

Evaluating the Adequacy, Utilization, and Support Systems for Postgraduate Students' Use of Electronic Information Resources in Academic Research in South East Nigeria

Ugwuowo, Lilian Chioma

*Department of Library and Information Science
Enugu State University of Technology
ugwuowochioma3@gmail.com*

Prof A. J. C. Mole

*Department of Library and Information Science
Enugu State University of Technology
austin.mole@unn.edu.ng*

ABSTRACT

This study evaluates the adequacy, utilization, and support systems for postgraduate students' use of electronic information resources (EIRs) in academic research across five federal universities in South-East Nigeria. Employing a descriptive survey research design, data were collected from a representative sample of 242 postgraduate students using validated tools: the Electronic Information Resources Access and Utilization Questionnaire (EIRAUQ) and Observation Checklist (EIRAUOC). The findings reveal that essential EIRs, such as e-books, e-journals, and institutional repositories, are generally adequate, while specialized resources, including patent databases and citation management tools, remain insufficient, posing challenges for niche research areas. Postgraduate students predominantly utilize EIRs for sourcing conceptual frameworks, professional discussions, and literature reviews but show less reliance on secondary literature and offline resources. Training programs effectively enhance students' confidence in resource navigation, yet their direct impact on research productivity is limited. Recommendations include improving access to specialized resources, integrating secondary literature into training, and refining programs to focus on translating skills into tangible research outputs. These findings underscore the critical role of EIRs in postgraduate research and the need for targeted enhancements to maximize their impact.

Keywords: *Resource Adequacy, Resource Utilization, Resource Support Systems, Postgraduate Students, Electronic Information Resources, Academic Research, South East Nigeria*

Introduction

The role of electronic information resources (EIRs) in postgraduate education has gained prominence due to their ability to provide instant access to vast amounts of scholarly materials. These resources include digital libraries, databases, e-books, e-journals, and other digital platforms essential for academic research. With the increasing reliance on these tools, it is imperative to evaluate their adequacy, utilization, and the

support systems available to postgraduate students. Proper access and use of EIRs have been shown to enhance research quality, critical thinking, and innovation in postgraduate education (Okon & Ime, 2018; Kasso & Balash, 2021).

The adequacy of electronic resources plays a vital role in meeting postgraduate research needs. Many academic institutions have invested significantly in EIRs to address the limitations of traditional library resources. However, challenges such as inadequate funding, limited access to up-to-

date resources, and technical barriers continue to undermine their adequacy (Olajide & Adebisi, 2019; Owolabi & Omotayo, 2020). Addressing these challenges is essential for creating an enabling research environment that meets the evolving needs of postgraduate scholars. Utilization of EIRs requires not just availability but also the capacity of students to effectively engage with these tools. Studies reveal that while postgraduate students often acknowledge the value of EIRs, many lack the advanced skills required for efficient usage. This includes difficulties with database navigation, keyword searching, and critically evaluating information. As a result, underutilization persists despite the availability of resources (Olanrewaju & Adetayo, 2020; Ahmed & Mahmoud, 2022). Bridging this gap demands targeted training and consistent user engagement.

Support systems are integral to the successful use of EIRs by postgraduate students. Well-structured training programs, technical support services, and user-friendly interfaces are necessary to maximize the benefits of these resources. Institutions that provide robust support mechanisms report increased user satisfaction and better research outcomes among students (Kasso & Balash, 2021; Ahmed & Mahmoud, 2022). Therefore, evaluating and enhancing these support systems should be a priority for academic institutions. The specific areas of research for which postgraduate students use EIRs highlight their diverse applications across disciplines. From literature reviews to data analysis, these resources serve as foundational tools for conducting rigorous academic inquiries. However, discrepancies in access and utilization patterns across disciplines emphasize the need for customized solutions that cater to the unique requirements of various academic fields (Olajide & Adebisi, 2019; Owolabi & Omotayo, 2020). Tailoring EIRs to meet specific research demands can optimize their impact.

Evaluating the adequacy, utilization, and support systems for EIRs is critical in ensuring their alignment with postgraduate research objectives. This assessment not only addresses immediate academic needs but also informs strategic planning for resource acquisition and user training. By understanding the interplay between these factors, institutions can better support their postgraduate communities, fostering a culture of research excellence (Ahmed & Mahmoud, 2022; Olanrewaju & Adetayo, 2020).

Objectives of the Study

The general purpose of this study is to evaluate the adequacy, utilization, and support systems for postgraduate students' use of electronic information resources in academic research in Nigeria. Specifically the study will:

1. ascertain the adequacy of the electronic information resources available to postgraduate students for their research needs
2. ascertain the areas of research for which the postgraduate students utilize electronic information resources
3. analyse the training and support provided to postgraduate students for the effective use of electronic information resources

Review of Related Literature

The adequacy of electronic information resources (EIRs) is critical for meeting the research needs of postgraduate students. Adequate EIRs ensure that students can access relevant, up-to-date, and comprehensive materials for academic success. Studies have shown that many Nigerian universities are making strides to improve EIR collections, with resources such as e-journals, databases, and digital libraries being prioritized (Olajide & Adebisi, 2019; Olanrewaju & Adetayo, 2020). However, gaps remain due to funding constraints, poor infrastructure, and limited subscriptions to international databases. These challenges hinder the ability of students to access high-

quality resources needed for rigorous research endeavours. Despite the growing availability of EIRs, their adequacy is often measured by their relevance to users' research needs. For postgraduate students, specialized resources tailored to their disciplines are essential. Research by Owolabi and Omotayo (2020) highlights the imbalance in resource distribution across disciplines, with science and technology fields often having better access than humanities and social sciences. This disparity underscores the need for academic institutions to invest in diversified EIR collections to ensure equitable access for all postgraduate students (Kasso & Balash, 2021).

The utilization of EIRs among postgraduate students depends on their ability to effectively locate, access, and use these resources. While many students acknowledge the importance of EIRs in their academic work, usage patterns often reveal underutilization due to limited awareness or technical skills (Ahmed & Mahmoud, 2022; Olanrewaju & Adetayo, 2020). Challenges such as lack of training on database navigation, ineffective search strategies, and inadequate digital literacy have been identified as barriers to optimal utilization of EIRs. Addressing these issues is crucial for maximizing the benefits of these resources. Moreover, the specific areas of research for which EIRs are utilized vary across disciplines. Postgraduate students often rely on EIRs for literature reviews, data analysis, and access to the latest scholarly findings. However, utilization tends to be higher in fields where digital resources are integral to research processes, such as engineering and medicine (Olajide & Adebisi, 2019; Ahmed & Mahmoud, 2022). These trends highlight the importance of tailoring resource access and training programs to the unique needs of different academic disciplines.

Effective use of EIRs among postgraduate students is heavily dependent on the availability of adequate training and support systems. Institutions that provide

regular workshops, user guides, and technical support services report higher levels of resource utilization and user satisfaction (Kasso & Balash, 2021; Olanrewaju & Adetayo, 2020). Training programs that focus on advanced search techniques, database management, and the ethical use of information have proven particularly beneficial in empowering students to make full use of available resources. However, the adequacy of support systems remains inconsistent across institutions. Many Nigerian universities face challenges in providing sustained support due to resource constraints and staff shortages. As a result, students often struggle with technical issues or lack the skills needed to navigate complex databases. Research suggests that enhancing these support mechanisms through increased funding, collaboration with information technology experts, and integration of digital literacy into academic curricula can significantly improve EIR utilization rates (Ahmed & Mahmoud, 2022; Owolabi & Omotayo, 2020).

Research Methodology

The research methodology employed for the study is the descriptive survey research design. This design facilitates a detailed understanding of the current state of EIR accessibility and use by observing and collecting data from a well-defined population. The study focuses on 2,415 postgraduate students across five Federal Universities in South East Nigeria, representing a diverse academic population. Using a proportionate stratified sampling technique, a sample size of 242 students (10% of the population) ensures fair representation across disciplines. This approach enables the findings to be generalized to the entire population, providing insights into the adequacy of available resources, areas of EIR usage, and the training and support provided for effective research. Data collection relies on two key instruments: the Electronic Information Resources Access and Utilization Questionnaire (EIRAUQ) and the

Electronic Information Resources Access and Utilization Observation Checklist (EIRAUOC). The EIRAUQ, comprising 108 items across eight clusters, captures detailed information on awareness, accessibility, adequacy, utilization, training, and EIR impact on research productivity. Meanwhile, the observation checklist evaluates the availability of various resources. Both tools underwent rigorous validation by experts and reliability testing, yielding satisfactory reliability coefficients (average 0.767). Data analysis employs descriptive statistics for research questions and inferential statistics for hypothesis testing, ensuring robust interpretation of findings. The study's

methodology emphasizes the systematic and inclusive exploration of how postgraduate students engage with EIRs in their academic research.

Research Findings

Research Question 1: How adequate are the electronic information resources to postgraduate students adequate for their research needs?

The respondents were required to identify the availability of these electronic information resources for their research needs

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Table 1: Adequacy of electronic information resources to postgraduate students for research needs

	NAU		FUTO		MOUA		AEU		UNN		Overall		Dec
	A	NA	A	NA	A	NA	A	NA	A	NA	A	NA	
E-Books	√	-	√	-	√	-	√	-	√	-	5	0	A
E-Journals	√	-	√	-	√	-	√	-	√	-	5	0	A
E-Conference Proceeding	-	X	-	X	-	X	-	X	√	-	1	4	NA
E-Thesis and Dissertation	√	-	√	-	√	-	-	X	√	-	4	1	A
Institutional Repository	√	-	√	-	√	-	-	X	√	-	4	1	A
CD-ROMs	√	-	√	-	-	X	-	X	√	-	3	2	A
DVDs and CDs	√	-	-	X	-	X	-	X	√	-	2	3	NA
Offline Databases	-	X	-	X	-	X	-	X	-	X	0	5	NA
Online Databases	√	-	√	-	-	X	√	-	√	-	4	1	A
Internet Access	-	X	√	-	-	X	-	X	-	X	1	4	A
E-Government Publications	-	X	-	X	-	X	-	X	-	X	0	5	NA
Patent Database	-	X	-	X	-	X	-	X	-	X	0	5	NA
Data Repositories	-	X	-	X	-	X	-	X	-	X	0	5	NA
E-Newspapers/ Magazines	-	X	√	-	-	X	-	X	-	X	1	4	NA
E-Reference works	√	-	√	-	√	-	√	-	√	-	0	5	NA
Citation Management Tools	-	X	-	X	-	X	-	X	-	X	0	5	NA
Total	9	8	9	7	5	11	4	12	9	7	2	3	

The study reveals that essential electronic information resources (EIRs) like

e-books and e-journals are consistently adequate across the five surveyed

universities in South-East Nigeria, with unanimous adequacy ratings (A = 5, NA = 0). Similarly, institutional repositories, e-theses, and online databases are largely adequate (A = 4, NA = 1), ensuring accessibility to fundamental digital resources for postgraduate research. However, several specialized resources, including offline databases (A = 0, NA = 5), e-conference proceedings (A = 1, NA = 4), and citation management tools (A = 0, NA = 5), are notably insufficient, highlighting significant

gaps in resource provision. While core EIRs are widely available, the lack of access to tools like patent databases, e-government publications, and data repositories (all rated A = 0, NA = 5) underscores challenges in supporting specialized research needs, calling for improvements in the availability of advanced resources to enhance research productivity and academic writing.

Research Question 2: What are the areas of research for which the postgraduate students utilize electronic information resources? The respondents were required to identify the areas of research for which the postgraduate students utilize electronic information resources

Table 2: Areas of Research for which the Postgraduate Students utilize Electronic Information Resources

	Mean	SD	REM
To source materials for writing conceptual framework	3.65	.57	SA
To source resources for background information	3.56	.67	SA
To do class assignments	2.90	.83	A
To augments class works and notes	3.35	.73	SA
To review empirical studies	3.55	.59	SA
To source information generally about the library/ information literacy	3.09	.94	SA
To participate in professional discussion groups	3.59	.49	SA
To retrieve current literatures	3.14	.79	SA
To blog discussions on my subject area of interest	3.05	.81	SA
Access secondary literature such as indexes and bibliographies	2.65	1.07	A
	3.25	0.75	

The study shows that postgraduate students in South-East Nigeria primarily use electronic information resources for key academic activities, with the highest-rated purpose being sourcing materials for writing conceptual frameworks (Mean = 3.65, SD = 0.57). This is closely followed by participating in professional discussion groups (Mean = 3.59, SD = 0.49), sourcing background information (Mean = 3.56, SD = 0.67), and reviewing empirical studies (Mean = 3.55, SD = 0.59). These activities highlight the strong reliance on digital resources for foundational and advanced research.

Additionally, students use these resources for augmenting classwork (Mean = 3.35, SD = 0.73) and retrieving current literature (Mean = 3.14, SD = 0.79), though reliance is lower for secondary literature (Mean = 2.65, SD = 1.07) and class assignments (Mean = 2.90, SD = 0.83). Overall, the findings indicate a predominant focus on using electronic resources for critical research and academic discourse.

Research Question 3: What training and support are provided to postgraduate students for the effective use of electronic information resources? The respondents were required to identify

the training and supports areas of research for which the postgraduate students utilize electronic information resources

Table 3: Training and Support Provided to Postgraduate Students for the Effective Use of Electronic Information Resources

	SD	Mean	REM
I receive formal orientation/ training on the use of electronic information resources	.58	3.66	SA
Access to more current literature	.46	3.69	SA
I have access to training materials for learning how to use electronic information resources	.45	3.70	SA
The in-house support that assists me with issues related to electronic information resources in the library are very effective	.49	3.59	SA
I feel confident using electronic information resources after attending a training session	.48	3.65	SA
I am satisfied with the availability of support services when I encounter difficulties using electronic information resources	.71	3.29	SA
I am aware of the training opportunities available for learning how to use electronic information resources	.44	3.75	SA
The training I received on electronic information resources impacted my research productivity	.84	2.89	A
	.56	3.53	

The study reveals strong agreement among postgraduate students in South-East Nigeria regarding the availability of training and support for using electronic information resources. Students show the highest awareness of training opportunities (Mean = 3.75, SD = 0.44) and access to training materials (Mean = 3.70, SD = 0.45), with training enhancing their ability to access current literature (Mean = 3.69, SD = 0.46). Formal orientation and training rank high (Mean = 3.66, SD = 0.58), and students feel confident using resources post-training (Mean = 3.65, SD = 0.48). In-house library support is also effective (Mean = 3.59, SD = 0.49). However, the training's impact on research productivity scores lower (Mean = 2.89, SD = 0.84), indicating room for improvement in aligning training with productivity outcomes. Satisfaction with support services (Mean = 3.29, SD = 0.71) also lags slightly, suggesting occasional gaps in assistance. Overall, training systems are effective but could be optimized to enhance research productivity further.

Discussion of Findings

Adequacy of the Electronic Information Resources Available to Postgraduate Students for their Research Needs

The study reveals that essential electronic resources, such as e-books, e-journals, institutional repositories, e-theses and dissertations, and online databases, are generally adequate across the surveyed universities. These core resources provide critical support for postgraduate research, offering access to scholarly literature, institutional research output, and comprehensive databases (Ogunniyi & Igun, 2017). This adequacy ensures that students can meet basic research requirements, enabling them to engage with relevant literature and academic content. However, while these resources cover foundational research needs, the study indicates gaps in more specialized tools, particularly those that are vital for niche research areas or fields requiring specific types of media and data (Nwosu et al., 2021).

Several resources, including e-conference proceedings, DVDs and CDs, and offline databases, are marked as inadequate,

reflecting a significant shortfall in the provision of specialized materials. This inadequacy may hinder students in areas that depend on conference papers, specialized offline resources, or media-based content, limiting the depth and breadth of their research. Additionally, the lack of access to patent databases and citation management tools presents a challenge for postgraduate students' research productivity and academic writing, as these tools are essential for managing intellectual property information and organizing references efficiently (Obiora & Anyaogu, 2020). The findings suggest that while core resources are adequate, targeted improvements in specialized resources are necessary to fully support advanced postgraduate research.

Areas of Research for which the Postgraduate Students utilize Electronic Information Resources

The study reveals that postgraduate students in South-East Nigeria heavily utilize electronic information resources for academic and research activities, with the primary purpose being sourcing materials for writing conceptual frameworks. This focus on developing strong conceptual frameworks underscores the importance of digital resources in shaping students' research foundations (Onwudinjo & Umeji, 2019). Another significant use of these resources is for participating in professional discussion groups, which aligns with the growing trend of academic networking and collaborative research fostered by digital platforms. Students also frequently access electronic resources for gathering background information and reviewing empirical studies, which are critical for comprehensive literature reviews and the contextualization of research (Aguolu & Aguolu, 2020). These findings indicate that postgraduate students are leveraging digital resources to support key elements of the research process, from foundational theoretical work to engaging with professional communities.

Despite the extensive use of electronic resources for primary research activities, the study shows that the utilization

of these resources for accessing secondary literature, such as indexes and bibliographies, and for completing class assignments is relatively lower. This suggests that students may either rely on other methods or resources, such as physical libraries or personal networks, for these tasks, or they may not prioritize secondary literature as much in their research process (Ajegbomogun & Salami, 2018). The lower ranking of secondary literature usage might point to gaps in training or awareness regarding the value of indexes and bibliographies in expanding research scope. Additionally, the lesser use of electronic resources for class assignments may reflect the more research-focused rather than coursework-focused role these resources play for postgraduate students. Overall, the findings demonstrate the critical role of electronic information resources in supporting essential research activities, though there may be opportunities to further encourage their use for accessing secondary literature and completing coursework.

Training and Support Provided to Postgraduate Students for the Effective Use of Electronic Information Resources

The study on postgraduate students' training and support for using electronic information resources reveals that students generally appreciate the training opportunities provided, particularly formal training sessions that enhance their confidence in navigating these resources. Access to training materials and current literature is also seen as valuable, contributing to students' ability to effectively use electronic resources for their research needs (Chisita & Chiparasha, 2019). In-house library support is deemed effective, with students often seeking assistance when encountering challenges. This indicates that institutional efforts to equip students with the necessary skills for utilizing electronic resources are largely successful. However, despite the positive feedback regarding training and access, the study highlights a critical area for improvement—students express dissatisfaction with how much the

training directly contributes to boosting their research productivity. This suggests that while training enhances technical competence, its translation into tangible research outputs remains a challenge.

Moreover, the study points to a notable gap in support services, with students reporting lower satisfaction levels regarding the availability of help when they encounter difficulties with electronic resources (Aliyu & Garba, 2021). This may suggest that while initial training is effective, ongoing support could be inconsistent or insufficient. The lower ranking of support services could reflect barriers such as limited library staff, inadequate one-on-one assistance, or gaps in personalized guidance for complex research tasks. To further enhance the research experience for postgraduate students, institutions could focus on not just providing training but also improving the follow-up support, ensuring that students have continuous access to assistance as they apply their training to actual research projects (Ozoemelem & Enem, 2020). Improving both the impact of training on research productivity and the accessibility of support services could result in a more robust training framework that better supports postgraduate research efforts.

Recommendations Based on Discussion of Findings

- Universities should prioritize acquiring and providing access to specialized electronic resources, including e-conference proceedings, offline databases, patent databases, and citation management tools. These are critical for advanced research in niche areas and academic writing. Addressing these gaps will enhance the depth and breadth of research outputs.
- Institutions should raise awareness of the importance of secondary literature, such as indexes and bibliographies, by integrating their use into training programs. This could help postgraduate students broaden their research scope and improve the quality of their literature reviews.
- Training programs should be refined to focus not only on resource navigation but also on strategies to translate these skills into increased research productivity. Workshops on effective literature synthesis, data analysis, and integrating findings into research projects could bridge this gap.
- Universities should enhance library support systems by increasing the availability of skilled staff, extending one-on-one assistance, and providing personalized guidance for complex research needs. Accessible, real-time help desks or virtual support platforms can address difficulties students face when utilizing electronic resources.
- Institutions should implement regular feedback mechanisms to assess the effectiveness of electronic resources and support services. Engaging students in these evaluations will provide insights for targeted improvements and ensure that resource offerings remain aligned with evolving research needs.
- Advanced training sessions focusing on professional networking through digital platforms and effective use of emerging tools for conceptual frameworks and empirical reviews should be introduced. This will better align students' training with their academic and professional activities.
- Universities should consider adopting innovative solutions such as mobile access to electronic resources, cloud-based storage for research materials, and integrating AI-driven tools for citation management and literature search. These technologies can improve

resource usability and accessibility for students.

Conclusion

In conclusion, the study highlights that electronic information resources (EIRs) are largely adequate for meeting the foundational research needs of postgraduate students in South-East Nigeria, with resources such as e-books, e-journals, and online databases being particularly effective in supporting critical academic activities. However, specialized resources, including e-conference proceedings, patent databases, and citation management tools, remain significantly inadequate, presenting challenges for niche research areas and academic productivity. Students extensively utilize EIRs for essential tasks like developing conceptual frameworks, engaging in professional discussions, and conducting literature reviews, underscoring the integral role these resources play in research. While training and formal orientation sessions effectively build confidence and technical competence in using these resources, their direct impact on enhancing research productivity is limited, and support services require strengthening to ensure consistent assistance. Addressing these gaps in specialized resources, training outcomes, and ongoing support would further empower postgraduate students to achieve greater research efficiency and effectiveness.

References

- Aguolu, C. C., & Aguolu, I. E. (2020). The impact of electronic resources on postgraduate research in Nigerian university libraries. *Journal of Information Science and Technology*, 12(2), 45-58.
- Ahmed, S., & Mahmoud, A. (2022). Postgraduate students' challenges in accessing and using electronic resources. *Journal of Digital Education and Technology*, 8(3), 45-56.
- Ajebomogun, F. O., & Salami, A. T. (2018). Secondary literature utilization among postgraduate students in Nigeria: Barriers and prospects. *International Journal of Academic Research in Education*, 7(3), 112-124.
- Aliyu, A. B., & Garba, K. M. (2021). Training and research support services: Evaluating the satisfaction levels of postgraduate students in Nigerian university libraries. *Journal of Academic Librarianship*, 47(5), 102386.
- Chisita, C. T., & Chiparausha, B. (2019). Enhancing postgraduate students' use of electronic resources through formal training programs: A case study from South-East Nigerian universities. *African Journal of Information and Communication Technology*, 12(1), 45-58.
- Kasso, H. T., & Balash, F. (2021). The role of electronic information resources in higher education. *International Journal of Library and Information Science*, 13(2), 10-19.
- Nwosu, C. U., Ezema, I. J., & Mbah, I. K. (2021). The role of e-conference proceedings in academic research in Nigerian universities. *Journal of Academic Research*, 6(2), 102-115.
- Obiora, E. N., & Anyaogu, C. A. (2020). Patent databases and citation management tools: A necessity for postgraduate research in Nigerian universities. *Library and Information Science Research*, 22(3), 123-134.
- Ogunniyi, S. O., & Igun, S. E. (2017). Availability and adequacy of electronic resources in academic libraries for postgraduate research: A study of selected universities. *Journal of Information Science and Technology*, 12(4), 55-68.

Okon, E., & Ime, B. (2018). Electronic resources and postgraduate research efficiency. *Journal of Academic Research*, 5(3), 23-29.

Olajide, T. A., & Adebisi, O. J. (2019). An assessment of digital resources in Nigerian universities. *African Journal of Information Studies*, 15(1), 67-76.

Olanrewaju, O., & Adetayo, E. (2020). Effective utilization of e-resources among postgraduate students. *Journal of Library Innovation*, 6(2), 28-36.

Onwudinjo, C. O., & Umeji, A. C. (2019). Access and use of electronic resources by postgraduate students in South-East Nigerian universities. *Library Philosophy and Practice*, 2019(1), 1-10.

Owolabi, T., & Omotayo, F. (2020). Challenges in accessing electronic resources in academic institutions. *Journal of Digital Libraries*, 12(1), 14-22.

Ozoemelem, O. A., & Enem, F. N. (2020). Library support services and research productivity of postgraduate students: A survey of Nigerian universities. *International Journal of Library and Information Studies*, 10(3), 56-67.