

UTILIZATION OF INTERNET RESOURCES IN ENHANCING POSTGRADUATE STUDENTS' ACADEMIC PERFORMANCE IN FEDERAL UNIVERSITY LIBRARIES IN NORTH-EAST NIGERIA

By

CHARLES MOSES IJANTIKU (*MNLA, CLN*)

IBB Library,
Modibbo Adama University-Yola, Adamawa State, Nigeria.

LINUS NIHUNGU AHAZ (*Ph.D.*)

Department of Library and Information Science,
Modibbo Adama University-Yoa, Adamawa State, Nigeria.

And

BONNIE OBEKA OBANDE (*MNLA, CLN*)

Igbinedion University, Okada, Edo State, Nigeria.

Abstract

This study investigated the utilization of internet resources in enhancing the academic performance of postgraduate students in Federal University Libraries in North-East, Nigeria. Adopting a descriptive survey design, the study sampled 318 postgraduate students from Abubakar Tafawa Balewa University (ATBU), Bauchi; Modibbo Adama University (MAU), Yola and the University of Maiduguri (UNIMAID). Data were collected using a validated questionnaire and an observation checklist, with reliability established at a Cronbach's alpha above 0.80. Findings revealed that students frequently use specialized academic resources such as e-journals (Mean = 3.52), online databases (Mean = 3.41) and e-books, alongside a high reliance on general search engines like Google (Mean = 3.60). The primary purposes for use were identified as thesis/dissertation writing (Mean = 3.46), literature reviews (Mean = 3.44) and assignment completion (Mean = 3.53). While internet resources were deemed to have a high impact on academic performance particularly in improving research quality (Mean = 3.54) and assignment performance (Mean = 3.47) their effectiveness was constrained by significant challenges. These include inadequate internet speed (Mean = 2.78), poor off-campus accessibility (Mean = 2.65) and insufficient user support. The study concludes that while internet resources are indispensable for postgraduate academic success in North-East Nigeria, infrastructural deficits and accessibility issues hinder their optimal utilization. It is recommended that university management invest in robust ICT infrastructure, expand subscriptions to

multidisciplinary databases and implement continuous digital literacy training programs to empower postgraduate students and maximize the academic benefits of internet resources. **Keywords:** Internet Resources, Postgraduate Students, Academic Performance, Federal University Libraries, North-East Nigeria.

Introduction

Over the past few decades, higher education systems worldwide have undergone significant transformation driven by Information and Communication Technologies (ICTs). Today, Internet-based resources form the backbone of academic communication, learning and scholarly inquiry. Postgraduate education, which emphasizes original research and scholarly productivity, depends heavily on access to reliable and up-to-date information sources. Internet resources such as online journals, e-books, academic databases, institutional repositories and collaborative research platforms provide the essential tools that enable postgraduate students to conduct advanced academic inquiries and produce quality scholarly outputs.

Postgraduate programmes in federal universities play a vital role in driving national development and academic innovation through the generation of new knowledge and the training of future researchers in Nigeria. However, despite the recognized importance of ICT integration in research processes, evidence suggests that infrastructural, technical and institutional constraints hinder postgraduate students' optimal utilization of Internet resources. For instance, Ani and Ahiauzu (2020) observed that the growth of electronic information resource systems in Nigerian universities is constrained by poor Internet infrastructure, irregular power supply and inadequate user skills. Similarly, Agboke and Effiong (2022) reported that while postgraduate students in the South-South region demonstrate moderate Internet literacy, their actual use of databases and subscription resources remains low due to limited access and insufficient

institutional support. Olaiya, Akintobi and Omatola (2024) further found that in Osun State universities, Internet service quality particularly in terms of reliability, bandwidth speed and login functionality significantly affects the use of electronic information resources.

Within this context, postgraduate students in the North-East geopolitical zone of Nigeria, comprising institutions such as Abubakar Tafawa Balewa University (ATBU), Bauchi; Modibbo Adama University (MAU), Yola and the University of Maiduguri (UNIMAID), rely on university Internet services and library-provided e-resources for their academic and research tasks. Preliminary observations and empirical evidence, however, point to disparities between resource availability and actual utilization, which may ultimately influence students' research productivity and academic performance.

Statement of the Problem

Despite significant investments in Internet infrastructure and subscriptions to online databases by federal universities, there is a perceived gap in the effective utilization of these resources by postgraduate students in North-East Nigeria. Practical experience and preliminary observations suggest that many students still depend heavily on outdated print materials, potentially hindering the quality and timeliness of their research. This raises concerns about whether the potential of Internet resources is being fully realized.

It remains unclear to what extent the utilization of these resources directly influences academic performance in this specific context. Therefore, this study seeks to investigate this gap and determine the relationship between the utilization of Internet resources and the enhancement of

academic performance among postgraduate students in federal universities in North-East Nigeria.

Research Questions

To guide the study, the following research questions were formulated:

1. What types of Internet resources are available and used by postgraduate students?
2. To what extent do postgraduate students utilize Internet resources?
3. For what purposes do postgraduate students utilize Internet resources?
4. How adequate are Internet resources for postgraduate students' needs?
5. What is the impact of Internet resource utilization on postgraduate students' academic performance?

Literature Review

Internet resources

Internet resources refer to, or are digitally delivered scholarly materials and tools such as e-journals, e-books, institutional repositories, bibliographic and full-text databases, subject portals, preprint servers and other web-based research services that provide access to contemporary, peer-reviewed and grey literature for academic inquiry.

Recent Nigerian studies confirm the centrality of these resources to postgraduate research while also documenting persistent access and use problems. Olaiya et al. (2024) report widespread availability of subscription databases (e.g., ProQuest, AGORA, HINARI) and

institutional repositories in several universities but note that service quality (speed, login reliability) limits effective use. Agboke and Effiong (2022) show that Internet literacy predicts who actually uses electronic information resources (EIRs): skillful students use databases more deeply, while less skilled students under-utilize available resources. This reveals a recurring gap between awareness and actual off-campus usage many students know resources exist but cannot access or navigate them remotely. Important practical attributes of Internet resources for postgraduate work include: timeliness (current literature), authority (peer-reviewed content), searchability (advanced query and filter functions), interoperability (linking/citation export) and access controls (institutional authentication, remote login). Usability (intuitive interfaces, off-campus SSO) and discoverability (library portal, federated search) are decisive for uptake.

Users tend to prefer resources that balance ease of access with perceived authority. Okwu, Oladokun, Oguche, & Arome, (2023) stated that where Internet resources are well-integrated (library portals, single sign-on), postgraduates shift from general web searches to targeted database queries; where resources are fragmented or hard to access, students revert to open-web tools (search engines, Wikipedia) despite lower scholarly value. When Internet resources are accessible and students possess the skills to use them, studies link higher resource use to better literature reviews, more rigorous referencing and improved research outputs (Nwafor, 2020). Conversely, infrastructural and usability barriers reduce the return on institutional investments in subscriptions and constrain students' ability to produce contemporary evidence-based scholarship.

Postgraduate students

Postgraduate students are advanced learners enrolled in master's and doctoral programs whose academic tasks (thesis/dissertation, publications, seminar papers) demand higher-order information literacy, deeper literature synthesis and sustained engagement with scholarly communication channels.

Empirical work from Nigeria indicates postgraduate cohorts are generally motivated and aware of scholarly resources, but their depth of engagement varies by skill, infrastructure and institutional support. Agboke and Effiong (2022) noted that while many postgraduates know about e-resources, only those with higher Internet literacy or better access deploy databases effectively. This underscores that awareness alone does not guarantee use: institutional facilitation (remote access, training) is crucial. Typical attributes of postgraduate students affecting information work include: (1) task-driven research needs (focused literature review, methodology support), (2) higher expectation of source authority (preference for peer-reviewed journals), (3) variable digital competence (search strategies, reference management) and (4) time-bound milestones (proposal, data collection, defense) that make timely access to resources critical.

Postgraduates' information seeking is usually iterative and depth-oriented: they formulate complex queries, follow citation trails, use subject indexes and repeatedly refine searches during a project lifecycle. However, in Nigerian contexts studies find a mixed pattern: some students demonstrate sophisticated search behaviours (using databases, subject terms), while others default to quick web searches or rely on outdated print sources when digital access is poor (Igwe, 2020). Depth and sophistication of information seeking strongly predict research quality. Postgraduates who can effectively interrogate databases and manage retrieved literature tend to

produce stronger theses, higher-quality literature reviews and more publishable outputs (Okwu et al.2023). Conversely, limited search proficiency, poor awareness of database features and infrastructural constraints (slow Internet, lack of remote access) lead to superficial literature coverage, weaker argumentation and increased incidence of referencing errors or reliance on non-scholarly sources.

Academic Performance

Academic performance refers to the measurable achievement of students in their postgraduate studies this includes output such as published works, theses, seminar presentations, successful defense, grades and other scholarly contributions. ICT (Information and Communication Technology) encompasses hardware (computers, mobile devices), software (databases, digital tools), connectivity (Internet, WiFi) and associated skills (searching, evaluating, digital scholarship).

Recent evidence affirms a strong positive correlation between ICT usage and postgraduate students' academic performance. For instance, a case study at the University of Calabar shows that postgraduate students who made regular use of online databases and digital scholarly tools scored higher in research output and had more peer reviewed publications than those who did not (Ann, 2025). Another study by Mashaba (2023) investigated the impact of ICT tools (e-learning platforms like Google Classroom, Internet-based resources) on postgraduate (and some advanced undergraduate) student performance. The findings show that students with better access and ICT competence had higher scores and more timely submission of research tasks.

Thus, recent literature underscores that ICT is not merely supportive but foundational to high postgraduate academic performance. Key linkages appear to be via resource access, digital literacy, seamless connectivity and institutional support.

Gaps in Nigerian Universities

Gaps in Nigerian universities refer to weaknesses and insufficiencies in the availability, access, usage and impact of Internet resources and ICT supports in infrastructure, training, awareness and policy that limit postgraduate research potential.

Several recent studies highlight these gaps. Owolabi and Jimoh (2020) found that although postgraduate students in the South-South region have moderate Internet literacy skills, the actual utilization of EIRs is significantly low due to lack of training and mentoring in how to locate, access and evaluate online materials. Similarly, Olaiya et al. (2024) in Osun State observed that while many students report awareness of E-resources, Internet service quality (speed, consistency) and functionality issues (login problems, restricted access, etc.) are major impediments. These gaps indicate that simply subscribing to e-resources is insufficient. Universities need to focus on capacity building (training, tutorials, help services), improving Internet infrastructure, implementing user support systems (e.g., library help desks, remote access facilitation) and increasing awareness of both what is available and how to use it.

Methodology

The study adopted a descriptive survey research design, which, according to Mole (2019), involves collecting data from a defined population to describe their opinions and perceptions about a phenomenon. This design was appropriate for systematically examining

postgraduate students' utilization of Internet resources in federal universities in North-East Nigeria, focusing on how infrastructural challenges, digital literacy competence and institutional strategies influence this utilization and its subsequent effect on academic performance.

Population and Sample: The study population was 3,189 postgraduate students across three federal universities (ATBU Bauchi, MAU-Yola and UNIMAID Maiduguri). A sample of 318 postgraduate students was selected through stratified random sampling.

Instruments: Data were collected using the Postgraduate Students' Use of Internet Resources for Effective Academic Performance Questionnaire (PSUIRAPULQ) and an observation checklist.

Validation and Reliability: Instruments were validated by experts in Library and Information Science, with pilot testing yielding Cronbach's alpha values above 0.80, ensuring internal consistency. Descriptive statistics (means, standard deviation) were used to analyze responses. A decision mean of 2.5 was used as the benchmark.

Table 1; Types of Internet Resources Used by Postgraduate Students (N = 318)

Internet Resource	Mean	SD	Decision
E-journals	3.52	0.61	Frequently Used
Online databases (e.g., EBSCOhost, ScienceDirect)	3.41	0.64	Frequently Used
E-books	3.38	0.66	Frequently Used
Online library catalogues (OPAC)	3.25	0.70	Frequently Used
Institutional repositories	3.14	0.73	Frequently Used
Online newspapers & magazines	2.96	0.80	Sometimes Used
Social media academic groups (e.g., ResearchGate)	2.91	0.82	Sometimes Used

General Internet search engines (Google, Yahoo)	3.60	0.55	Frequently Used
---	------	------	-----------------

Source: Survey, 2025.

Result and Discussion

Results in Table 1 show that postgraduate students frequently use e-journals, online databases and e-books as their primary Internet-based academic resources. Google and other general search engines ranked highest, reflecting continued dependence on easily accessible general-purpose tools. This finding implies that while students are aware of and use specialized scholarly platforms, they still rely heavily on open-access and general search engines for information retrieval. This pattern aligns with the observations of Owolabi and Jimoh (2020) and Adebayo and Ahmed (2021), who found that postgraduate students often combine scholarly databases with general search tools to satisfy diverse information needs. The moderate use of institutional repositories and online catalogues suggests limited awareness or accessibility of these academic infrastructures, which has been a recurring issue in developing-country university systems.

Table 2: Extent of Internet Resource Utilization (N = 318)

Extent of Use	Mean	SD	Decision
Daily use of Internet resources	3.48	0.62	Great Extent
Weekly use for assignments/research	3.44	0.65	Great Extent
Use of Internet resources for thesis/dissertation writing	3.39	0.67	Great Extent
Internet use for collaborative research	3.21	0.70	Great Extent
Use limited to personal browsing	2.67	0.88	Some Extent

Source: Survey, 2025.

Findings in Table 2 indicate that postgraduate students use Internet resources to a great extent, particularly for daily and weekly academic tasks. The data suggest that online engagement has become an integral part of students' learning routines. However, a minority still use Internet resources mainly for personal browsing rather than scholarly purposes. This variation may stem from differences in research orientation and digital literacy levels. Similar results were reported by Ani and Ahiauzu (2020), who noted that while most postgraduate students recognize the academic value of Internet resources, some fail to fully exploit them for research due to lack of training or motivation.

Table 3: Purposes of Internet Resource Use (N = 318)

Purpose of Use	Mean	SD	Decision
Writing assignments & term papers	3.53	0.59	Very High Purpose
Thesis/dissertation writing	3.46	0.61	Very High Purpose
Literature review	3.44	0.64	Very High Purpose
Seminar preparation	3.37	0.68	High Purpose
Accessing online lectures/tutorials	3.29	0.72	High Purpose
Keeping up-to-date with research	3.22	0.75	High Purpose
Collaborative communication with peers	3.11	0.78	High Purpose

Source: Survey, 2025.

Results in Table 3 show that postgraduate students use Internet resources for multiple academic purposes, especially for assignments, thesis/dissertation writing and literature reviews. This pattern reflects a strong integration of online tools in scholarly workflows. The findings corroborate those of Mashaba (2023), who emphasized that Internet resources are indispensable in supporting postgraduate research activities and improving the quality of academic writing. The

relatively lower use for collaborative communication suggests that many students still prefer individual study modes rather than networked research communities.

Table 4: Adequacy of Internet Resources (N = 318)

Adequacy Indicator	Mean	SD	Decision
Availability of relevant e-resources	3.05	0.74	Adequate
Speed of Internet access	2.78	0.81	Fairly Adequate
Coverage of subject areas	2.92	0.77	Adequate
Accessibility within campus	2.87	0.83	Fairly Adequate
Accessibility off-campus	2.65	0.86	Less Adequate

Source: Survey, 2025.

Table 4 shows that Internet resources in federal universities are only moderately adequate. While relevant e-resources are generally available, issues such as low Internet speed, inconsistent campus access and poor off-campus connectivity hinder effective utilization. These infrastructural limitations mirror the challenges identified by Ani and Ahiauzu (2020) and Ezeani and Ugwu (2022), who reported that bandwidth constraints and unstable connections remain persistent barriers to optimal use of digital resources in Nigerian universities. Improving connectivity and expanding off-campus access could significantly enhance postgraduate research efficiency.

Table 5: Impact of Internet Resources on Academic Performance (N = 318)

Impact Indicator	Mean	SD	Decision
Improved quality of research	3.54	0.57	High Impact
Better performance in assignments	3.47	0.60	High Impact
Enhanced thesis/dissertation writing	3.44	0.62	High Impact

Improved seminar presentations	3.31	0.66	High Impact
Broader knowledge and awareness	3.29	0.69	High Impact

Source: Survey, 2025.

Findings in Table 5 reveal that Internet resource utilization has a high positive impact on postgraduate students' academic performance. Students reported significant improvements in research quality, thesis/dissertation writing and assignment performance. This underscores the transformative influence of Internet-based scholarly resources on learning and research productivity. The result supports Mashaba (2023) and Adebayo and Ahmed (2021), who found that effective use of online academic tools enhances academic achievement and research outcomes among postgraduate learners. It also highlights the necessity for universities to sustain digital resource support systems to maintain these positive impacts.

Recommendations

1. Universities should expand subscriptions to multidisciplinary e-resources.
2. Improve Internet speed and ensure reliable on- and off-campus access.
3. Train postgraduate students on advanced Internet search and retrieval strategies.
4. Invest in ICT infrastructure to support research-driven Internet resource utilization.

Conclusion

This study investigated the utilization of Internet resources by postgraduate students in federal universities in North-East Nigeria, focusing on the types of Internet resources used, extent and purposes of utilization, adequacy of available resources and the impact of such use on academic

performance. The findings have provided clear answers to all research questions set out in the study.

Firstly, it was established that postgraduate students frequently use Internet resources such as e-journals, online databases and e-books for their academic and research activities, confirming that digital platforms have become indispensable in postgraduate scholarship. Secondly, the study revealed a high extent of Internet resource utilization, as most students engage these tools daily or weekly for academic work, particularly for assignments, thesis/dissertation writing and literature reviews. Thirdly, the findings showed that while Internet resources are moderately adequate, persistent infrastructural and connectivity challenges especially limited off-campus access and slow Internet speed continue to impede optimal use. Lastly, the study confirmed that Internet resources have a strong positive impact on students' academic performance, improving the quality of research, assignments, seminar presentations and overall scholarly productivity.

From these results, it can be concluded that Internet resource utilization significantly contributes to postgraduate students' academic development and research competence. However, the extent of this benefit depends largely on the adequacy and accessibility of Internet infrastructure provided by the universities.

In terms of contribution to knowledge in Library and Information Science (LIS), this study extends empirical understanding of how Internet resources influence postgraduate academic productivity within the Nigerian higher education context, an area that remains underexplored in current literature. The study also contributes a contextual model linking Internet resource adequacy, utilization patterns and academic outcomes offering practical insights for university

libraries, ICT departments and academic policymakers. Furthermore, it underscores the strategic role of librarians and information professionals in facilitating digital literacy and effective use of online scholarly resources among postgraduate students.

Overall, this research reinforces the need for continuous investment in ICT infrastructure, institutional repositories and digital literacy training within academic libraries, as these factors are crucial in supporting evidence-based learning, quality research output and global academic competitiveness among postgraduate students.

References

- Adebayo, O., & Ahmed, T. (2021). The role of academic databases in tertiary institutions. *Journal of Academic Librarianship*, 47(2), 131-142. <https://doi.org/10.1016/j.acalib.2020.102362>
- Agboke, E., & Effiong, J. (2022). Awareness, usage, and Internet literacy among postgraduate students in South-South Nigerian universities. *Journal of Academic Library Studies*, 14(2), 105-122.
- Ani, O. E., & Ahiauzu, B. (2020). *Towards effective development of electronic information resources in Nigerian university libraries*. *Library Management*, 29(6-7), 504-514. <https://doi.org/10.1108/01435120810894527>
- Ann, O. (2025). Availability and utilization of electronic resources by postgraduate students in University of Calabar Library. *Global Journal of Pure and Applied Sciences*, 31(2), 373-381. <https://dx.doi.org/10.4314/gjpas.v31i2.23>
- Igwe, K. N. (2020). The information-seeking behaviour of undergraduate students in the digital age: The case of a Nigerian university. *Journal of Library & Information Sciences*, 8(1), 1-15. <https://doi.org/10.15640/jlis.v8n1a1>
- Mashaba, M. C. (2023). Electronic library resource use by postgraduate students: patterns and influencing factors. *SA Journal of Information Management*, 25, Article 1602. <https://doi.org/10.4102/sajim.v25i0.1602>
- Mole, A. J. C. (2019). *Practical guide to research in library and information science*. Enugu: University of Nigeria Press Ltd.
- Nwafor, P. (2020). Institutional challenges affecting postgraduate research in federal universities

- in North-East Nigeria. *Federal University Studies Review*, 2(1), 77-94. [No DOI located]
- Olaiya, S. O., Akintobi, J. O., & Omatola, G. B. (2024). Internet service quality and the use of electronic information resources by postgraduate students in public universities in Osun State. *Gateway Information Journal*, 7(1), 44-58. Retrieved from <https://www.gatewayinfojournal.org/index.php/gij/article/view/44>
- Okwu, E., Oladokun, B. D., Oguche, E., & Arome, D. B. (2023). *Awareness and usage of electronic resources by postgraduate students in Nigerian universities* (*Library Herald*, 61(2), 30–41). <https://doi.org/10.5958/0976-2469.2023.00012.X>