten and expose postgraduate students to the availability of digital information resources and services in their respective libraries.

Keywords*: Availability, Use, Digital Information Resources, Digital Information Services*

Introduction

The advent of Information and Communication Technology (ICT) has brought about dynamic changes in the structure and operation of libraries and information centers in today's information environment. The traditional library system has evolved into an e-learning and virtual learning system, presenting new challenges for library professionals. Information and communication technology (ICT) has created a new academic culture of understanding and cooperation, facilitated by the Internet, which stand-alone PCs could not have achieved before networking. Libraries now house both conventional printed documents and electronic information resources in their collections. Digital documents can be stored, accessed and used when the need arises. Consequently, library services extend beyond physical walls and integrate into local, regional, national, and international networks, transforming academic libraries into hybrid libraries. The term, digital information resources, according to Ikenwe and Udem (2023), are those information resources in an electronic format which are accessible through internet-connected computers or other electronic devices in libraries known as in-house digital resources.

Digital information resources are categorized into two parts: information resources that from beginning are produced in digital form such as e-books, e-journals, e-projects, e-reference materials, e-seminar paper, e-books, e-newsletters, e-thesis, e-conference papers, e-technical reports, e-dissertation etc. and information resources and materials which are not digital initially but can be transformed to digital over time (Akinlolu et al, 2023). Also, Dukare (2020) defines a digital resource as a resource that requires access to the computer or any electronic product that provides a collection of data, be it text referring to full-text databases, electronic journals, image collections, other multimedia and media-based products. numerical, graphic or temporal values, such as a commercially available title that was published for the purpose of commercialization.

In the same vein, within the context of this study, digital information resources refer to the information contents which include online databases, university specialized catalogue, institutional repositories, e-journal, e-books, e-newspapers, e-reference materials, open educational resources (OERs). The Internet and the World Wide Web (WWW) have revolutionized access to digital information resources and services, offering scholars fast and easy global access. This connectivity not only facilitates the exchange of research ideas but also links researchers to electronic bulletin boards, chat rooms, and social networks like Twitter, LinkedIn, and other academic platforms (Alison, Ruth, Tella, & Mutula, 2018). The Internet serves as a rich source of information, catering not only to educational and scientific inquiries but also acting as a lifeline for various business communities (Kathleen, Anderson, and Lee, 2019).

However, Hirsh, (2014) enumerates digital services provided by Digital Libraries, including Catalogues, Databases, Current Awareness Bulletins, Subscribed Databases, CD-ROM Databases, Remote Information Services, Internally Published Newsletters, Reports & Journals, Internet Information Sources Mirroring & Cataloguing, E-mail, Bulletin Board Service, Netnews system, Audio and Video Communication, Electronic Table of Contents, Electronic Document Delivery Service, Electronic Theses and Dissertations, Reference Service, Electronic Publishing, Discussion groups and forums, Central storage facilities for Hosting digital collections and indexes, and Tools for loading, storing, searching, and displaying digital objects, along with Special Collections services. The 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 libraries and information centers affiliated with higher institutions of learning 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)

Statement of the Research Problem
The Nigerian educational system is undergoing rapid transformation in terms of the increasing number, development, and adoption of technologies in teaching, learning, and research processes to meet the demands of the 21st Century. Simultaneously, universities in Nigeria have made substantial investments in acquiring digital information resources and services to enhance their teaching, learning, and research processes (Ukwoma & Iwundu, 2020). In the light of these advancements, postgraduate students can remotely access digital information resources and services through their

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.

However, despite the availability of vast resources, services, and conducive learning environments (Learning Commons) in university libraries in Kaduna State, the researchers have observed that many among the postgraduate students in the universities studied could not finish their research writing, which 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, this worrisome and ugly trend made the researchers to speculate whether or not it could be as a result of unavailability of digital information resources and services for use and access by postgraduate students? or could it be that regardless of the availability of digital resources, and services their use is insignificant among the postgraduate students?

Relatedly, studies conducted by Onye (2016), Abubakar (2020), Igbo et al, (2022) and Momoh et al (2023) have investigated issues surrounding availability, accessibility and utilization of digital information resources and services in university libraries. These studies largely focused on provision of digital information resources as well as their access and utilization by undergraduate students in university libraries outside the scope of the present study. There is therefore the need to investigate the Availability and Use of Digital Information Resources and Services for Access and Use by Postgraduate Students 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 available for access and use by postgraduate students in the university libraries in Kaduna State, Nigeria?
2. To what extent do the Postgraduate Students use 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 difference in the types of digital information resources and services available for access and use by postgraduate students in the university libraries in Kaduna State, Nigeria.

Literature Review
The literature reviewed covered the conceptual framework and empirical researches on the availability and use of digital information resources and services.

Digital Information Resources and Services in the University Libraries
In today's rapidly changing and technologically advanced environment, it is imperative for every aspect of life to embrace advancements. Tertiary institutions, particularly libraries, need to acknowledge and implement emerging technologies to keep up with the evolving landscape. A digitally advanced library is essential, as it can cater to the diverse needs of users by providing extensive digital information resources, transcending limitations of time, space, geography, and racial discrimination.

Digital libraries break down barriers, enabling users to access services remotely or from different countries at cost-effective rates. Odu, (2017) emphasizes that digital library resources and services can revolutionize traditional libraries, increasing user visits as information is made available in digital form on computers. Obaseki, Umeji & Krubu, (2018) note that the impact of digital information resources on library services is profound, enhancing support for electronic journals, document delivery, publishing, resource services, inter-library loans, full-text searching, cross-searching specialist abstracts, and more. The digital era has ushered in a memorable period in the history of libraries, with information stored on computers connected through networks.

Despite the potential benefits, studies in Nigeria, as highlighted by Oduwole, Oyesiku & Labulo, (2012) reveal that digital information resources and services in university libraries are underutilized. Reports by Oketunji, (2001) and Akintunde, (2006) indicate below-average utilization of digital information resources by students (both undergraduates and postgraduates) in universities. More so, Catts and Lau, (2014) stressed that; provision of digital information services is not a fixed capacity but requires adaptation to each emerging situation. The process of 'identifying and assessing the quality of digital information resources' comprises two key aspects. Firstly, it involves utilizing digital information resources, where individuals need to discern the appropriate ones based on sources or context when searching for specific digital information, be it in computer or digital format. Secondly, it encompasses 'evaluating the quality of such digital information,' which is closely linked to locating it. This evaluation involves the ability to gauge accuracy, credibility, and reliability of the acquired information.

The capability to 'retrieve digital information' and store data from digital sources is applicable in various contexts, ranging from acquiring digital information about one's culture and heritage to managing business records, technical knowledge, or personal contacts. Similarly, the 'effectiveness of digital information resources and services' denotes the proficiency in using digital information and services optimally for problem-solving and critical thinking. On the other hand, the 'ethical use of digital information resources' involves employing digital information and services in a manner that respects the rights of others.

Recent developments in African universities have seen a significant integration of technology into their operations. This integration serves as a tool for improvement and development, particularly when focusing on academic content and digital information

preservation. University libraries play a central role in this evolution as they house the intellectual content of the institutions. The acquisition of digital information resources and services is deemed a crucial investment in providing intellectual property to support reading and research within these institutions (Inskip, Adedeji, Ayen, & Omoba, 2008).

However, Lawal, (2017) further emphasizes the impact of the information explosion and the information technology revolution on the emergence of the digital information era. This has led to the availability of various library resources for clientele, aligning with the fundamental function of libraries to provide the right materials in all formats to meet the information needs of users. The university library, in particular, aims to serve students and researchers at all levels, prompting librarians to acquire and make available necessary databases for teaching and research within the university communities.

Digital library resources are stored and accessible in electronic formats, with library services also provided electronically. Rosenberg, (2006) highlighted that these services are frequently accessible over the Internet, enabling users to remotely access digital materials. This reflects the shift that many libraries are making towards embracing digital environments. Rosenberg further emphasized that as libraries transition into the digital realm, their primary role is not only to provide digital information resources but also to establish services facilitating easy access and use of information.

Nigerian university libraries are actively participating in the provision of digital information resources, transforming formerly print materials into non-print formats (soft copies). These resources, including music, games, stories, articles, journals, books, encyclopedias, pamphlets, cartographic materials, and more, are now accessible through computer devices and corresponding ICT tools (Obaseki, Umeji & Krubu, 2018). Digital information resources encompass a wide array of media, such as sound, animated graphics, pictures, and movies. The aim of offering digital information resources and services in libraries plays a crucial role in preserving materials and ensuring easy access for students, researchers, and other users. Fabunmi, Paris, and Fabunmi, (2016) emphasized that these services enhance access to digital information resources, making them available to a broader audience beyond a specific group of researchers. Digital projects enable users to search collections rapidly and comprehensively from any location at any time, making previously unseen information visible. Multiple users can access the same material simultaneously, eliminating distance-related issues, as users no longer need to physically travel to libraries. In the university setting, digital information resources and services have significantly contributed to the development of higher education environments, particularly for postgraduate students. These students can access and use digital information resources not only within the library but also beyond the institution for learning and research.

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. Azoemlau 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 vain, Ekera and Tiamiyu, (2016) emphasized the speed and cost-effectiveness of communication through digital mails (E-mail) via the Internet. Ureigho, Oroko, and Ekuyota, (2010) noted that, in addition to E-mail, the Internet provides opportunities to listen to international radio stations on research and education. 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 Nigerian universities. Also, 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 et al (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 studied 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.

In his contribution, Ojo and Akande's, (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. In the same perspectives, 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.

According to the Krejcie and Morgan table (1970), a population of 20,000 can adequately be represented by 377 respondents as sample size. This sample size was considered appropriate and adequate as representation of the entire population. A structured closed-ended questionnaire was developed by the researcher and the questionnaire was administered personally with the assistants of 2 research assistants. 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.

Findings and Discussion

The data analysis was firstly done using descriptive statistics such as frequency counts and percentages for the research questions. Thereafter, inferential statistics using One-way ANOVA was used to test the hypothesis respectively. The analyses, findings and discussion were presented as follows:

Type of Digital Information Resources Available for Postgraduate Students Access and Use in the Universities Libraries in Kaduna State

In order to find out the types of digital information resources available for the postgraduate students access and use, a list of various types of DIR was drawn for the respondents to tick as many types available for them to access and use in their respective university libraries. The table 1 presented the responses of the respondents.

Table 1: Type of Digital Information Resources Available for Postgraduate Students Access and Use in the Universities Libraries in Kaduna State.

S/N	Types of Digital Information Resources	University Libraries Studied					
		KIL, ABUZ		KASU Library		NDA Library	
		Freq	%	Freq	%	Freq	%
1.	CD Rom	89	44.3	10	16.5	46	42.3
2.	e-Journals	177	87.1	49	80.3	70	64.1
3.	Search Engines	143	70.4	56	91.0	103	94.1
4.	Online database	186	92.0	43	70.5	103	94.1
5.	Online (OPAC)	125	61.5	10	16.4	45	41.0
6.	Online References	122	60.0	31	51.0	70	64.1
7.	Online Journals	143	70.4	43	70.5	103	94.1
8.	E – Bulletin	89	44.3	10	16.4	39	35.4
9.	Audio and Video Communication	175	86.2	45	86.2	80	73.2
10.	Electronic Table of Contents	55	27.0	15	25.0	45	41.0
11.	Electronic Document	128	63.0	43	70.5	70	64.1
12.	Blog	45	22.1	7	11.5	33	30.0

Table 1 above showed the postgraduate students' responses on the types of digital information available in their respective university libraries. At the Kashim Ibrahim Library (KIL), it was found that e-Journals 177(87.1%), Search Engines 143(70.4%), Online Public Access Catalogue (OPAC) 125(61.5%), , Online References 122(60.0%), Online Journals, 143(70.4%), Audio and Video Communication 175(86.2%), and Electronic Document 128(63.1%) were the major digital information resources available with the highest percentage scores of over 50% responses.. While, E–Bulletin 89(44.3%), Netnews system 80(39.4), Electronic Table of Contents 55(27.1%), Blog 45(22.5%), CD Rom 89(44.3%), Teaching Resources 40(20.0%) were the types of digital information

resources available in the library with the lowest percentage scores of less than 50% responses.

Similarly, at the KASU Library Kaduna, it was discovered that Search Engines 56(91.0%), e-Journals 49(80.3%), Online databases 43(70.5%), Online reference 43(70.5%), Online Journals 43(70.5%), Audio and Video Communication 45(86.2%), and electronic documents 43(70.5%), were among the major digital information resources available with the highest percentage scores of over 50% scores. Conversely, CD Rom 10(16.5%), Public Access Catalogue (OPAC) 10(16.5%), e–bulleting 10(16.5%), Netnews system 4(6.5%), Electronic Table of Contents 15(25.0%), Blog 7(11.5%) and Teaching Resources 5(8.2%) were the digital information resources available with the least percentage scores of less than 50%.

On the other hand, At the NDA Library, Kaduna, it was revealed that online database 103(94.1%), Search Engines 103(94.1%), Online Journals 103(94.1%), Audio and Video Communication 80(73.2%), e-Journals 70(64.1%), Electronic Document 70(64.1%), Online References 70(64.1%) constituted the major types of digital information resources available in the library having obtained the highest percentage scores of over 50% respectively. On the contrary, CD Rom 46(42.3%), Online Public Access Catalogue (OPAC) 45(41.0%), E – Bulletin 39(35.4%), Netnews system 27(24.5%), Electronic Table of Contents 45(41.0%), Blog 33(30.0%) and Teaching Resources 22(20.0%) were the digital information resources available with the lowest percentage scores of less than 50% respectively.

From the foregoing, it was surprising also to note that postgraduate students in all the university libraries studied indicated the availability of CD-ROMs though with a frequency and percentage score of less than 50% scores. This situation should be discouraged particularly taking note of the importance of CD-ROMs offline contents as a complimentary source to online databases in the provision of electronic information resources in libraries. The findings also indicated the least availability of Blog. Also, Igbo (2017) and Anyaebu, et al., (2020) identifies Web-based OPACs, Web-based databases, electronic document delivery, virtual library tours, library Websites, library portals, Web-based user education programmes, FAQs, Web forms, electronic bulletin boards, discussion forums, electronic mailing lists (e.g., listservs) and library calendars were the types of digital information resources that were highly accessible in Rajasthan University library.

However, the implication on the finding is that, online data base found to be the major types of digital information available indicated by postgraduate students regardless the university, while Blog found to be the least digital information resources available in the universities.

Type of Digital Information Services Available for Postgraduate Students Access and Use in the Universities Libraries in Kaduna State.

In order to find out the types of digital information services (DIS) available for the postgraduate students access and use, a list of various types of DIS was provided for the respondents to tick as many types as were available for them to access and use in their respective university libraries. The table 2 presented the responses of the respondents.

Table 2: Types of Digital Information Services Available for Postgraduate Students Access and Use in the Universities Libraries in Kaduna State

S/N	Types of Digital Information Services	University Libraries studied					
		KIL, ABUZ		KASU Library		NDA Library	
		Freq	%	Freq	%	Freq	%
1.	Audio-Visual and Communication	127	63.1	53	87.3	96	87.3
2.	Library Bulletin Board	34	17.2	19	31.1	25	23.2
3.	Bibliographic Digital Information Serv.	32	16.2	25	41.0	15	14.1
4.	Digital Based News library	127	63.1	36	59.0	25	23.2
5.	E-Mailing	127	63.1	52	85.2	79	72.3
6.	Printing	169	83.3	57	93.4	61	55.5
7.	Public Access Catalogue	169	83.3	30	49.2	76	69.1
8.	Online Reference	127	63.1	18	29.5	44	40.0
9.	Customer Care	127	63.1	59	97.2	90	82.0
10.	Online Internet Search	170	84.0	55	90.2	92	84.1
11.	Online Cataloguing and Classification	46	23.1	24	39.3	48	44.1
12.	Awareness and Workshop	49	24.1	18	29.5	48	44.1
13.	News Groups/Dialogue	10	5.4	13	21.3	0	0.0
14.	Digital Document Delivery	36	18.2	55	90.2	25	41.0
15.	Technical Training on Digital for Staff and Users	44	22.2	18	29.5	18	25.0

Table 2 above discovered that, postgraduate students indicated their responses on the digital information services available in their respective university libraries studied. At the KIL, it was found that Online Internet Search Services 170 (84.0), Audio-Visual and Communication Services 127(63.1%), Digital Based News library Services 127 (63.1%), E-Mailing Services 127(63.1%), printing services 169 (83.3%), public access catalogue

169 (83.3**%),** Online Reference Services, 127(63.1%) and Customer Care Services 127 (63.1%) were the type of digital information services available with the highest percentage of over 50% response scores. Conversely, Library Bulletin Board Service 34(17.2%), Bibliographic Digital Information Services 32(16.2%), online Cataloguing and Classification Services 46 (23.1%), Awareness and Workshop Services 49 (24.1%), News Groups/Dialogue Services 10 (5.4%), Digital Document Delivery Services 36(18.2%) Technical Training on Digital for Staff and Users 44(22.2%) were among the digital information services found to be available with the lowest percentage of less than 50% response scores respectively.

On the other hand, in KASU library, it was discovered that Audio-Visual and Communication Services of 53 (87.3%), E-Mailing Services 52(85.2%), Printing Services 57(93.4%), online Internet Search Services scores 55 (90.2%), Customer Care Services 59(97.2%) and Digital Document Delivery Services 55(93.4%) were the digital information services available with the highest percentages of over 50% response scores. However, Library Bulletin Board Service,19(31.1%), Bibliographic Digital Information Services 25(40.1%), Digital Based News library Services 36(59.0%), Public Access Catalogue Services 30(49.2%), Online Reference Services 18(29.5%), Online Cataloguing and Classification Services 24 (39.3%), Awareness and Workshop Services 18(29.5%), News Groups/Dialogue Services 13(21.3%) Technical Training on Digital for Staff and Users 18(29.5%) were the digital information services found to have recorded the lowest percentage scores of less than 50% respectively.

At the NDA Library, Kaduna it was discovered that, Audio-Visual and Communication Services 96(87.3%), E-Mailing Services 79(72.3%), Printing Services 61(55.5%), Public Access Catalogue Services 76(69.1%), Customer Care Services 90(82.0%), Online Internet Search Services 92(84.1%). Online Cataloguing and Classification Services 95(86.4%) and Awareness and Workshop Services 90(82.3%) were among the major digital information services available with the highest percentages of over 50% response scores. While, Library Bulletin Board Service 25(23.2%), Bibliographic Digital Information Services 15(14.1%), Digital Based News library Services 25(23.2%), Online Reference Services 44(40.0%), Digital Document Delivery Services 25(41.0%), Technical Training on Digital for Staff and Users 18(25.0%), and News Groups/Dialogue Services 0(0.0%) were the digital information services that recorded the lowest percentages of less than 50% responses.

This finding agreed with that of Edem & Egba, (2016), Echezona, Ugwu & Ozioko, (2020). They found that Audio-Visual and Communication Services, E-Mailing Services, Printing Services Public Access Catalogue**,** Online Reference Services, and Customer Care Services, e-mail and Web forms were the digital information services highly offered by the libraries in south eastern state of Nigeria with more than 96%. Also, Sekyere (2021) in his study on customer services, e-mail service, chat and reference services in ten academic libraries in West African countries found that less than 50%

offered digital reference services only through phone, e-mail and chat. The finding also means that, Online Internet Search Services found to be the major digital information resources and services access and utilized by postgraduate students regardless in the university. While News Groups/Dialogue Services found to be the least services patronize by postgraduate students regardless of the university.

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 Services by Postgraduate Students in the University Libraries in Kaduna State

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 marks of all the three Universities having 50% of their responses. 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
Inferential analysis was done 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.

There is no significant difference in the type of digital information resources and services available for access and use by Postgraduate Students in the University Libraries in Kaduna State.
This hypothesis was tested with the scores of the post graduate students on types of digital information resources and services in the respective university libraries. The test was carried out with the one-way analysis of variance using the university libraries of the post graduate students as the independent variable. The summary of the analysis of variance models for the two (digital information resources and digital information services) is presented in Table

Table 4: One way analysis of variance on types of digital information resources and services available in university libraries for postgraduate students

Variables	Sources	Sum of Squares	Df	Mean Square	F	Sig.
Digital Resources	Between Groups	46.121	2	23.060	1.803	0.166
	Within Groups	4744.339	371	12.788		
	Total	4790.460	373			
Digital Services	Between Groups	35.780	2	17.500	2.486	0.234
	Within Groups	5222.680	371	14.077		
	Total	5528.460	373			

(Critical value for F at 2, 371 df and at 0.05) = 3.00

 The result in Table 4 revealed that the postgraduate students did not differ significantly in the management of digital information resources by their different university libraries. The observed F-value was 1.803 obtained at 2, 371, degree of freedom. The probability level of significance obtained for the test was 0.166 ($p > 0.05$). For the digital information services, the observed F-value was 2.486 with a p-value of 0.234 ($p > 0.05$). With these observations, there is no enough evidence to reject the null hypothesis. The null hypothesis that, there is no significant difference in the type of digital information resources and services available for Postgraduate Students to access and use in the University Libraries in Kaduna State is therefore retained. The mean score for the post graduate students from the different universities on the two variables are presented in Table 5:

Table 5: Mean scores on types of digital information resources and services in the University Libraries

University	N	Digital Resources			Digital Services		
		Mean	Std. Dev.	Std. Error	Mean	Std. Dev.	Std. Error
KASU	61	7.57	3.766	0.482	7.46	4.272	0.547
ABU	203	6.98	3.712	0.261	6.63	4.279	0.300
NDA	110	6.50	3.190	0.304	5.98	1.984	0.189
Total	374	6.94	3.584	0.185	6.69	3.850	0.199

From the table 5, mean scores of postgraduate students of the university libraries studied indicated that, there was no major variability on the types of digital information resources and services available in their respective university libraries. This observation accounted for the no significant difference obtained in the test. The CD Rom, e-Journals, Search Engines, Online database, Online Public Access Catalogue.

Summary of Findings

The summary of findings was outlined as follows:

1. It was discovered that e-Journals, Online databases, Search Engines, Online Public Access Catalogue (OPAC), Online References, Online Journals, Audio and Video Communication, and Electronic Documents were the commonest types of digital information resources available with the highest percentage scores of over 50% responses in University libraries in Kaduna State

2. It was found that Online Internet Search Services, Audio-Visual and Communication Services, Digital Based News Library Services, E-Mailing Services, printing services, public access catalogue services, Online Reference Services, and Customer Care Services were the type of digital information services available with the highest percentage of over 50% response scores University libraries in Kaduna State.

3. It was discovered 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 used digital information services available in university libraries in Kaduna State.

4. It was revealed that the hypothesis which states that there is no significant difference in the type of digital information resources and services available for Postgraduate Students to access and use in the University Libraries in Kaduna State is therefore retained.

Conclusion

Utilization of 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 age 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 aforementioned findings and discussions, it is recommended as follows:

1. That 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. 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. There is a need for 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 capacity and make their services very effective.

4. There is the need for the provision of diverse and unique digital information resources and services for the postgraduate students' access and use in the university libraries in Kaduna State. These digital information resources and services includes but not limited to: specialized and subject based databases, blogs, Online Reference Services, document delivery services etc.

References

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

Abubakar, D. (2020). Availability and Accessibility of Information Resources In University Libraries For Students' Academic Use: A Case Study Of Pharmaceutical Science Students Of The University Of Jos. *Library Philosophy and Practice (e-journal).* 4231. https://digitalcommons.unl.edu/libphilprac/4231

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

Akinlolu, M. O.; Awujoola, O. A. & Olawale, Y. J. (2023) Library cooperation and use of
digital library by postgraduate students in selected universities in South-West, Nigeria." Library Philosophy and Practice (e- journal). 8016. https://digitalcommon s.unl.edu /libph ilprac/8016/

Akinola, A. O., Shorunke, O. A., Ajayi, S.A. Odefadehan, O.O. & Ibikunle, F.L. (2018).
Awareness and use of electronic databases by postgraduates in the University of Ibadan. *Library Philosophy and Practice* (e-journal). 2065. http://digitalcommons.unl.edu/libphilprac/2065.

Akuffo, M.N. & Budu, S. (2019). Use of electronic resources by students in a premier postgraduate theological university in Ghana. South African

Journal of Information Management. 21(1), 1-9

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

Alison, M., & Ruth, J. (2018). Mobilising your e-content for maximum impact. *In UKSG 35ᵗʰ Annual Conference.* Retrieved on 14 of January 2014 from. http://www.slideshare.net/AlisonMcab.

Anyaegbu, M. I. & Wali, N. B. (2020). Influence of staff training and development on libraians job performance in federal university libraries in South-South, Nigeria. *Library Research Journal, 1 (1), 38-60.*

Arora, J., Trivedi, K. J., & Kembhavi, A. (2016). Impact of access to e-resources through the UGC-INFONET Digital Library Consortium on research output of member universities. *Current Science Journal,* 104 (3&10),1-9.

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 No. 2, pp. 38-49.

Catts, R., & Lau, J. (2014). Towards Information Literacy indicators. Available at:www.uls.unesco.org/library/Documents/wp08_InfoLit_en.pdf. Retrieved on 15/9/2021.

Dukare, D. A. (2020). *Concept and types of digital resources, What are the benefits of consortia approach in collection development?* IP Indian Journal of Library Science and Information Technology January-June, 2020;5(1):46-49. Available from: https://www.researchgate.net/publication/343170723_Concept_and_types_of_ digital_resources_What_are_the_benefits_of_consortia_approach_in_collectio n_development [accessed Dec 17 2024].

Dukper, K. B., Sakibu, B. & Arthur, B. (2018). Awareness and utilization of electronic resources by students of Tamale Technical University, Ghana. Library Philosophy and Practice (e-journal). Retrieved from https://digitalcommons.unl.edu/libphilprac/2078 on 15/05/2022.

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.

Echezona, R.I., Nwegbu, M.U. & Ozioko (2020). *Bring back the users in academic libraries in the digital age.* Paper presented at the 53rd National Conference and Annual General Meeting of Nigeria Library Association (NLA), Oshogbo, Ogun state of Nigeria, 26-31 July

Ekere, O., & Tam, 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, 2017)

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.

Fabunmi, B. A., Paris, M. & Fabunmi, M. (2016). Digitization of library resources: Challenges & and implications for policy and planning. *International Journal of African & African American Studies.* 5(2), 23-36.

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.

Igbo, H.U., & Imo, N.T. (2020). Digital libraries and access to information in Nigerian federal universities; the impact of technology variables. *Journal of Information and Knowledge Management, 19*(2), paper 2050013 https://doi.org/10.1142/S0219649220500136.

Igbinosa, I. O. & Idiodi, E. A (2013). Coping with Users Frustration in Academic Libraries in

Nigeria: University of Benin Experience. *Communicate: Journal of Library and Information Science.*5 (1).

Igbo, H. U., Ibegbulam, I. J., Asogwa, B. E., & Imo, N. T. (2022). Provision of digital information resources in Nigerian university libraries. *Information Research, 27*(3), paper 936. Retrieved from http://InformationR.net/ir/27-3/paper936.html (Archived by the Internet Archive at https://bit.ly/3eu2rL1) https://doi.org/10.47989/irpaper936

Ikenwe, I. J. & Udem, O. K. (2023). Beyond Library beginnings: Understanding Digital Libraries. *Handbook of Research on Technological advances of Library and Information Science in Industry 5.0. p.18.*

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

Kathleen, J. A., & Lee. R. (2019). The internet will continue to make life better: Pew Research Center

Kregcie, R. V., & Morgan, D. W. (1970). Determining Sample Size for Research Activities. Educational and Psychological Measurement 30:607 – 610.

Lawal, V. (2017). Information Literacy and the Future of Digital Information Services at the University of Jos Library. Library Philosophy and Practice (e-journal). 1674. Retrieved from https://digitalcommons.unl.edu/libphilprac/1674

Magara, E. (2012). Application of Digital Libraries and Electronic Technologies in Uganda. *African Journal of Library, Archival and Information Science,* 12(2); 145 – 154.

Mommoh, R. L. & Gomina, H. E. (2023). Utilization of Electronic Resources in University of Abuja Library by Undergraduate Students of University of Abuja, Nigeria. *Library Philosophy and Practice (e-journal).* 7597. https://digitalcommons.unl.edu/libphilprac/7597

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. (2014). "Use of CD-ROM Database by Staff and Students in the University of Jos Library". *The Information Scientist*: An International Journal of Information and Communication Technology (ICT) Vol. 5 No. 1, pp 7-8

Obaseki, T. I & Amune, J. B. (2018). Electronic Resources: Avenue for Information Resources Acquisition in the 21st century Nigeria Tertiary Institutions. *A paper presented at the AGM of NLA Cross River State Chapter Conference*. At UNICAL Conference Hotel Calabar 9th - 11th November.

Oduwole,A.A., Oyesiku, F. A., & Labulo, A. A. (2012). On-line Public Access Catalogue (OPAC) Use in Nigerian Academic Libraries: A Case Study from the University of Agriculture, Abeokuta. *Library Herald, 40(*1), 20-7.

Offili, D.N. (2017). *Digital literacy for librarians*. A Paper Presented in Workshop on Innovation in Libraries by Nigerian Library Association, Delta State Chapter at Federal University of Petroleum Resources, Effurun, Delta State.

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

Oketunji, I. (2010). *Computer application to libraries*. Paper presented at the 39th Annual National Conference and AGM of the Nigerian Library Association at the Imo Concord Hotel Owerri, June 17-22.

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* 2010. Available at: http://unllib.unl.edu/LPP/omotayo.htm. 26/7/2018.

Onye, U. U. (2026). Availability, Accessibility and Utilization of Library Information Resources by Students of the Federal University of Technology, Owerri (FUTO). *Information and Knowledge Management,* Vol.6, No.10, 2016

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.

Rosenberg, . D. (2005). Towards the digital library: Findings of an investigation to establish the current status of university libraries in Africa. UK: INASP. Accessed from http://www.inasp.info/uploaded/documents/digital-libr-finalformat-web.pdf.

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.* Vol. 93 No. 1, pp. 21-31.

Sekyere, K. (2010). Less words, more action: using on-the-fly videos and screenshots in your library's IM/Chat and email reference tranChowdhury, GG (2021). Digital library services: Present and future. Journal of Documentation (JDOC) 58(3), 258–283.sactions. *Community and Junior College Libraries, 16*(3), 157-161.
https://www.tandfonline.com/doi/abs/10.1080/02763915.2010.491711

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.

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

Ureigho, R.J., Oroke, G.U & Ekruyota, G.O, (2010). The Impact of Internet Usage: A Case
Study of Delta State Tertiary Institutions (Nigeria). http://www.academicjournals.org/SRE.Accessed on 8/8/2018.