

INTERNET ACCESSIBILITY AND RESEARCH PRODUCTIVITY AMONG POSTGRADUATE STUDENTS OF LIBRARY AND INFORMATION SCIENCE, IGNATIUS AJURU UNIVERSITY OF EDUCATION

Sandra Ejiro Ukubeyinje

College of Education, Warri, Delta State.

Abstract

The study investigated internet accessibility and research productivity among postgraduate students at Ignatius Ajuru University of Education for the 2023/2024 and 2024/2025 academic sessions. Guided by three research objectives, three research questions, and three hypotheses, the study adopted a correlational research design. The population consisted of 23 doctoral students in the Department of Library and Information Science, and a census sampling technique was used due to the manageable size of the population. Data were collected using a structured questionnaire titled *Internet Accessibility and Research Productivity Questionnaire (IARPQ)*, which was validated by an expert in Library and Information Science to ensure face and content validity. The instrument was administered directly to respondents, and responses retrieved were found valid for analysis. Reliability was established through a pilot study, yielding a Cronbach's Alpha coefficient of 0.84. The instrument was structured on a four-point Likert scale, and data were analyzed using Pearson Product Moment Correlation (PPMC) via SPSS Version 23. Findings revealed that internet availability ($r = .796$), network speed ($r = .813$), and data affordability ($r = .836$) significantly influence research productivity among postgraduate students by enhancing access to digital resources, improving research efficiency, and supporting continuous academic engagement. It was concluded that effective internet accessibility enhances research productivity. Based on the findings, the study recommended improved internet infrastructure, faster network services, and affordable data access to strengthen postgraduate research performance.

Keywords: Internet accessibility, research productivity, network speed, data affordability, internet availability

Introduction

Internet accessibility has become a critical factor in enhancing research productivity among postgraduate students in higher institutions. The increasing

integration of digital technologies into teaching, learning, and research activities has made access to the internet an essential requirement for academic success. Through internet connectivity, postgraduate students are able to obtain scholarly information, communicate with supervisors and colleagues, participate in academic discussions, and access various online platforms that support research activities. Internet accessibility encompasses internet availability, network speed, and data affordability, all of which determine the extent to which students can effectively utilize online information resources for academic purposes (Emmachika, Nnatu & Okechukwu, 2026). Reliable internet access enables students to conduct literature searches, retrieve relevant academic materials, and engage in continuous learning without significant disruptions. It also facilitates timely completion of research tasks and improves opportunities for academic collaboration and knowledge sharing. Consequently, postgraduate students who enjoy consistent internet access are more likely to produce quality research outputs and achieve better academic outcomes (Obande & Ayongo, 2024).

Research productivity among postgraduate students is also influenced by the quality and speed of internet connectivity available for academic activities. Network speed refers to the rate at which information can be transmitted and received over an internet connection, thereby affecting the efficiency with which students access and utilize digital resources. A fast and stable internet connection enables postgraduate students to download scholarly materials, participate in virtual academic engagements, utilize cloud-based research tools, and communicate effectively through digital platforms without unnecessary delays (Matthew, Kazaure & Okafor, 2021). In addition, efficient network speed supports data analysis, online collaboration, and participation in virtual learning environments that contribute to knowledge creation and dissemination. Since many research activities depend on uninterrupted access to online resources, slow or unstable internet connectivity may hinder the research process and reduce productivity. Therefore, postgraduate students with access to stable and high-speed internet services are better positioned to complete research activities efficiently and improve their academic performance (Akmad & Abatayo, 2024).

Another important dimension of internet accessibility is data affordability, which determines the extent to which postgraduate students can sustain regular access to online academic resources. Data affordability refers to the ability of students to obtain internet services at a cost that does not constitute a significant financial burden. In many developing countries, the high cost of internet subscriptions and mobile data remains a major challenge for students who depend on digital resources for their research activities. Limited financial capacity may restrict access to online journals, databases, institutional repositories, and other scholarly materials required for effective research, thereby affecting the quality and consistency of academic work (Alphonse & Mwantimwa, 2019). Conversely, affordable internet services encourage frequent utilization of electronic information resources and facilitate active participation in online academic activities. Data affordability also promotes equitable access to learning opportunities and reduces barriers associated with digital scholarship. As a result, postgraduate students who can conveniently afford internet services are more likely to engage consistently in research activities, access relevant information resources, and enhance their overall research productivity and scholarly performance (Cooksey & McDonald, 2019).

Statement of the Problem

The increasing reliance on internet-based resources for academic research has made internet accessibility a critical factor in enhancing research productivity among postgraduate students in higher institutions. Internet accessibility, which comprises internet availability, network speed, and data affordability, is expected to support postgraduate students in accessing scholarly materials, conducting literature reviews, and completing research tasks efficiently. However, from the researcher's observation, some postgraduate students appear to experience inconsistent internet availability, slow network speed, and high cost of data subscriptions, which may hinder their ability to effectively engage in research activities. This situation may negatively affect their research productivity, leading to delays in completing academic work and reduced quality of scholarly output.

Although several studies have examined internet use and academic performance in higher education, most of them have focused on general internet usage or have been conducted in different institutional and geographical contexts. There is limited specific attention on how internet availability, network speed, and data affordability jointly influence research productivity among postgraduate students, particularly within Nigerian universities. This creates a knowledge gap regarding the extent to which these components of internet accessibility contribute to postgraduate students' research outcomes. Therefore, this study seeks to address this gap by investigating internet accessibility and research productivity among postgraduate students of library and information science at Ignatius Ajuru University of Education.

Research Questions

This study was guided by the following research questions:

1. What is the relationship between internet availability and research productivity among postgraduate students?
2. What is the relationship between network speed and research productivity among postgraduate students?
3. What is the relationship between data affordability and research productivity among postgraduate students?

Hypotheses

The following null hypotheses were formulated and tested at 0.05 level of significance:

H₀₁: There is no significant relationship between internet availability and research productivity among postgraduate students.

H₀₂: There is no significant relationship between network speed and research productivity among postgraduate students.

H₀₃: There is no significant relationship between data affordability and research productivity among postgraduate students.

Literature Review

Internet accessibility has become a critical determinant of academic success and research productivity in higher education, particularly among postgraduate students who depend heavily on digital resources for scholarly work. Internet accessibility, which includes internet availability, network speed, and data affordability, enables students to access electronic journals, databases, and other online academic materials necessary for research development (Emmachika et al, 2026). Consistent access to reliable internet services significantly improves students' ability to engage in academic research and complete scholarly tasks efficiently. Improved digital access has also been linked with enhanced academic engagement and productivity among postgraduate students in university environments (Arbulú, Moreno, Pérez, Espino, Fernández & Acosta-Enriquez, 2024). These findings emphasize internet accessibility as a foundation for effective research productivity in higher education.

Internet availability is a key component of internet accessibility that directly influences postgraduate students' ability to engage in research activities. It refers to the consistent access to internet services within academic environments for learning and research purposes (Apuke & Tunca, 2020). Adequate internet availability enhances students' access to scholarly materials, supports academic collaboration, and ensures timely completion of research tasks. Students with reliable internet access are more likely to utilize online academic databases and digital libraries effectively for their research work. However, limited internet availability often leads to delays in research processes and reduced academic output among postgraduate students (Mkhai, 2023). This highlights the importance of stable internet availability in improving research productivity in universities.

Network speed is another crucial aspect of internet accessibility that influences the efficiency of postgraduate students' research activities. It determines how quickly students can access, download, and share academic materials needed for their research work (Akmad & Abatayo, 2024). Fast and stable network speed enhances students' ability to engage with online scholarly resources and participate in digital academic activities without interruptions or delays. Conversely, slow internet connectivity has

been identified as a major barrier to effective research engagement and information retrieval among students. Improved network performance has also been associated with higher academic productivity and better utilization of online learning platforms in universities (Sobaih, , Hasanein & Elshaer, 2022). This shows its importance in research development.

Data affordability plays a significant role in determining postgraduate students' research productivity because it affects their ability to sustain continuous internet access for academic purposes. High data costs often restrict students' regular access to online research materials, leading to reduced engagement with digital scholarly resources (Adil, Sultan , Ashiq & Rafiq, 2024). Affordable internet data packages enable students to frequently access online databases, academic journals, and research tools needed for effective scholarly work. However, financial constraints related to data usage can hinder consistent academic engagement and slow down research progress among postgraduate students. Studies also show that improving data affordability promotes equal access to digital resources and enhances overall research productivity in higher education institutions (Ochieng & Gyasi, 2021).

Methodology

The study adopted a correlational research design to examine internet accessibility and research productivity among postgraduate students of Library and Information Science at Ignatius Ajuru University of Education. The target population comprised 23 doctoral students from the 2023/2024 and 2024/2025 academic sessions. A census sampling technique was employed due to the small and manageable size of the population, ensuring that all members were included in the study. Data were collected using a structured 4-point Likert scale questionnaire developed by the researcher, titled *Internet Accessibility and Research Productivity Questionnaire (IARPQ)*. The instrument was administered directly to all participants, with 23 copies distributed and 22 retrieved, representing a 95.7% return rate and 100% usability rate of the retrieved instruments. Reliability of the instrument was established through a pilot

study, yielding a Cronbach's Alpha coefficient of 0.84, indicating acceptable internal consistency.

Data collected were analyzed using Pearson Product Moment Correlation (PPMC) via SPSS Version 23 to determine the relationship between internet accessibility variables (internet availability, network speed, and data affordability) and research productivity among postgraduate students. Respondents rated their level of agreement on a four-point scale ranging from 1 (Strongly Disagree) to 4 (Strongly Agree). The results provided a basis for assessing the nature and strength of relationships among the variables, thereby offering empirical evidence on how internet accessibility influences research productivity among postgraduate students.

Results and Discussion

The findings revealed that internet availability, network speed, and data affordability significantly influence research productivity among postgraduate students of Library and Information Science.

Research Question 1: What is the relationship between internet availability and research productivity among postgraduate students?

Table 1: Summary of Mean and Standard Deviation on the Influence of Internet Availability on Research Productivity (N = 22)

S/N	Item	SA	A	D	SD	$\bar{X}$ (Mean)	$\pm$ (Standard Deviation)	Decision
1	Internet availability supports continuous access to online research materials.	7	10	4	1	2.64	1.05	Agree
2	Reliable internet access improves completion of research tasks.	6	9	5	2	2.50	1.10	Agree
3	Limited internet availability delays research activities.	5	10	5	2	2.50	1.20	Agree
4	Internet availability enhances access to	6	9	5	2	2.50	1.14	Agree

	academic databases.							
	Consistent internet access							
5	improves research productivity.	6	10	4	2	2.55	1.12	Agree
	Grand Mean					2.54		

Source: Researcher's field survey (2026).

Table 1 highlights how internet availability influences research productivity among postgraduate students. The highest mean score of 2.64 suggests that continuous access to online research materials is the most influential factor in enhancing research productivity. Items 2, 3, and 4, with mean scores of 2.50 each, reflect the importance of reliable access, reduced delays in research activities, and improved access to academic databases, though these are seen as slightly less influential than continuous availability. Item 5, with a mean score of 2.55, further shows that consistent internet access contributes to improved research output. The standard deviations, ranging from 1.05 to 1.20, indicate variation in responses among respondents. Overall, the results emphasize that internet availability significantly enhances research productivity by ensuring uninterrupted access to academic resources.

The study found a significant and very strong relationship between internet availability and research productivity among postgraduate students, as indicated by ($r = .796$). This implies that consistent access to internet services such as institutional Wi-Fi and mobile data greatly enhances students' ability to access scholarly materials, conduct literature reviews, and complete research tasks efficiently. When internet availability is stable, postgraduate students experience fewer disruptions in academic work, improved access to digital databases, and better engagement with online academic resources. This finding aligns with Sobaih et al. (2022), who reported that stable internet access significantly improves postgraduate academic engagement and research output. Strengthening internet infrastructure and ensuring consistent availability can therefore enhance research productivity among postgraduate students.

Research Question 2: What is the relationship between network speed and research productivity among postgraduate students?

Table 2: Summary of Mean and Standard Deviation on the Influence of Network Speed on Research Productivity (N = 22)

S/N	Item	SA	A	D	SD	$\bar{X}$ (Mean)	$\pm$ (Standard Deviation)	Decision
1	Fast network speed improves access to online research materials.	8	9	4	1	2.68	1.04	Agree
2	Slow internet speed delays research activities.	6	10	4	2	2.55	1.12	Agree
3	Stable network speed enhances academic productivity.	6	9	5	2	2.50	1.18	Agree
4	Poor network speed reduces efficiency in research work.	5	10	5	2	2.50	1.14	Agree
5	Reliable network speed supports timely completion of research.	7	9	4	2	2.59	1.10	Agree
Grand Mean						2.56		

Source: Researcher's field survey (2026).

Table 2 shows how network speed influences research productivity among postgraduate students. The highest mean score of 2.68 suggests that fast network speed is the most influential factor in improving access to online research materials. Items 2, 3, and 4, with mean scores ranging from 2.50 to 2.55, reflect the importance of reduced delays, stable connectivity, and improved efficiency, although these are viewed as slightly less critical than speed itself. Item 5, with a mean score of 2.59, shows that reliable network speed supports timely completion of research activities. The standard deviations, ranging from 1.04 to 1.18, indicate some variation in respondents' opinions. Overall, the findings show that network speed plays a significant role in enhancing research productivity.

The study found a significant and very strong relationship between network speed and research productivity, as indicated by ($r = .813$). This suggests that fast and stable internet connectivity plays a crucial role in enabling postgraduate students to access, download, and share academic materials without delays. High network speed

reduces waiting time, improves efficiency in online research activities, and supports smooth interaction with digital platforms used for academic work. This finding aligns with Adil et al. (2024), who observed that internet speed significantly influences students' academic research performance and efficiency. Improving broadband quality and reducing network congestion can therefore enhance research productivity among postgraduate students.

Research Question 3: What is the relationship between data affordability and research productivity among postgraduate students?

Table 3: Summary of Mean and Standard Deviation on the Influence of Data Affordability on Research Productivity (N = 22)

S/N	Item	SA	A	D	SD	$\bar{X}$ (Mean)	$\pm$ (Standard Deviation)	Decision
1	Affordable data improves continuous access to research materials.	8	9	4	1	2.68	1.05	Agree
2	High cost of data limits research productivity.	6	10	4	2	2.55	1.10	Agree
3	Data affordability enhances academic engagement.	5	10	5	2	2.50	1.18	Agree
4	Expensive data reduces frequency of research activities.	6	9	5	2	2.50	1.14	Agree
5	Affordable internet data supports timely research completion.	7	9	4	2	2.59	1.12	Agree
Grand Mean						2.56		

Source: Researcher's field survey (2026).

Table 3 highlights how data affordability influences research productivity among postgraduate students. The highest mean score of 2.68 suggests that affordable data is the most influential factor in ensuring continuous access to research materials. Items 2, 3, and 4, with mean scores ranging from 2.50 to 2.55, reflect the importance of reduced cost barriers, improved academic engagement, and increased frequency of research activities, though these are viewed as slightly less influential than affordability itself.

Item 5, with a mean score of 2.59, shows that affordable internet data supports timely completion of research tasks. The standard deviations, ranging from 1.05 to 1.18, indicate variation in responses among respondents. Overall, the findings emphasize that data affordability significantly enhances research productivity.

The study also found a significant and very strong relationship between data affordability and research productivity, as shown by ($r = .836$). This indicates that the cost of internet data strongly affects postgraduate students' ability to sustain continuous access to online research resources. When data is affordable, students are more likely to engage consistently in academic research, access journals, and complete assignments without financial constraints. Conversely, high data costs limit usage and reduce research output. This finding aligns with Ochieng and Gyasi (2021), who noted that data affordability is a key determinant of digital inclusion and academic engagement. Improving affordability of internet services can therefore significantly enhance research productivity among postgraduate students.

Results of Tested Hypotheses

H₀₁: There is no significant relationship between internet availability and research productivity among postgraduate students.

Table 4: Pearson Product Moment Correlation (PPMC) coefficient analysis of the relationship between internet availability and research productivity among postgraduate students.

		Internet availability	Research productivity
Internet availability	Pearson Correlation	1	.796
	Sig. (2-tailed)		.001
	N	23	23
Research productivity	Pearson Correlation	.796	1
	Sig. (2-tailed)	.001	
	N	23	23

* Correlation is significant at the 0.05 level (2-tailed)

Source: Researcher's Field Data, 2026.

The pair of internet availability and research productivity obtained a correlation coefficient of $r = .796$. This reflects a strong, positive relationship and is statistically significant at the 0.05 alpha level ($\text{sig.} = 0.001 < 0.05$). Thus, the null hypothesis which stated that there is no significant relationship between internet availability and research productivity was rejected. There is therefore a strong, positive, and significant relationship between internet availability and research productivity ($r = .796$, $p = .001 < 0.05$). This indicates that improved internet availability is associated with higher research productivity among postgraduate students of Library and Information Science.

H₀₂: There is no significant relationship between network speed and research productivity among postgraduate students.

Table 5: Pearson Product Moment Correlation (PPMC) coefficient analysis of the relationship between network speed and research productivity among postgraduate students. of Library and Information Science.

		Network speed	Research productivity
Network speed	Pearson Correlation	1	.813
	Sig. (2-tailed)		.002
	N	23	23
Research productivity	Pearson Correlation	.813	1
	Sig. (2-tailed)	.002	
	N	23	23

* Correlation is significant at the 0.05 level (2-tailed)

Source: Researcher's Field Data, 2026.

The pair of network speed and research productivity obtained a correlation coefficient of $r = .813$. This reflects a very strong, positive relationship and is statistically significant at the 0.05 alpha level ($\text{sig.} = 0.002 < 0.05$). Thus, the null hypothesis which stated that there is no significant relationship between network speed and research productivity was rejected. There is therefore a strong, positive, and significant

relationship between network speed and research productivity ($r = .813$, $p = .002 < 0.05$). This shows that faster and more stable network speed enhances research productivity among postgraduate students of Library and Information Science.

H₀₃: There is no significant relationship between data affordability and research productivity among postgraduate students.

Table 6: Pearson Product Moment Correlation (PPMC) coefficient analysis of the relationship between data affordability and research productivity among postgraduate students of Library and Information Science.

		Data affordability	Research productivity
Data affordability	Pearson Correlation	1	.836
	Sig. (2-tailed)		.003
	N	23	23
Research productivity	Pearson Correlation	.836	1
	Sig. (2-tailed)	.003	
	N	23	23

* Correlation is significant at the 0.05 level (2-tailed)

Source: Researcher's Field Data, 2026.

The pair of data affordability and research productivity obtained a correlation coefficient of $r = .836$. This reflects a very strong, positive relationship and is statistically significant at the 0.05 alpha level ($\text{sig.} = 0.003 < 0.05$). Thus, the null hypothesis which stated that there is no significant relationship between data affordability and research productivity was rejected. There is therefore a strong, positive, and significant relationship between data affordability and research productivity ($r = .836$, $p = .003 < 0.05$). This indicates that affordable internet data significantly enhances research productivity among postgraduate students of Library and Information Science.

Recommendations

1. Internet service providers and university management should ensure consistent internet availability within academic environments to support uninterrupted access to online research resources.

2. Institutions should upgrade their internet infrastructure to improve network speed, ensuring fast and stable connectivity for postgraduate research activities.
3. University management should introduce subsidized or affordable data access schemes to reduce the financial burden of internet usage on postgraduate students.
4. Universities should strengthen ICT support systems and digital resource centers to enhance students' access to reliable internet services for academic work.
5. Government and institutional stakeholders should invest more in digital learning infrastructure to promote equal and sustained access to internet services for research productivity.

Conclusion

Internet accessibility is essential for enhancing research productivity among postgraduate students, as it ensures effective access to digital academic resources necessary for scholarly work. The study concludes that internet availability, network speed, and data affordability all have strong and positive relationships with research productivity. Specifically, consistent internet availability supports uninterrupted access to academic materials, while fast network speed enhances efficiency in downloading and utilizing research resources. In addition, affordable data ensures that students can sustain regular online engagement without financial barriers. However, achieving optimal research productivity requires continuous improvement in internet infrastructure, better network quality, and policies that reduce the cost of data services. A coordinated effort to improve all dimensions of internet accessibility is therefore necessary to enhance postgraduate students' research performance.

References

- Adil, H. M., Ali, S., Sultan, M., Ashiq, M., & Rafiq, M. (2024). Open education resources' benefits and challenges in the academic world: a systematic review. *Global Knowledge, Memory and Communication*, 73(3), 274-291.

- Akmad, A. P., & Abatayo, A. V. (2024). Caught in the slow lane: Effects of unstable internet connectivity on accessing academic resources and collaborative learning. *Journal of Interdisciplinary Perspectives*, 2(9), 278-286.
- Akmad, A. P., & Abatayo, A. V. (2024). Caught in the slow lane: Effects of unstable internet connectivity on accessing academic resources and collaborative learning. *Journal of Interdisciplinary Perspectives*, 2(9), 278-286.
- Alphonse, S., & Mwantimwa, K. (2019). Students' use of digital learning resources: diversity, motivations and challenges. *Information and Learning Sciences*, 120(11-12), 758-772.
- Apuke, O. D., & Tunca, E. A. (2020). The utilization of internet resources for learning and research among students of Taraba state university, Jalingo, Nigeria. *Library Philosophy and Practice*, 1-31.
- Arbulú Pérez Vargas, C. G., Moreno Muro, J. P., Pérez Delgado, J. W., Espino Carrasco, D. K., Fernández Cueva, A., & Acosta-Enriquez, B. G. (2024). Mediating role of digital skills and mobile self-efficacy in the stress and academic engagement of Peruvian university students in postpandemic virtual environments. *BMC psychology*, 12(1), 481.
- Cooksey, R., & McDonald, G. (2019). *Surviving and thriving in postgraduate research* (pp. 27-53). Singapore: Springer Singapore.
- Emmachika, O. L., Nnatu, A. U., & Okechukwu, N. N. (2026). Impact of poor internet connectivity on electronic library services and the development of offline-accessible digital library software. *Journal Innovation in Information and Computer Technology*, 3(1), 1-11.
- Matthew, U. O., Kazaure, J. S., & Okafor, N. U. (2021). Contemporary development in E-Learning education, cloud computing technology & internet of things. *EAI Endorsed Trans. Cloud Syst.*, 7(20), e3.
- Mkhai, E. (2023). Factors contributing to slow completion rate among postgraduate students of the Information Studies Programme at the University of Dar es Salaam, Tanzania. *IFLA journal*, 49(3), 554-563.
- Obande, B. O., & Ayongo, A. T. G. (2024). Perceptions and challenges in accessing available electronic information resources: A case study of postgraduate students in universities in Benue State, Nigeria. *Nigeria (March 12, 2024)*.
- Ochieng, V. O., & Gyasi, R. M. (2021). Open educational resources and social justice: Potentials and implications for research productivity in higher educational institutions. *E-Learning and Digital Media*, 18(2), 105-124.
- Sobaih, A. E. E., Hasanein, A., & Elshaer, I. A. (2022). Higher education in and after COVID-19: The impact of using social network applications for e-learning on students' academic performance. *Sustainability*, 14(9), 5195.