



Data Management and Communication Skills as Correlates of Postgraduate Students' use of Electronic Information Resources in South East Nigeria

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ABSTRACT

The increasing reliance on Electronic Information Resources (EIRs) in university libraries has made digital skills essential for effective research, yet many postgraduate students in South East Nigeria struggle to maximize these resources. The study adopted a correlational design to examine how postgraduate students' digital skills relate to their use of electronic information resources in South East Nigerian universities. The population included 172 postgraduate Library and Information Science students from five universities, with a census sampling approach used. Data were collected via the questionnaire, validated by experts and tested for reliability. Data were analyzed using Pearson correlation, simple and multiple regression in SPSS 24, with significance set at $p \leq 0.05$. The study examined the relationship between postgraduate students' skills acquisition and their use of electronic information resources (EIRs) in South East Nigerian university libraries. Data management skills showed a weak positive correlation of 0.26 with EIRs (N=172). Linear regression indicated no significant relationship ($R^2=0.069$; $t=7.528$; $df=170$; $p=0.069$), meaning only 6.9% of EIR use variation is explained by data management skills. Conversely, communication skills exhibited a strong positive correlation of 0.85 with EIRs (N=172). Regression results revealed a significant relationship ($R^2=0.729$; $t=22.930$; $df=170$; $p=0.001$), indicating that 72.9% of EIR use variation is explained by communication skills). The study conclude that communication skills are critical for effective use of EIRs, while data management skills alone are insufficient, highlighting the need for targeted training in communication and digital literacy.

INTRODUCTION

Postgraduate students rely increasingly on electronic information resources (EIRs) such as digital journals, institutional repositories, datasets, and academic social networks for research, coursework, and collaboration. Electronic Information Resources (EIRs) refer to digital materials that provide access to scholarly, instructional, and research information through electronic platforms (Olaiya et al, 2024). They include online journals, e-books, institutional repositories, research databases, datasets, multimedia files, digital libraries, and academic search engines. EIRs offer quick retrieval, remote accessibility, advanced search features, and up-to-date information for users across disciplines. They support academic activities such as literature review, data analysis, citation management, and scholarly communication. Because they are searchable and continually updated, EIRs enhance research productivity and enable collaboration, making them essential tools for modern academic and professional environments (Chime & Ekwueme, 2023).

However, effective use of EIRs depends not only on access but also on users' competencies in managing research data and communicating findings. Poor data management practices and weak communication skills can limit retrieval, interpretation, sharing, and reuse of digital resources, reducing research efficiency and scholarly impact (Ahmed et al, 2025). In contexts where institutional systems face structural limitations and efficiency challenges, students' individual competencies become even more important for navigating electronic platforms, a situation comparable to how governance gaps affect institutional performance in Nigeria, as noted by Okonkwo and Idigo (2022). Similarly, the growing digital interconnectedness of academic work reflects broader globalization trends that demand higher information literacy and communicative competence, a point emphasized by Adolphus et al. (2023). These skills therefore serve as key correlates of meaningful EIR utilization by Postgraduate students.

Postgraduate students tend to handle heavier research demands, so their use of electronic information resources leans heavily on how well they manage data and communicate their findings. Studies on resource mobilisation and modern pedagogy hint that advanced learners thrive where digital engagement is supported (Egwu & Mbonu, 2023; Egwu, 2022). Quality assurance research also shows that organised academic environments strengthen resource use (Egwuh, 2022). Evidence from ICT utilisation, employability preparation, and staff research proficiency underscores the same pattern (Ikegbusi et al., 2021; Egwu & Ekwe, 2024; Ezugoh et al., 2025). Insights from sustainability-focused AI studies further show how data-driven communication enhances scholarly productivity (Ofozoba et al., 2025). Electronic information resources sit at the center of postgraduate research, so the literature's emphasis on digital readiness naturally points to stronger data handling, clearer communication, and smoother access to online scholarly materials.

Postgraduate students' use of EIRs rests on an interplay between technical infrastructures and individual capabilities. Borgman (2010) argues that digital scholarship requires researchers to master not only literature search techniques

but also the infrastructures that store, curate, and expose data. Data management skills covering documentation, metadata creation, file organization, version control, preservation, and ethical handling which increase the value students extract from EIRs because well-managed data are easier to locate, evaluate, and integrate into new analyses (Cox & Pinfield, 2014). Where students lack such skills, repositories and datasets remain underused; researchers avoid sharing their outputs, and replication or secondary analysis becomes difficult (Tenopir et al., 2011).

Empirical studies show positive correlations between data management competencies and frequency, depth, and sophistication of EIR use. Data management refers to the systematic process of collecting, organizing, storing, preserving, and ensuring the quality of data for effective retrieval and use. It includes activities such as proper file naming, documentation, metadata creation, version control, ethical handling, backup procedures, and secure storage (Suryaningrat et al, 2024). Good data management practices help maintain data integrity, enhance accessibility, and support reproducibility in research. For postgraduate students, effective data management enables efficient analysis, collaboration, compliance with institutional guidelines, and long-term preservation of research outputs. It ensures that datasets remain usable, understandable, and shareable, thereby improving the overall quality and impact of scholarly work.

Researchers who demonstrate routine documentation and metadata practices tend to search repositories more often, harvest datasets for secondary analysis, and contribute datasets to institutional archives. These activities amplify scholarly visibility and foster collaborative opportunities (Tenopir et al., 2011; Cox & Pinfield, 2014). Conversely, gaps in data management lead students to rely narrowly on full-text articles rather than engage with raw data or methodological supplements, narrowing the scope of inquiry (Habersang & Reihlen, 2025). Communication skills form the other critical correlate. Communication skills refer to the abilities required to convey ideas, information, and research findings clearly and effectively through written, verbal, and visual means. These skills include academic writing, oral presentation, critical reading, digital communication, data interpretation, and the use of visual tools such as charts and infographics.

Strong communication skills enable postgraduate students to articulate research problems, defend arguments, engage in scholarly discussions, and disseminate results through publications, conferences, and digital platforms. Effective communication enhances collaboration, increases research visibility, and supports knowledge sharing within academic communities. Ultimately, these skills elevate the clarity, impact, and credibility of scholarly work. Information-seeking literature emphasizes that effective use of EIRs demands not only search literacy but also the ability to frame research questions, synthesize sources, and present findings in forms suitable for digital dissemination (Abid, 2023). Strong academic writing, data visualization, and oral presentation skills enable students to interpret complex datasets, craft useful metadata descriptions, and upload materials in ways that increase discoverability and reuse. When

students can translate technical results into clear abstracts, titles, and metadata, retrieval systems index their work more effectively, leading to higher citation and download rates (Gusenbauer & Haddaway, 2020).

LITERATURE REVIEW

Communication and data management skills interact synergistically. For instance, crafting a clear data descriptor requires both accurate metadata (a data management task) and concise explanatory prose (a communication task). Students skilled in both areas are more likely to deposit datasets with comprehensive documentation, which in turn promotes reuse and cross-disciplinary discovery (Cox & Pinfield, 2014). Instructional interventions that integrate data management training with scientific writing and visualization produce larger gains in EIR engagement than siloed workshops that teach technical tools without attention to rhetoric and dissemination strategies (Jaafar, 2024).

Barriers persist. Time constraints, perceptions that data management is peripheral to research, lack of institutional mandates, and uneven availability of training hinder uptake of best practices (Tenopir et al., 2011). Communication weaknesses such as difficulty writing clear metadata or designing intelligible visualizations which further reduces the usability of deposited materials. Libraries and graduate programs therefore play pivotal roles. Evidence suggests that embedding data management modules within discipline-specific research methods courses, offering scaffolded support for metadata creation, and providing peer review of dataset documentation increase both EIR use and data sharing rates among postgraduate students (Borgman, 2007; Cox & Pinfield, 2014). The present study on is justified by several important gaps in research and practice. Although electronic information resources have become central to postgraduate research, many students still experience difficulties in locating, evaluating, and applying digital materials effectively, as reported by Arthur-Nyarko et al, (2020).

Existing studies highlight that weak data management practices such as poor documentation, limited metadata skills, and inadequate organization of research files restrict students' ability to benefit from institutional repositories and online databases, a concern raised by Demetres et al, (2020). Communication skills also pose challenges, particularly in academic writing, data interpretation, and digital presentation, which affect students' capacity to synthesize information retrieved from electronic sources, as noted by Kuiper and Volman (2014). However, research in South East Nigeria has not sufficiently explored how data management skills and communication skills together influence the use of electronic information resources. Many studies focus primarily on ICT access or general information literacy without examining these more advanced competencies that directly shape postgraduate research behaviour, a limitation identified by Wu et al, (2022). Investigating these correlates is therefore necessary to inform curriculum development, targeted training, and institutional support that will enhance research efficiency and strengthen digital scholarship among postgraduate students in the region.

Objectives

1. Correlation between postgraduate Students' data management skills and their use of electronic information resources for research activities in university libraries in South East, Nigeria.
2. Correlation between postgraduate Students' communication skills and their use of electronic information resources for research activities in university libraries in South East, Nigeria.

Research Questions

The following research questions will guide the study:

1. What is the correlation between postgraduate students' data management skills acquisition and their use of electronic information resources for research activities in university libraries in South East, Nigeria?
2. What is the correlation between postgraduate students' communication skills acquisition and their use of electronic information resources for research activities in university libraries in South East, Nigeria?

Hypotheses

The following null hypotheses will be tested at 0.05 alpha level:

1. There is no significant correlation between postgraduate students' data management skills acquisition and their use of electronic information resources for research activities in university libraries in South East, Nigeria

There is no significant correlation between postgraduate students' communication skills acquisition and their use of electronic information resources for research activities in university libraries in South East, Nigeria

METODOLOGY

The study adopted a correlational research design to examine the relationship between postgraduate students' digital skills and their use of electronic information resources for research activities in university libraries in South East Nigeria. This design was chosen because it effectively determines the extent, direction, and strength of relationships between variables, making it suitable for educational investigations focused on understanding how students' digital competencies influence their engagement with electronic resources.

The study was conducted in South East Nigeria, a region comprising Abia, Anambra, Ebonyi, Enugu, and Imo states. The area is known for its cultural richness, economic activity, and concentration of educational institutions, including universities, polytechnics, and colleges of education. These institutions play a significant role in human capital development and increasingly emphasize digital literacy and access to electronic resources. The region's urban centers such as Onitsha, Aba, Enugu, Owerri, and Umuahia which host a large proportion of the population and serve as hubs for academic and commercial activity (N.P.C.N, 2020). Despite these advancements, gaps remain in understanding the level of digital skills among postgraduate students and how these skills facilitate the use of electronic information resources.

The population of the study consisted of 172 postgraduate students from five universities offering Library and Information Science programs in the region.

This included 25 students from Nnamdi Azikiwe University, 22 from Michael Okpara University of Agriculture, 70 from University of Nigeria Nsukka, 25 from Enugu State University of Science and Technology, and 30 from Imo State University. Because the population was relatively small, a census sampling technique was employed, including all postgraduate students without further sampling.

A self-structured questionnaire-based o four-point rating scale was used for data collection. The instrument underwent face and content validation by experts in Library and Information Science and Educational Foundations, ensuring clarity, relevance, and suitability for the study. The reliability of the instruments was confirmed through a pilot study with postgraduate students outside the study area. Data collection was conducted in person with the help of trained library staff, who distributed and retrieved questionnaires efficiently. For data analysis, Pearson Product Moment Correlation was used to examine relationships between variables, with simple regression employed to determine the explanatory power of each digital skill dimension on the use of electronic resources. Multiple regression was applied for analyses involving more than two variables. Interpretation of correlations followed standard guidelines, with significance tested at $p \leq 0.05$. All analyses were conducted using SPSS version 24, ensuring accurate and systematic evaluation of the research questions and hypotheses.

RESULT AND DISCUSSION

Research Question 1

What is the correlation between postgraduate students' data management skills acquisition and their use of electronic information resources for research activities in university libraries in South East, Nigeria?

Table 1. Pearson R on Postgraduate Students' Data Management Skills Acquisition and Their use of Electronic Information Libraries Resources for Research Activities in University Libraries

Sources of variance	N	Data management skills (r)	EIRs (r)	Remark
Data management skills	172	1.00	0.26	
				Weak positive relationship
EIRs	172	0.26	1.00	

Table 1 shows that there is a weak positive relationship of 0.26 existing between postgraduate students' data management skills acquisition and their use of electronic information resources for research activities in university libraries in South East, Nigeria

Hypothesis 1

There is no significant correlation between postgraduate students' data management skills acquisition and their use of electronic information resources for research activities in university libraries in South East, Nigeria

Table 2. Linear Regression on Significant Correlation Between Postgraduate Students' Data Management Skills Acquisition and Their use of Electronic Information Resources for Research Activities in University Libraries

Linear Regression	R	R ²	Df	T	a.level	p-value
	.263 ^a	.069	170	7.528	0.05	0.069
a. Predictors: (Constant), data management skills						
b. Dependent: EIRs in research activities						

Table 2 indicated that at 0.05 level of significance and 170df, the calculated t 7.528 with p-value 0.069 which is greater than 0.05 ($t=7.528$; $df=170$; $p > 0.05$), the null hypothesis is not rejected. This means that there is no significant relationship between postgraduate students' data management skills acquisition and their use of electronic information resources for research activities in university libraries in South East, Nigeria. The R² value of 0.069 means that about 6.9% of the variation in electronic information resources for research activities can be explained by postgraduate students' data management skill acquisition.

Research Question 2

What is the correlation between postgraduate students' communication skills acquisition and their use of electronic information resources for research activities in university libraries in South East, Nigeria?

Table 3: Pearson R on Postgraduate Students' Communication Skills Acquisition and Their use of Electronic Information Resources for Research Activities in University Libraries

Sources of variance	N	Communication skills (r)	EIRs (r)	Remark
Communication skills	172	1.00	0.85	
				Strong positive relationship
EIRs	172	0.85	1.00	

Table 3 shows that there is a strong positive relationship of 0.85 existing between postgraduate students' communication skills acquisition and their use of electronic information resources for research activities in university libraries in South East, Nigeria

Hypothesis 2

There is no significant correlation between postgraduate students' communication skills acquisition and their use of electronic information resources for research activities in university libraries in South East, Nigeria

Table 4. Linear Regression on Significant Correlation Between Postgraduate Students' Communication Skills Acquisition and Their use of Electronic Information Resources for Research Activities in University Libraries

Linear Regression	R	R ²	Df	T	a.level	p-value
	.854 ^a	.729	170	22.930	0.05	0.001
a. Predictors: (Constant), communication skills						

b. Dependent: EIRs for research activities

Table 4 indicated that at 0.05 level of significance and 170 df, the calculated $t_{22.930}$ with p-value 0.001 which is less than 0.05 ($t = 22.930$; $df = 170$; $p < 0.05$), the null hypothesis is rejected. This means that there is significant correlation between postgraduate students' communication skills acquisition and their use of electronic information resources for research activities in university libraries in South East, Nigeria. The R^2 value of 0.729 means that about 72.9% of the variation in electronic information resources can be explained by postgraduate students' communication skill acquisition

Postgraduate Students' Data Management Skills Acquisition and Their use of Electronic Information Resources for Research Activities in University Libraries in South East, Nigeria

This finding revealed that there is a weak positive relationship between postgraduate students' data management skills acquisition and their use of electronic information resources for research activities in university libraries in South East, Nigeria. This finding means that as data management skills improve, there is a slight increase in the frequency or effectiveness of electronic resource utilization. However, the weak strength of this relationship implies that data management skills are not a dominant predictor of resource use. This finding was in line with the finding of Ekenna and Mabawonku (2013) that a modest correlation between data management skills, such as organizing research datasets, and the use of electronic databases. Similarly, Achugbue et al, (2024) examined postgraduate students in South-South Nigeria and reported a weak positive correlation between data handling skills and electronic resource use, attributing the limited strength to inadequate exposure to advanced data management tools. These findings align with the notion that data management skills contribute to resource use but are not a dominant factor, as external barriers like poor internet connectivity and limited software access. On the contrary, the finding opposed that of Tunmibi and Ajokotola (2024) that the level of research data management services among the respondents is high with data indicating that they score high on all the metrics of research data management services such as data creation, data analysis, data preservation, data sharing, and data reuse. More so, the finding of Ojo et al. (2024) opposed that there exist a high level of data management and curation practices employed by the librarians in the selected libraries. The difference in both findings could be that respondents vary in terms of opinions based on their level of education.

The corresponding hypothesis revealed that there is no significant relationship between postgraduate students' data management skills acquisition and their use of electronic information resources for research activities in university libraries in South East, Nigeria. This finding was in line with that of Anunobi and Ukwoma (2016) that there was no significant relationship between skills in managing data and engagement with electronic resources. This is consistent with Alex-Nmecha and Ejitagha (2023), who found no significant relationship between postgraduate students in Nigeria possessing basic data management skills and their familiarity with specific electronic resources

Postgraduate Students' Communication Skills Acquisition and Their use of Electronic Information Resources for Research Activities in University Libraries in South East, Nigeria.

The finding revealed that there is a strong positive relationship between postgraduate students' communication skills acquisition and their use of electronic information resources for research activities in university libraries in South East, Nigeria. This means that as students acquire higher levels of communication skills, their utilization of electronic information resources also increases correspondingly. In essence, students who are proficient communicators are likely better equipped to formulate search queries, interpret academic texts, engage in online scholarly discussions, and cite digital sources accurately, thus leveraging EIRs more efficiently for their research tasks. This finding supported the finding of Aamir and Muhammad (2021) that librarians have a high level of communication skills and work productivity. This is in consonant with the finding of Okon et al, (2021) that a strong positive correlation exist between communication skills, such as articulating search queries and collaborating via digital platforms, and electronic resource use. Ekenna and Mabawonku (2013) further corroborate this, noting a strong relationship where skills in articulating research needs via digital tools boosted resource access.

The corresponding hypothesis revealed that there is significant correlation between postgraduate students' communication skills acquisition and their use of electronic information resources for research activities in university libraries in South East, Nigeria. This finding was in consonant with that of Alex-Nmecha and Ejitagha (2023) that no significant relationship existed between communication skills and e-resources for tools requiring specialized knowledge. On the contrary, Olaoye et al, (2024) found no significant correlation in South-East Nigeria, citing inadequate training in digital communication tools as a limiting factor, suggesting that without proper support, communication skills have limited influence.

CONCLUSION AND RECOMMENDATION

The study established that postgraduate students' communication skills significantly influence their use of electronic information resources (EIRs) in university libraries in South East Nigeria, with 72.9% of EIR use variation explained by communication skills. Conversely, data management skills showed only a weak and non-significant relationship with EIR use, accounting for just 6.9% of the variation. These findings suggest that while communication competencies strongly facilitate the effective use of digital resources for research, merely possessing data management skills is insufficient. Therefore, enhancing postgraduate students' communication abilities should be prioritized to maximize their engagement with electronic information resources.

FURTHER STUDY

This research still has limitations so further research on this topic is still needed "Data Management and Communication Skills as Correlates of

Postgraduate Students' Use of Electronic Information Resources in South East Nigeria".

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