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Digital Competencies and Use of Digital Tools for Learning: A Focus on Library and Information Science Postgraduate Students in South-South, Nigeria

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ABSTRACT: This study examined the digital competencies and use of digital tools for learning among postgraduate students of Library and Information Science (LIS) in South-South, Nigeria. The specific objectives were to determine: (1) the extent of digital competencies of LIS postgraduate students, (2) the extent of their use of digital tools for learning, and (3) the relationship between digital competencies and the use of digital tools for learning. A descriptive research design was adopted to describe and analyse existing conditions without manipulation of variables. The population comprised 161 postgraduate students across three public universities—Delta State University, Abraka (64), Ambrose Alli University, Ekpoma (26), and Ignatius Ajuru University of Education, Port Harcourt (71). A census sampling technique was employed, including the entire population. Data were collected using a structured questionnaire titled *Competencies and Use of Digital Tools for Learning Questionnaire (CUDTLQ)*, adapted from Tzafilkou et al. (2022) and Rafiq et al. (2024). Expert validation established content validity, while a test–retest reliability coefficient of 0.87 confirmed internal consistency. The instrument used a five-point Likert scale, and data were analysed using mean, standard deviation, and linear regression at a 0.05 significance level. Findings revealed that the aggregate mean score for digital competencies was 2.75 (SD = 1.28), below the criterion mean of 3.00, indicating low competence. Similarly, the extent of digital tool usage was low, with an aggregate mean of 2.49 (SD = 1.29). However, regression analysis showed a very strong, significant relationship between digital competencies and digital tool use ($R = .989$, $R^2 = .979$, $F(1,125) = 5711.187$, $p < .05$), indicating that 97.9% of the variance in tool use was explained by digital competence. The study concluded that low digital competencies limit postgraduate students' effective use of digital tools. It recommends that universities integrate mandatory digital literacy training, hands-on workshops, and blended learning modules to enhance postgraduate students' digital competence and overall learning outcomes.

KEYWORDS: Digital competence, Digital literacy, Digital tools, Library and Information Science, Postgraduate students, South-South Nigeria, Technology-enhanced learning

INTRODUCTION

The use of digital tools has become an essential part of postgraduate education, transforming how students access information, conduct research, and collaborate with peers and lecturers. These tools, ranging from advanced software, online databases, collaborative platforms and virtual learning environments, offer postgraduates the resources and flexibility needed to manage their complex academic tasks. The necessity for digital tools in postgraduate education is occasioned by the growing volume of research activities. Means et al. (2014) posited that digital technologies enable more flexible and personalised learning environments, which are essential for postgraduate students who often balance rigorous academic demands with professional responsibilities. Digital tools offer immediate access to vast resources, facilitating efficient information retrieval and management.

Additionally, digital tools support various learning styles and needs, allowing for more inclusive and adaptive educational practices (Garrison & Vaughan, 2014). The use of digital technologies not only enhances academic performance but also prepares students for the technological demands of their future careers. The introduction of digital tools in postgraduate education addresses the growing need for more efficient and effective ways to handle the demanding nature of advanced studies. Traditional methods of learning and research often fall short when dealing with the vast amount of information and the high level of collaboration required in postgraduate programmes (Abd Majid et al., 2025).

The use of digital tools by postgraduates for learning holds numerous benefits to the students, institutions, and society at large, but for postgraduates to leverage these digital tools, studies have indicated that several factors could inhibit postgraduates from favourably deploying

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these digital tools, among which include postgraduate students' digital competencies. Digital competence refers to the ability to use digital technologies effectively and responsibly, and scholars from both Nigeria and around the world provide varied definitions that highlight different aspects of these essential skills (Ajegbomogun et al., 2022). Ferrari (2013) defined digital competence as the combination of knowledge, skills, and attitudes required to use digital technologies in a confident, critical, and creative way. This definition emphasises not only the technical skills necessary to access, manage, and evaluate information but also the critical thinking and creativity needed to effectively use technology in various contexts. Ferrari's perspective underscores the importance of both the practical application of digital tools and the ability to think critically about their use.

The European Framework for Digital Competence (DigComp) offered a structured approach, defining digital competence as encompassing five key areas: information and data literacy, communication and collaboration, digital content creation, safety, and problem-solving. This framework provides a comprehensive view of digital competence, covering everything from handling and analysing data to creating content and ensuring online safety. It highlights the multifaceted nature of digital competence, which includes technical skills as well as the ability to collaborate and solve problems in a digital environment (European Commission, 2017). In Nigeria,

Bawden (2014) defined digital competence as the ability to use digital tools to find, evaluate, create, and communicate information effectively. This definition focuses on the practical aspects of digital literacy, emphasising the essential skills required to interact with and manage information in a digital environment. Bawden's perspective highlights the importance of being able to effectively handle and communicate information using digital technologies. Martin (2015) described digital competence as the capacity to use digital technologies across various contexts, including personal, educational, and professional domains. This definition broadens the scope of digital competence, underscoring its relevance beyond academic settings and highlighting its importance in personal and professional life. Martin's perspective reflects the idea that digital skills are crucial for various aspects of modern life.

Statement of the Problem

In today's technology-driven academic environment, digital tools have transformed how students access, process, and share information for learning and research. Tools such as online databases, digital libraries, reference management software, learning management systems (LMS), and collaborative platforms like Google Workspace and Microsoft Teams enable efficient access to vast information resources and promote interactive and self-directed learning. Effective use of these tools requires strong digital competencies, including information literacy, technical proficiency, critical thinking, and adaptability to emerging technologies. In postgraduate education—where research and innovation are central—these competencies are essential for academic success and lifelong learning.

However, preliminary interactions with Library and Information Science (LIS) postgraduate students and lecturers in universities across the South-South region of Nigeria reveal disparities in awareness, access, and effective use of digital tools. Many students still rely on traditional learning methods and show limited proficiency in advanced digital applications for research. Challenges such as inadequate institutional support, poor digital infrastructure, and a lack of structured digital literacy programmes further hinder effective utilisation. Existing studies affirm these concerns. Okiki and Asiru (2018) found that postgraduate students in Nigerian universities exhibit low proficiency in using online research tools due to limited digital skills, while Adebayo and Omotayo (2021) reported that inconsistent digital literacy training and underuse of digital platforms negatively affect LIS students' research engagement.

These issues highlight the urgent need to assess the digital competencies and utilisation of digital tools among LIS postgraduate students in the South-South region. Understanding these factors is vital to designing interventions that enhance digital literacy and learning outcomes. Hence, this study focuses on Digital Competencies and Use of Digital Tools for Learning: A Focus on Library and Information Science Postgraduate Students in South-South, Nigeria.

Research Questions

The following research questions guided this study

1. What is the extent of digital competencies of postgraduate students of library and information science in South-South, Nigeria?
2. What is the extent of the use of digital tools for learning among postgraduate students?
3. What is the relationship between digital competencies and the use of digital tools for learning by postgraduate students?

LITERATURE REVIEW

This section of the article presents the review of current relevant literature that aligns with the specific objectives of the study, which are presented as follows:

Digital Competencies of Postgraduate Students

The increasing integration of digital tools in education necessitates that postgraduate students develop a set of digital competencies to effectively engage in and enhance their learning experiences. In today's educational landscape, digital tools such as learning management systems (LMS), virtual libraries, and various online collaboration platforms have become integral to the academic process (Redecker, 2017). The transition towards digital learning environments has been accelerated by advancements in technology and the growing demand for flexible learning solutions that cater to diverse student needs (Carretero, Vuorikari, & Punie, 2017). These digital competencies are not just about technical proficiency but encompass a range of skills and knowledge areas essential for navigating, utilising, and benefiting from digital technologies. According to JISC (2015), digital competencies include the ability to manage digital identities, participate in online communities, and leverage digital tools for both learning and research purposes. These competencies enable students to access information efficiently, collaborate with peers and instructors, and produce digital content that meets academic standards (Wheeler, 2015). Moreover, they are critical for fostering lifelong learning and adaptability in an increasingly digital world (Ng, 2015).

The need for digital competencies among postgraduate students is underscored by the evolving nature of research and academic work, which increasingly relies on digital tools for data collection, analysis, and dissemination (Aesaert et al., 2017). As postgraduate studies often

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involve complex and self-directed research activities, students must be adept at using digital tools to enhance their productivity and achieve academic success. Furthermore, possessing these competencies ensures that students are prepared for the digital demands of the contemporary workforce, where digital literacy is often a prerequisite (van Laar et al., 2017). Digital competence is the ability to effectively and responsibly use digital technologies, tools, and resources to access, evaluate, create, and transmit information (Kiryakova & Kozhuharova, 2024). It covers a range of knowledge, skills, and attitudes related to the effective use of digital technologies in various contexts, including education. Digital competence is based on skills in ICT to use computers to create, retrieve, assess, present, and exchange information and to communicate and participate in networks using the services and mechanisms of the internet including digital and ICT literacy, and competencies in the use of digital tools and resources (Spante et al., 2018). Digital competencies include digital literacy, experience using educational software and platforms, and the ability to seamlessly integrate ICT into learning activities.

Johnson et al. (2019), in their study titled "Assessing Technical Skills among Postgraduate Students in Digital Learning Environments," aimed to evaluate the technical proficiency of postgraduate students in using digital learning tools. The cross-sectional survey, which included 500 postgraduate students from various universities, revealed that 75% of students reported proficiency in basic computer operations ($p < 0.01$), while 60% demonstrated advanced skills in software applications ($p < 0.05$). The findings indicated that while the majority of students possessed basic technical skills, fewer had advanced technical competencies. The study concluded that there is a need for enhanced technical training to improve postgraduate students' ability to utilise digital tools effectively and recommended incorporating such training into postgraduate curricula.

Use of Digital Tools for Learning among Postgraduate Students

In the ever-changing world of higher education, postgraduate students' educational experiences now revolve around digital tools. These tools improve learning processes' efficacy and efficiency in addition to making a wide range of information easier to access. Digital technology's widespread adoption has resulted in the development of several tools for postgraduate study, ranging from data analysis and content creation to research and collaboration. Based on recent research, this review looks at the different kinds of digital tools used by grad students and talks about how they affect learning.

Learning Management Systems (LMS) such as Moodle and Blackboard are among the primary digital tools used by postgraduate students. They provide a centralized platform for accessing course materials, submitting assignments, engaging in discussions, and monitoring academic progress. According to Alraimi et al. (2015), the adoption of LMS significantly enhances students' learning experiences by offering a structured and interactive environment, with 70% of respondents reporting improved engagement and academic performance. Key features contributing to this improvement include centralized access to learning resources, streamlined assignment submission and grading, and interactive discussion forums that promote collaboration and continuous communication between students and instructors, fostering a more engaging and efficient learning experience.

Oluwadamilola and Nwachukwu (2019) conducted a study on Digital Literacy Skills and Use of E-Resources by Postgraduate Students in Nigerian Universities to examine digital literacy levels, frequency of digital tool use, and challenges faced by postgraduate students. Using a descriptive survey of 250 students from three South-West universities, data were collected through a structured questionnaire and analysed using mean scores and frequency counts. Findings revealed moderate digital literacy but low usage of digital tools, with limited internet access and inadequate training as major challenges. Unlike their study, the present research focuses on South-South Nigeria and includes institutional factors and digital competencies.

Relationship Between Digital Competencies and the Use of Digital Tools for Learning by Postgraduate Students

The level of digital competencies among postgraduate students plays a critical role in determining their ability to effectively use digital tools for learning. Tzafilkou et al. (2022) confirmed that digital competence significantly influences postgraduate students' engagement and success in utilising online learning platforms. Their study emphasised that students with stronger digital skills were more adept at navigating and maximising the benefits of digital learning environments. Similarly, Getenet et al. (2024) found that postgraduate students with higher levels of digital literacy and positive attitudes toward technology were more confident in using digital tools, which led to better learning outcomes.

Further supporting this relationship, Hidayat-Ur-Rehman (2024) demonstrated that digital competence is a key predictor of effective smartphone-based learning among postgraduate students. His study showed that students with advanced digital skills were able to leverage mobile technologies for formal learning activities more efficiently than their less digitally competent peers. Zhang et al. (2024) also highlighted that self-regulated learning in digital environments is highly dependent on students' digital competencies. Their findings indicated that postgraduate students with strong digital abilities and self-regulation skills were more successful in using artificial intelligence (AI) powered educational tools.

Nguyen and Adelusi (2024) stressed that digital competencies are pivotal in empowering postgraduate students to maximize institutional digital resources, noting that students with stronger digital skills were better able to navigate complex learning management systems. Nguyen and Adelusi further stated that enhancing digital competencies directly correlates with improved learning outcomes and technology adoption rates. Similarly, Littlejohn et al. (2016) observed that students with advanced digital competencies demonstrated stronger self-regulated learning behaviours, enabling them to independently manage digital learning tasks and explore digital platforms more effectively.

METHODOLOGY

The study adopted a descriptive research design, considered appropriate because it enabled the researcher to describe and analyse the existing state of digital competencies and the use of digital tools for learning without manipulating any variables. According to Creswell and Creswell (2023)**,** descriptive research is suitable for studies aimed at systematically presenting facts about a population or phenomenon as they exist in their natural setting, thereby providing a factual and comprehensive understanding of current conditions. Quantitative data were collected using a structured questionnaire administered to postgraduate students of Library and Information Science (LIS) in selected public universities across the South-South region of Nigeria. This design facilitated the assessment of variables such as students' digital competencies (technical, problem-solving, and critical thinking skills) influencing the use of digital tools, and the extent of digital tool utilisation for learning and research.

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The population of the study consisted of all 161 postgraduate students of LIS in public universities offering postgraduate programmes in Delta, Edo, and Rivers States. These included Delta State University, Abraka (64 students), Ambrose Alli University, Ekpoma (26 students), and Ignatius Ajuru University of Education, Port Harcourt (71 students). Given the small and manageable population size, the census sampling technique was employed, involving the entire population of 161 students. This ensured full representation and enhanced the reliability and generalisability of the findings.

Data were collected using a self-structured questionnaire titled "Competencies and Use of Digital Tools for Learning Questionnaire (CUDTLQ)". The instrument was adapted from validated scales, including the Students' Digital Competence Scale (Tzafilkou et al., 2022) and Digital Tools and Online Learning Scale (Rafiq et al., 2024), with necessary modifications to align with the study objectives. It comprised two sections: Section A (digital competencies) and Section B (use of digital tools for learning). A five-point Likert scale ranging from Very High Extent (5) to Very Low Extent (1) was used.

To ensure validity, the questionnaire was reviewed by experts in the Department of Library and Information Science, Delta State University, Abraka. Their input helped refine the items for clarity, accuracy, and content relevance. The reliability of the instrument was tested using the test–retest method of questionnaire administration. Twenty-five copies were administered twice, two weeks apart, to LIS postgraduate students of Nnamdi Azikiwe University, Awka, and analysed using Pearson's Product-Moment Correlation Coefficient, which yielded a reliability coefficient of 0.87, confirming high internal consistency.

For data collection, the researcher and three trained assistants personally distributed the questionnaires to respondents at their respective institutions and retrieved them immediately after completion to ensure a high response rate. Data obtained were analysed using both descriptive and inferential statistics. Mean and standard deviation addressed research questions on digital competencies and digital tool usage. Regression analyses were used to answer the research question on the relationship between competencies and use of digital tools at a 0.05 level of significance. Interpretation of results for competencies and use of digital tools followed the mean range of 1.00–1.50 (Very Low Extent), 1.51–2.50 (Low Extent), 2.51–3.50 (Moderate Extent), 3.51–4.50 (High Extent), and 4.51–5.00 (Very High Extent).

RESULTS

Research Question One: What is the extent of digital competencies of postgraduate students of library and information science in South-South, Nigeria?

The data in Table 1 provide an answer to this research question.

Table 1: Extent of Digital Competencies of Postgraduate Students

S/N	Statement on Digital Competencies	VHE	HE	ME	LE	VLE	$\bar{x}$	St.d	Dec.
1	How proficient are you in setting up and maintaining digital devices	22	19	33	16	37	2.79	1.45	**Not Accepted**
2	How effectively do you communicate and collaborate with peers and instructors using digital platforms	31	22	41	12	21	3.24	1.37	**Accepted**
3	How competent are you in using specialized software	18	23	39	21	26	2.89	1.32	**Not Accepted**
4	How well can you critically analyze and synthesize information from digital sources to create academic content	16	19	18	40	34	2.55	1.36	**Not Accepted**
5	How skilled are you in creating original digital content	15	18	27	38	29	2.62	1.30	**Not Accepted**
6	How easily can you learn and adapt to new digital tools	10	9	52	18	38	2.49	1.21	**Not Accepted**
7	How proficient are you in organizing digital data	9	21	46	10	41	2.58	1.29	**Not Accepted**
8	How competent are you in conducting comprehensive online research using academic search engines	11	6	75	3	32	2.69	1.16	**Not Accepted**
9	How effectively can you troubleshoot and resolve issues that arise when using digital tools?	13	17	67	17	13	3.00	1.05	**Accepted**
10	How well do you engage in collaborative learning activities using digital platforms	12	18	47	10	40	2.62	1.32	**Not Accepted**
N	**127**	**Criterion Mean**	**3.00**	**Aggregate Mean**	**= 2.75**	**St.d = 1.28**			

As revealed in Table 1, the aggregate mean of 2.75 is lower than the criterion mean of 3.00, which signifies that the extent of digital competencies of postgraduate students of Library and Information Science in South-South, Nigeria is generally low. This implies that while students demonstrate some competence in communication and collaboration with peers and instructors ($\bar{x}$ = 3.24, St.d = 1.37), and troubleshooting ($\bar{x}$ = 3.00, St.d = 1.05), they face significant challenges in most other areas of digital competency, limiting their overall effectiveness in the use of digital tools for learning.

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Research Question Two: What is the extent of the use of digital tools for learning among postgraduate students?
The data in Table 4.8 provide an answer to this research question.

Table 2: Extent of Use of Digital Tools for Learning

S/N	Statement on Use of Digital Tools	VHE	HE	ME	LE	VLE	x̄	St.d	Dec.
1	I use Learning Management Systems (e.g., Moodle, Blackboard, Canvas) to access course materials and submit assignments	11	10	23	35	48	2.22	1.27	**Not Accepted**
2	I use video conferencing tools (e.g., Zoom, Microsoft Teams, Google Meet) for attending online classes, seminars, or group meetings	10	11	31	30	45	2.30	1.26	**Not Accepted**
3	I use reference management tools (e.g., EndNote, Zotero, Mendeley) to organise and cite academic sources in your research	15	13	33	25	41	2.50	1.35	**Not Accepted**
4	I access e-books (e.g., JSTOR, ProQuest, Google Scholar) for your academic studies	17	19	28	31	32	2.67	1.36	**Not Accepted**
5	I use collaborative document editing tools (e.g., Google Docs, Microsoft Word Online) to work on group projects or share documents with peers	16	15	30	38	28	2.63	1.30	**Not Accepted**
6	I use online presentation tools (e.g., PowerPoint, Prezi, Canva) to create and deliver presentations for your coursework	21	10	27	40	29	2.64	1.36	**Not Accepted**
7	I use digital note-taking applications (e.g., OneNote, Evernote, Notion) to organise my study materials and lecture notes	10	11	30	33	43	2.31	1.24	**Not Accepted**
8	I engage with virtual learning environments (e.g., Coursera, edX, Khan Academy) to supplement my coursework?	18	13	37	39	20	2.76	1.25	**Not Accepted**
9	I use multimedia creation tools (e.g., Adobe Creative Suite, iMovie, Audacity) to produce videos, podcasts, or graphics for your assignments	13	18	27	37	32	2.55	1.29	**Not Accepted**
10	I use task management and productivity apps (e.g., Trello, Asana, Todoist) to plan and manage my academic workload	11	10	27	37	42	2.30	1.25	**Not Accepted**
N	**127**	**Criterion Mean**	**3.00**	**Aggregate Mean**	**=**	**2.49**	**St.d**	**=**	**1.29**

As revealed in Table 2, the aggregate mean of 2.49 is lower than the criterion mean of 3.00, which signifies that the extent of use of digital tools for learning among postgraduate students of Library and Information Science in South-South, Nigeria is generally low. This implies that although students make some effort to access e-books ($\bar{x}$ = 2.67, St.d = 1.36), engage with virtual learning environments ($\bar{x}$ = 2.76, St.d = 1.25), and use collaborative or presentation tools ($\bar{x}$ = 2.63–2.64), their overall adoption and effective use of digital tools for academic purposes remain inadequate. This low utilization suggests that limited digital competencies and weak institutional support (as seen in previous findings) may be contributing factors to the underuse of available digital tools.

Research Question Three: What is the relationship between digital competencies and the use of digital tools for learning by postgraduate students?

Table 3: Linear Regression on Relationship between Digital Competencies and the Use of Digital Tools for Learning

Model	R	R^2	Sum of Squares	Df	F	Mean Square	Sig.
Regression			19687.095	1	5711.187	19687.095	.000[b]
Residual	.989[a]	.979	430.889	125		3.447	
Total			20117.984	126			

The data presented in Table 3 indicate a very strong relationship between digital competencies and the use of digital tools for learning by postgraduate students. The regression model produced an R value of .989 and an R^2 value of .979, which shows that about 97.9% of the variance in the use of digital tools is explained by students' digital competencies.

Furthermore, the regression was found to be statistically significant, with $F(1,125) = 5711.187$, $p = 0.000$; $p < 0.05$. This means that the model significantly predicts the use of digital tools for learning. Since the significance value ($p = 0.000$) is less than the 0.05 threshold, the null hypothesis which states that there is no significant relationship between digital competencies and the use of digital tools for learning by postgraduate students is rejected. Therefore, it is concluded that digital competencies statistically and significantly influence the use of digital tools for learning by postgraduate students in South-South, Nigeria.

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DISCUSSION OF THE FINDINGS

This section of the study is focused on the discussion of the findings in line with the research questions and hypotheses in chapter one of this study, which are presented as follows:

Extent of Digital Competencies of Postgraduate Students

The finding from research question one revealed that the extent of digital competencies of postgraduate students of Library and Information Science in South-South, Nigeria is generally low. The finding implies that there is a pressing need for targeted digital literacy training and continuous professional development. Strengthening students' digital skills will not only enhance their effective use of digital tools for learning but also better prepare them as future information professionals capable of thriving in technology-driven library and information service environments.

This finding aligns with the work of Adewuyi and Ayodele (2022), who reported that poor digital literacy significantly hindered e-learning adoption among postgraduate students in federal universities in South-West Nigeria. Their study showed that although students had a moderate level of digital literacy, it directly influenced their uptake of e-learning technologies. The similarity between both studies emphasizes the persistent challenge of digital competence as a determinant of students' ability to maximize learning technologies.

Similarly, Smith and Brown (2021) found that while postgraduate students were comfortable using basic digital tools, only half demonstrated proficiency with more complex applications. This mirrors the present finding that postgraduate students exhibit low digital competencies, suggesting that many remain unprepared to fully exploit advanced digital platforms that enhance research and learning outcomes.

However, the current study's finding contrasts with that of Chukwu and Adebayo (2021), who discovered that postgraduate students in Nigerian private universities possessed high levels of digital competencies and were actively engaged in blended learning. The disparity may be attributed to institutional differences, such as variations in ICT infrastructure, training opportunities, and digital culture between private and public universities. Whereas private institutions may provide stronger institutional support and digital training, the students in South-South Nigeria, as revealed in the present study, still struggle with inadequate competencies.

Extent of Use of Digital Tools for Learning

The output from research question three revealed that the extent of use of digital tools for learning among postgraduate students of Library and Information Science in South-South, Nigeria is generally low. The generally low use of digital tools for learning among postgraduate students highlights the need for deliberate integration of digital technologies into teaching, research, and library services, ensuring that future information professionals develop the practical experience and confidence required to operate effectively in today's technology-driven information landscape.

This finding is consistent with the study by Oluwadamilola and Nwachukwu (2019), which reported that postgraduate students in South-West Nigeria demonstrated moderate digital literacy skills but made limited use of e-resources. Only 32% of respondents indicated frequent use of digital tools for academic purposes, citing challenges such as limited internet access and inadequate training. Like the present study, their findings highlight a persistent gap between access to digital tools and their effective utilization in postgraduate education.

Similarly, Okafor and Ezeanya (2022) found low levels of awareness and adoption of digital tools among postgraduate students in South-South Nigeria, with only 35% of respondents reporting frequent use. Their study identified digital skills, institutional encouragement, and perceived ease of use as major influencing factors, reinforcing the present finding that the use of digital tools among postgraduate students remains generally low in the region.

However, the present study contrasts with the work of Tenopir et al. (2015), who reported extensive use of online databases and digital libraries by postgraduate students, with 90% of respondents identifying these resources as crucial for their research. The difference may be explained by contextual variations: Tenopir et al. focused on postgraduate students in settings where institutional support, internet access, and training opportunities were more readily available, while the current study highlights challenges unique to South-South Nigeria, such as infrastructural deficits and low institutional integration of digital tools.

Relationship between Digital Competencies and Use of Digital Tools

The results from research question four and hypothesis one indicated that digital competencies statistically and significantly influence the use of digital tools for learning by postgraduate students in South-South, Nigeria**.** The finding implies that strengthening postgraduate students' digital competencies through targeted training and support will directly enhance their effective use of digital tools for learning, thereby improving research productivity, academic performance, and readiness for professional practice in the digital-driven library and information science field.

This finding aligns with the study by Okiki (2011), who reported that postgraduate students at the University of Lagos with moderate ICT competencies were more likely to use digital tools for academic purposes compared to their less competent peers. However, Okiki also noted that despite moderate competence levels, actual utilisation of digital tools remained below expectation, suggesting that competence is a key but not exclusive determinant of use. The similarity lies in confirming that digital competencies are directly tied to the effective use of digital tools for postgraduate learning.

Similarly, Ilomäki et al. (2016) in Finland found that postgraduate students who demonstrated high digital competencies showed significantly greater engagement with digital learning tools ($R = 0.68$). Their study underscores the same relationship as observed in the present research: that strong digital competencies enable postgraduate students to more actively and effectively integrate digital technologies into their learning practices. While their context differs geographically and methodologically, both studies reinforce the central role of digital competence in digital tool utilisation.

Conversely, the present finding contrasts with Olatokun (2009), who discovered that despite high levels of access to ICTs among postgraduate students in Southwestern Nigeria (70%), effective utilisation for academic learning was relatively low (55%). This suggests that access to digital tools and even a baseline level of competency may not automatically translate to high levels of use. Factors such as institutional

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support, cultural attitudes, or motivation could explain why competence did not lead to optimal tool usage in Olatokun's study, whereas in the present study, digital competencies significantly predicted usage.

CONCLUSION

Based on the findings of this study, it can be concluded that postgraduate students of Library and Information Science in the region possess a generally low level of digital competencies. This suggests that many students lack adequate technical, problem-solving, and critical-thinking skills required to effectively engage with digital learning platforms and resources. Furthermore, the study established that the extent of use of digital tools for learning among these students is also low, indicating limited integration of available digital technologies in their academic and research activities.

However, a significant positive relationship was found between digital competencies and the use of digital tools for learning. This implies that students who possess higher digital skills are more likely to effectively utilise digital tools for research, collaboration, and learning enhancement. The result underlines the crucial role of digital competence as a determinant of effective digital tool utilisation among postgraduate students.

RECOMMENDATIONS

Based on the findings of the study on digital competencies and the use of digital tools for learning by postgraduate students in South-South, Nigeria, the following recommendations are made:

1. To address the low digital competencies of postgraduate students, universities and faculty in Library and Information Science should organise regular digital literacy workshops and hands-on training sessions, focusing on technical, research, and problem-solving skills. These should be implemented through collaboration with ICT experts and embedded into the postgraduate curriculum to ensure consistent skill acquisition.
2. To increase the extent of digital tool usage among postgraduate students, lecturers and academic advisors should deliberately integrate digital tools into teaching, assignments, and research activities, while providing students with guided practice. This should be reinforced by continuous monitoring and feedback mechanisms to encourage regular use of digital resources.
3. Since digital competencies significantly influence the use of digital tools for learning, universities should establish compulsory digital skills development modules as part of postgraduate programmes. These modules should be delivered through blended learning approaches, combining classroom instruction with practical exercises on real academic platforms and research databases.

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