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AN ASSESSMENT OF POSTGRADUATE STUDENTS' CHALLENGES, SOLUTIONS AND SKILLS IN UTILIZATION OF DIGITAL REFERENCE RESOURCES IN NORTH CENTRAL NIGERIAN UNIVERSITY LIBRARIES

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Abstract
This research assessed the challenges, solutions, and skills related to the utilization of digital reference resources by postgraduate students in federal universities within the North Central, Nigeria. A descriptive survey design was employed, guided by three research questions. The population of the study consisted of 8,727 postgraduate students across three universities, with a sample size of 871 selected for participation. A self-developed structured questionnaire was used to gather data, and 593 validly completed responses were returned. Respondents rated their agreement with various items on a Likert scale. Data analysis involved the use of mean and standard deviation. The findings revealed that while digital reference resources significantly enhance research in university libraries, postgraduate students face challenges such as limited access to digital facilities, insufficient training on digital resource utilization, and a lack of awareness of available digital tools. However, solutions such as increased training opportunities, improved access to resources, and the integration of digital literacy into academic programs were identified. The study concluded that while digital reference resources are crucial for academic advancement, postgraduate students should actively engage in self-improvement training, especially through online platforms, to enhance their competence in utilizing these resources. The study recommends that universities provide more structured training and support to help students overcome challenges and improve their digital literacy.
Keyword: University Library, Digital Reference Resources, Digital Resources, Digital Skills

Background to the Study

University libraries are the bedrock upon which universities are built. In the university, library occupies a unique position as it manages the intellectual resources of the university. University libraries therefore, serve two complementary purposes: to support the institutions' curriculum, and to support the research of the faculties and students. University libraries are agents of quality education that depends on provision of current and relevant information resources and services; ensure reference resources and services are readily available and accessible to researchers, educators and patrons' community.

University libraries are major access points in the provision of reference resources and for quality teaching, learning and research. Reference resources are information bearing materials in personnel, prints and electronic form used by reference librarians to provide access to specific information for users, reference services are services that deal with the assistance given to patrons in finding information, answering questions, and otherwise fulfilling users' information needs. Makinde, Aba & Ugah (2017) averred that the ultimate goal of reference resources and services is to provide accurate and specific information in the shortest possible time. It is sufficed to state that, reference and information services have always been the main component of library services. Digital reference resources are resources which are accessed through electronic system and computer network. The library materials produced in digital formats, such as e-journals, e-books, reference work published online and CD-ROMs, bibliographic databases, and other web based resources. These are those resources that deal with both born electronic and digitized materials which can be either accessible from library's databases, metadata and, or from the internet. The electronic materials includes: e-books, e - journals, e-magazine, e-projects, e-thesis, e-dissertations, e-reports, websites, WWW-resources and other related materials which can be converting the materials formats into digital format revealed that library digital information resources available in the university libraries in Nigeria include: Compact Disc Read Only Memory CD-ROMs, databases, videotapes, cassettes, diskettes, magnetic disks, Internet/email, microfiche and icrophones among others.

Akpojotor (2016) assert that these digital reference resources can be seen as the most recent development in information technology and that they are available in various forms like e-library, digital libraries, online journal magazine, e-learning tutors and online test. The digital information resources are made available in university libraries to assist patrons in finding information relevant to their needs. These resources provide accurate and timely information, especially for students who depend greatly on the electronic resources for information to advance research and collaboration with other researchers around the world for intellectual growth. Tofi, Agada and Okafor (2020) stated that, it is worthy of note that digital reference resources play a prominent role in facilitating access to required information by the patron
s in an easy and expeditious manner. Negahban and Mysore in Urhiewhu, Okeke and Nwafor (2015) pointed out that digital reference resources in reality have become the backbones of many academic institutions.

This study investigated three selected federal universities from the North Central, Nigeria, and they were chosen because they are amongst the second and third generation universities. They are the University of Jos, University of Abuja and Joseph Sarwuan Tarka University of Agriculture, Makurdi. This is based on their past records or antecedents. To a reasonable extent, they have establish digital libraries that cushion the effect of utilization of digital reference resources research amongst the postgraduate students. Three selected faculties from the

three selected universities were used for the purpose of this study: Faculties of Education, Sciences and Social Sciences.

Whereas, previous studies in this area have concentrated on other aspects of library reference literacy skills, most did not deal with assessment of postgraduate student's challenges, solutions and skills in utilization of reference resources in digital literacy. Hence, it is on this premise that this study investigate the challenges encountered by the postgraduate students, possible solutions and the skills needed to effectively utilize the digital reference resources provided in Universities of Jos, Abuja and Agriculture, Makurdi, in North Central, Nigeria. The findings will add to the existing literature and body of knowledge.

Statement of the Problem

The advent of digital reference resources to the library has proven to be very important in information search and in getting answers to queries for library patrons. Easy access, use and extension of library services to clients outside the four walls of the library without delay or stress can be said to be one of the great benefits of digital reference resources to the libraries and library patrons. The reality is that in most federal universities, postgraduate students struggle to make proper utilization of the digital reference resources made available in their university libraries, due to some challenges that hinder them.

As such, the need for utilization of digital reference resources amongst postgraduate students is imperative as digital reference resources will provide the students with access to a very large information collections. In utilization of digital reference resources, there are possible challenges, solutions faced by the postgraduate students and skills needed for effective utilization of the resources. Therefore, in order to close the gaps established, this study became paramount to investigate the assessment of postgraduate students challenges, solutions and skills in utilization of reference resources in digital literacy in three Federal University libraries in North Central, Nigeria

Objectives of the Study

The main objective of this study is to assess postgraduate students' challenges, solutions, and skills in utilizing digital reference resources in university libraries across North Central Nigeria. The specific objectives are to:

1. examine the challenges that hinder the effective utilization of digital reference resources by postgraduate students at the University of Jos, University of Abuja, and Joseph Sarwuan Tarka University of Agriculture, Makurdi, in North Central Nigeria.
2. identify strategies to enhance the utilization of digital reference resources for improved research by postgraduate students at the University of Jos, University of Abuja, and Joseph Sarwuan Tarka University of Agriculture, Makurdi, in the North Central Geopolitical Zone of Nigeria.
3. assess the skills required by postgraduate students for effective utilization of digital reference resources at the University of Jos, University of Abuja, and

Joseph Sarwuan Tarka University of Agriculture, Makurdi, in North Central Nigeria.

Research Questions

The following research questions have been formulated to guide the study:

1. What are the challenges hindering the effective utilization of digital reference resources by postgraduate students at the University of Jos, University of Abuja, and Joseph Sarwuan Tarka University of Agriculture, Makurdi, in North Central Nigeria?
2. What strategies can be implemented to improve the utilization of digital reference resources for research by postgraduate students at the University of Jos, University of Abuja, and Joseph Sarwuan Tarka University of Agriculture, Makurdi, in North Central Nigeria?
3. What skills are required by postgraduate students for the effective utilization of digital reference resources at the University of Jos, University of Abuja, and Joseph Sarwuan Tarka University of Agriculture, Makurdi, in North Central Nigeria?

Review of Related Literature

In today's digital age, university libraries have become pivotal in facilitating research and academic success for postgraduate students. The integration and utilization of digital reference resources are critical for supporting academic work, providing students with access to vast amounts of information beyond the traditional library shelves. However, despite the importance of these resources, many postgraduate students in North Central Nigeria face significant challenges when attempting to fully utilize digital reference materials. Inadequate infrastructure, limited technical support, and low levels of digital literacy are among the key barriers to effective use.

Digital Reference Resources

Digital reference resources are defined as electronic materials provided by libraries to meet the information needs of users via online platforms. These resources encompass a wide range of digital materials, including e-books, online journals, databases, theses, dissertations, and technical reports. Digital resources offer users the opportunity to access scholarly information from virtually anywhere, expanding the reach of libraries beyond their physical spaces. As Barfi, Afful-Arthur, and Manu (2018) assert, digital reference materials are essential tools for modern education and research. The integration of digital reference services in academic libraries allows for more efficient service delivery, enabling users to access information on demand, thereby enhancing learning experiences and supporting academic success.

Challenges in Utilizing Digital Reference Resources

Despite the significant benefits digital reference resources provide, several challenges hinder their effective utilization among postgraduate students in Nigerian universities, particularly in North Central Nigeria. One of the major

barriers to the effective utilization of digital resources is inadequate funding. Libraries require substantial investments to acquire the necessary hardware, software, and internet infrastructure. As Lucky (2015) observes, while digital formats have reduced costs associated with printed materials, these savings are often offset by the high costs of maintaining computers, network systems, and digital subscriptions. Furthermore, maintaining digital systems requires ongoing financial investments in equipment upgrades, software licensing, and training for library staff and users. The lack of sustained funding thus hampers the availability and quality of digital reference services in many universities. Another major challenge is the shortage of skilled personnel, particularly in the management of digital platforms. Adeniran (2014) notes that the successful implementation and utilization of digital libraries depend on the availability of trained staff who possess technical expertise in managing digital systems, web technologies, and digital indexing. Unfortunately, many academic libraries in Nigeria suffer from a dearth of such expertise, leaving gaps in the effective operation and management of digital reference services. The lack of adequately trained staff leads to inefficient service delivery and creates frustration among students attempting to access digital resources. Inadequate infrastructure is a persistent issue for Nigerian universities. Erratic power supply and poor internet connectivity significantly hinder the operation of digital libraries, making it difficult for students to access resources around the clock. As Olijo (2018) points out, digital libraries rely on continuous electricity and stable internet access for their servers and digital repositories.

The absence of these essential services poses a major obstacle to ensuring the reliability and availability of digital reference resources for postgraduate students. Copyright and licensing agreements present additional challenges for academic libraries. The growing reliance on digital content has led publishers to implement restrictive licensing agreements that limit access to certain resources. Ashcroft (2018) highlights the issue of ownership versus licensing, where publishers control access to digital materials through costly subscription models. These restrictions limit the ability of libraries to engage in resource-sharing initiatives and complicate access to essential academic materials for students. As a result, the high cost of digital subscriptions and licensing fees places further strain on already underfunded university libraries.

Strategies to Enhance the Utilization of Digital Reference Resources

To address the challenges impeding the effective use of digital reference resources, universities and library administrators can adopt several strategies aimed at improving access, funding, and skill development. Adequate and sustained funding is critical to addressing many of the issues surrounding digital resource utilization. As Madu, Aboyade, & Ajayi (2019) emphasize, institutions should collaborate with national organizations such as the Tertiary Education Trust Fund (TETFund) and the National Communication Commission (NCC) to ensure sufficient financial resources for the establishment and maintenance of

digital libraries. Increased budgetary allocations will enable universities to procure the necessary hardware and software and ensure that digital services are continuously available. Incorporating digital literacy skills into the curriculum for postgraduate students, especially those studying library and information science, will significantly improve their ability to navigate and utilize digital platforms. Anunobi and Emezie (2020) stress the importance of equipping library science students with the skills and competencies required to manage and utilize digital information systems effectively. By integrating digital literacy training into academic programs, universities can enhance the overall digital competence of both librarians and postgraduate students. Librarians and postgraduate students must be provided with regular training to keep pace with the rapidly evolving digital landscape. Professional development programs focusing on information retrieval, digital management, and troubleshooting should be offered to ensure that librarians and students possess the necessary skills to use digital resources effectively. According to Madu et al. (2019), continuous professional development is crucial for ensuring that library staff are well-equipped to manage digital services and guide students in accessing these resources.

Digital Skills and Competences Required

The growing reliance on digital reference resources has transformed how postgraduate students conduct research and access academic information. To effectively utilize these resources, students must develop a range of digital skills and competences. Information and data literacy are essential skills that allow students to search for, filter, and evaluate digital content. Vuorikari et al. (2022) argue that students must be proficient in browsing digital databases, selecting relevant information, and critically evaluating the credibility of sources. This requires both technological competence and the ability to navigate complex digital systems efficiently. Digital reference services require students to develop strong critical thinking and problem-solving skills. Afukidang, Aghadiuno, and Ebaye (2024) highlight the growing importance of media literacy as students increasingly rely on digital tools to communicate, collaborate, and share information online. Media literacy equips students with the ability to critically engage with digital content, ensuring that they use these tools effectively for academic purposes.

Theoretical Framework: Connectivism Theory

The Connectivism Theory, developed by George Siemens in 2004, provides a relevant framework for understanding the importance of digital literacy and ICT skills in the academic environment. Siemens' theory posits that learning occurs within a dynamic environment where technology plays a central role in connecting individuals to knowledge. In the context of digital reference resources, postgraduate students' ability to access and utilize digital information depends on their capacity to connect to various digital platforms and interact with diverse sources of knowledge. The theory underscores the need for universities to equip

students with the necessary digital skills to navigate these complex environments and take full advantage of the opportunities provided by digital reference resources. Universities must adopt strategic interventions to overcome these challenges, including improving funding, offering digital literacy training, and providing continuous professional development for librarians. By equipping students with the necessary digital skills and competences, universities can enhance the overall research capabilities of their postgraduate students and foster academic excellence across North Central Nigeria.

Research Methodology

The study employed the descriptive survey design. Three (3) research questions guided the study. The population of the study comprised of eight thousand seven hundred and twenty seven (8,727) postgraduate students in the three universities studied. The sample size of 871 postgraduate students were used for the study. They were randomly selected from the three universities investigated. The instrument used was a self-developed structured questionnaire. A total of 871 copies of questionnaires were given to experts to validate, before being distributed to respondents and 593 were returned and filled correctly. This gave a response rate of 68.1%. The results were presented in tables. Data collected were presented using mean and standard deviation to answer the research questions. The respondents were given the research instruments, in which they were to answer by stating their level of agreement with them using Likert scale; strongly Agree (SA) = 4, Agree (A) =3, Disagree (D) =2 and Strongly Disagree (SD) =1 and Highly Possessed (HP) =4, Moderately Possessed (MP) =3, Less Possessed (LP) = 2, Not Possessed (NP) = 1 respectively.

Results

This section is concerned with data presentation, analysis, interpretation and discussion of findings. The results are presented and analyzed based on the research questions

Research Question 1: to establish the challenges associated with the utilization of digital reference resources by postgraduate students.

Table 1: Mean Responses of Challenges faced by the postgraduate students in the utilization of digital reference resources in the library.
University of Jos, University of Abuja and Joseph Sarwuan Tarka University of Agriculture

		Mean	Mean	Mean	Mean	SD	RD	
1	Lack of browsing skills	2.29	3.06	3.23	2.64	1.18	9th	A
2	Poor internet supply	2.83	2.92	2.81	2.85	1.22	1st	A
3	Power failure	2.23	3.19	3.29	2.66	1.22	8th	A
4	Low internet bandwidth	2.39	3.52	3.29	2.82	1.12	2nd	A
5	High cost of accessing relevant materials	2.51	2.67	2.71	2.59	1.12	10th	A
6	Cost of subscription/packages	2.41	3.20	3.33	2.77	1.17	6th	A
7	Complexity of online Resources	2.64	2.87	3.11	2.79	1.09	5th	A
8	Uncooperative attitude of library staff	2.75	3.03	2.72	2.80	1.18	4th	A
9	Insufficient Computers	2.73	3.17	2.66	2.81	1.08	3rd	A
10	Irrelevant Digital Resources	2.36	3.06	3.43	2.73	1.12	7th	A
	Cluster Mean	**2.51**	**3.07**	**3.06**	**2.74**	**1.15**		A

Key: A= Agree, D=Disagree, UNIJOS= University of Jos, UNIABJ= University of Abuja, UAM= Joseph Sarwuan Tarka University of Agriculture Makurdi, R=RANK, D= DECISION

The respondents were asked to indicate the challenges faced by the postgraduate students in the utilization of digital reference resources in the library. Using the criterion mean of 2.50 on a 4 point rating scale, the above table indicates that the respondents accepted all the ten listed factors are challenges. The ranking of the items indicates that Poor internet supply (x=2.85, SD=1.22) is ranked highest, while high cost of accessing relevant materials (x=2.59, SD=1.12) is ranked lowest as regards to challenges faced by the postgraduate students in the awareness and utilization of digital reference resources and services in the library.

Research Question 2: To determine the appropriate strategies for the utilization of digital reference resources in the library.

Table 2: Mean Responses of Solutions for enhancing effective utilization of digital reference resources in the library.
University of Jos, University of Abuja and Joseph Sarwuan Tarka University of Agriculture

		Mean	Mean	Mean	Mean	SD	RD	
1.	Uninterrupted power supply	2.53	3.10	3.17	2.79	1.11	8th	A
2.	Minimal cost of maintenance	2.66	3.16	3.03	2.85	1.08	7th	A
3.	Effective services by network service providers	3.25	3.39	3.44	3.32	.97	2nd	A
4.	Appropriate search engines should be provided	3.09	3.24	3.48	3.20	.99	5th	A
5.	Steady internet supply	3.19	3.48	3.48	3.31	.95	3rd	A
6.	Librarians should be friendly and accommodating	2.76	3.30	3.29	2.98	1.13	6th	A
7.	Result oriented training programs to help students overcome techno phobia should be organized	3.34	3.28	3.45	3.35	.68	1ist.	A
8.	Relevant Digital Resources should be made available	3.27	3.29	3.18	3.26	.71	4th	A
9.	Computers should be made very sufficient for students use	2.32	3.08	3.27	2.67	1.06	10th	A
10.	Low cost of accessing relevant materials	2.32	2.98	3.41	2.68	1.09	9th	A
	Cluster Mean	**2.87**	**3.23**	**3.32**	**3.04**	**.98**		**A**

Key: A= Agree, d=Disagree, UNIJOS= University of Jos, UNIABJ= University of Abuja, UAM= Joseph Sarwuan Tarka University of Agriculture Makurdi, R=RANK, D= DECISION

The respondents were asked to indicate Strategies for enhancing effective utilization of digital reference resources and services in the library. The analysis of data showed that the respondents' accepted all the ten (10) mentioned strategies in the table. The ranking of the items in the cluster indicates that Result oriented training programs to help students overcome techno phobia should be organized (x=3.35, SD=.68) is ranked highest, while Computers should be made very sufficient for students use (x=2.67, SD=1.06) is ranked lowest.

Research Question 3: To find out the skills possessed by postgraduate students for effective utilization of digital reference resources.

Table 3: Mean Responses of Skills needed by Postgraduate Students for effective utilization of Digital Reference in the Library.
University of Jos, University of Abuja and Joseph Sarwuan Tarka University of Agriculture

		Mean	Mean	Mean	Mean	SD	RD	
1.	Typing skills	3.61	3.78	3.57	3.64	.52	3rd	HP
2.	Communication Skills	3.46	3.52	3.48	3.48	.52	4th	MP
3.	General Internet Skills	3.85	3.88	3.86	3.86	.88	1st.	HP
4.	Web Access Skills	2.51	3.40	3.23	2.85	1.16	8th	MP
5.	Information Retrieval Skill	2.61	2.94	3.23	2.81	1.22	9th	MP
6.	Sending and Receiving E-mail	2.69	3.02	3.28	2.88	1.05	7th	MP
7.	Skills in Use of Search Engines	2.31	2.85	2.74	2.51	1.18	10th	MP
8.	Skills in Use of Online Dictionary and Thesaurus	2.76	3.13	2.98	2.89	1.02	6th	MP
9.	Word Processing Skills	3.61	3.78	3.82	3.69	.60	2nd	HP
10.	Save and Save Documents	2.94	3.09	2.98	2.98	1.10	5th	MP
	Cluster Mean	**3.04**	**3.34**	**3.32**	**3.16**	**.88**		**MP**

Key: HP=Highly Possessed, MP= Moderately Possessed, LP= Less Possessed (LP), NP= Not Possessed. *UNIJOS= University of Jos, UNIABJ= University of Abuja, UAM= Joseph Sarwuan Tarka University of Agriculture Makurdi, R=Rank, D= Decision***.**

The respondents were asked to indicate the Skills Possessed to enhance research by Postgraduate Students for effective utilization of Digital Reference Services in the Library. Finally, the ranking of the items indicates that General Internet Skills (x=3.86, SD=.88) is **ranked highest, while** Skills in Use of Search Engines (x=2.51, SD=1.18) is ranked lowest as regards to Skills Possessed to enhance research by Postgraduate Students for effective utilization of Digital Reference Services in the Library.

The respondents indicated the skills they possess for utilizing digital reference resources. "General internet skills" (Mean = 3.86, SD = 0.88) ranked highest, while "Skills in use of search engines" (Mean = 2.51, SD = 1.18) ranked lowest.

Challenges faced by Postgraduate Students: The study revealed significant challenges that impede the effective use of digital reference resources in the libraries. These challenges were poor internet supply and the high cost of accessing relevant materials. Power failure, insufficient computers, and low internet bandwidth were also highlighted as critical challenges. Postgraduate students often rely heavily on digital reference materials for research, but these limitations hinder their ability to effectively access and utilize these resources. This situation exacerbates the digital divide, leaving students with less access to critical academic materials.

Solutions for Enhancing Utilization of Digital Resources: Several strategies were identified to improve the utilization of digital reference resources. The need

for result-oriented training programs was ranked as the most important solution, especially to help students overcome technophobia and increase their digital literacy. Regular training sessions aimed at enhancing students' competency in navigating online databases, search engines, and digital libraries were emphasized as a means of closing the skills gap. Also, the study revealed that steady internet supply and efficient services from network providers would be essential in addressing the internet connectivity issues. Making relevant digital resources more available and reducing the cost of accessing these materials were also seen as significant steps toward improving utilization, Skills Possessed by Postgraduate Students: The study also examined the level of skills possessed by the postgraduate students in utilizing digital reference resources. General internet skills were found to be highly possessed among students, suggesting that most students are proficient in basic digital operations such as web navigation and information retrieval. However, there was a need for improvement in more specialized skills, such as the use of search engines, online dictionaries, and thesauruses, which are critical for academic research. Typing skills, communication skills, and word processing abilities were also evaluated, and students were found to moderately possess these skills.

Discussion of Findings

The findings of this study are consistent with previous research, such as Ale and Omeneke (2017), who noted that library users' expectations and tastes have evolved in line with technological advancements. In the current digital age, libraries must not only provide traditional resources but also enhance their digital services to meet the needs of modern researchers. The lack of adequate infrastructure, however, remains a key barrier to achieving this. Furthermore, as noted by the findings, internet connectivity and access costs are among the most pressing challenges. In today's digital era, the ability to access academic resources online is critical, and without reliable internet, postgraduate students may be severely disadvantaged in conducting research. Similarly, the high costs associated with digital resources place an additional financial burden on students, many of whom may not have the means to consistently afford subscription fees or access to premium academic materials.

On the solutions side, the recommendation for regular orientation and training programs to help students overcome technophobia is a crucial step. Continuous education on digital literacy will not only improve students' abilities to utilize digital tools but also increase their confidence in using these resources effectively for academic research.

Conclusion

The findings of the study revealed that the challenges, solutions and

opportunities in utilization of digital reference resources amongst postgraduate students in Federal Universities the in North Central Geopolitical Zone of Nigeria, possessed above average in the digital reference resources identified by the researcher, and that most of the postgraduate students also utilize the digital reference resources to a great extent. The postgraduate students also agreed that the digital reference resources have great impact in enhancing the quality of their research.

Based on the findings of the study, it concludes that digital reference resources have shown a great impact on enhancing research in our university libraries. It has brought a lot of innovations and revolutions into the way research can be enhanced for better productivity. However, several challenges were identified in the study militating against the effective utilization of digital reference resources they include: lack of skills and competence in digital literacy, poor internet supply, power failure, low internet bandwidth, high cost of accessing relevant materials, and cost of subscription/packages complexity of online resources, uncooperative attitude of library staff, insufficient computers, and irrelevant digital resources.

Recommendations

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

1. Universities must prioritize the provision of reliable internet services and ensure a stable power supply to reduce disruptions in the use of digital reference resources.
2. Organizing regular digital literacy workshops and seminars for postgraduate students will ensure that they remain adept at using evolving digital tools and resources.
3. Universities should invest in sufficient computers and other necessary hardware to meet the demands of postgraduate students.
4. Librarians play a critical role in guiding students in the use of digital resources.

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