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Research Article

Institutional Factors Influencing the Utilisation of Digital Tools for Learning Among Postgraduate Students of Library and Information Science in South-South, Nigeria

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Abstract

This study investigated institutional factors influencing the utilisation of digital tools for learning among postgraduate students of Library and Information Science in South-South, Nigeria. Specifically, it examined (i) the extent of availability of institutional factors that influence the use of digital tools for learning, (ii) the extent of use of digital tools among postgraduate students, and (iii) the relationship between institutional factors and the utilisation of digital tools for learning. The study adopted a correlational research design to determine the relationship between institutional factors—such as infrastructure, policy support, and institutional services—and students' use of digital tools. The population comprised all 161 postgraduate students of Library and Information Science in Delta State University, Abraka (64), Ambrose Alli University, Ekpoma (26), and Ignatius Ajuru University of Education, Port Harcourt (71). Due to the manageable population size, the total enumeration (census) sampling technique was employed, involving all 161 students. Data were collected using a self-structured questionnaire titled "Institutional Factors and Utilisation of Digital Tools for Learning Questionnaire (IFUDTLQ)," adapted from Bielaczyc et al. (2021) and Rafiq et al. (2024). Content validity was ensured through expert review, while the reliability coefficient obtained using Cronbach's Alpha was 0.86, indicating high internal consistency. Out of 161 copies distributed, 127 (79%) were returned and analysed. Data were analysed using descriptive statistics (mean and standard deviation) and inferential statistics (Pearson's Product-Moment Correlation Coefficient) at a 0.05 level of significance. Findings revealed that the extent of availability of institutional factors was generally low, with an aggregate mean of 2.64 (< 3.00). Similarly, the extent of use of digital tools was also low, with an aggregate mean of 2.49 (< 3.00). However, institutional factors showed a very strong positive correlation with the use of digital tools ($r = .990$, $p = .000 < 0.05$), indicating that improved institutional support significantly enhances digital tool utilisation among postgraduate students. It was concluded that inadequate infrastructure, weak policy implementation, and insufficient technical support hinder students' effective engagement with digital tools. The study recommended that universities invest in robust ICT infrastructure, enforce clear e-learning policies, and provide continuous capacity-building initiatives to improve digital competence and institutional readiness for technology-enhanced learning.

Keywords

Institutional Factors, Digital Tools, Postgraduate Students, Library and Information Science, South-South Nigeria, E-learning Adoption, Technological Infrastructure

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1. Introduction

The introduction of digital tools into education has been transformative, offering new methods for delivering content and engaging learners [14]. noted that the adoption of digital technologies began with the emergence of Learning Management Systems (LMS) such as Moodle and Blackboard, which revolutionised the distribution and management of course materials. These platforms now form the backbone of educational organisation, communication, and real-time feedback, creating more interactive and collaborative learning experiences for postgraduate students. Digital tools—including reference management software, online journals, and research databases—have further streamlined research processes, improved access to knowledge, and enhanced academic productivity.

Digital tools encompass technologies that enhance learning and academic efficiency. [21] Identified them as applications that assist in organising, analysing, and presenting scholarly work [9], while emphasised their contribution to data collection and analysis, improving research outcomes. Similarly [33], highlighted their role in expanding access to information and fostering collaboration. Collectively, these perspectives position digital tools as essential for postgraduate education by improving efficiency, accuracy, and inclusivity, bridging traditional and modern learning approaches.

Postgraduate students employ a wide range of tools to support their academic and research activities. LMS platforms like Canvas and Blackboard facilitate course management and communication [16], while reference management tools such as EndNote and Mendeley simplify citation and bibliography processes [21]. Analytical tools like SPSS and NVivo support quantitative and qualitative research, ensuring methodological rigour [9]. Together, these technologies enhance research quality, collaboration, and time management, enriching the postgraduate learning experience.

However, research indicates that institutional factors significantly influence the effective utilisation of digital tools. [39] defined institutional factors as encompassing institutional vision, technological infrastructure, and support systems that facilitate or hinder online education. [23] similarly identified institutional support as academic and financial services—ranging from faculty guidance and workshops to scholarships and grants—that enhance student success. [24] added that institutional support includes academic advising, technological assistance, and counselling, all of which foster digital learning engagement.

Bond, M. et al. found that universities with robust digital infrastructure achieve higher student engagement and performance [8], while [18] noted that such institutions-maintained learning continuity during the COVID-19 pandemic. [34] observed that tools like LMS and virtual simulations enhance learning through personalisation and feedback, though their effectiveness depends on institutional support. [33] further argued that continuous professional development for educators is essential for effective integration. Additionally, [38] cautioned that unequal access to technology widens educational disparities, stressing the need for financial support such as grants and internet subsidies. Finally, institutional policies and leadership play pivotal roles. [19] highlighted that supportive policies promoting digital literacy through training and curriculum integration increase engagement. [12] concluded that leadership commitment to digital innovation inspires adoption, as academic leaders who model digital tool use encourage similar practices among students.

1.1. Statement of the Problem

In recent years, the integration of digital tools into higher education has transformed teaching, learning, and research processes, offering flexible access to information, collaboration, and innovation. For postgraduate students in Library and Information Science (LIS), digital tools such as Learning Management Systems (LMS), digital libraries, e-books, online databases, and collaborative platforms like Microsoft Teams and Google Classroom have become indispensable for effective learning and research engagement. These tools are expected to enhance students' ability to access, manage, and disseminate information efficiently.

However, despite the availability of digital technologies and increasing institutional emphasis on digital transformation, several studies and informal observations indicate that postgraduate students in Nigeria, particularly in the South-South region, are not fully utilising digital tools for learning as expected [25, 29]. Many students continue to rely heavily on traditional learning methods and underuse institutional digital resources. This underutilisation raises concerns about the institutional conditions that may be impeding effective adoption and sustained use of digital tools for postgraduate learning.

Institutional factors such as ICT infrastructure, availability of digital resources, policy implementation, funding, and administrative support are critical determinants of how effectively digital tools are utilised in higher education. Inadequate digital infrastructure, limited institutional support, poor internet connectivity, insufficient training opportunities, and lack of clear digital policies can all hinder the optimal use of digital tools by postgraduate students. These institutional shortcomings may create disparities in access and utilisation, affecting students' learning outcomes, research productivity, and readiness for technology-driven academic and professional environments. Given the increasing centrality of digital tools in modern academic practice, it is essential to examine the extent to which institutional factors influence the utilisation of these tools among postgraduate students of Library and Information Science in South-South, Nigeria.

1.2. Research Questions

The following research questions guided this study:

1) What is the extent of availability of institutional factors that can influence the use of digital tools for learning?
2) What is the extent of the use of digital tools for learning among postgraduate students?
3) What is the relationship between institutional factors and the use of digital tools for learning by postgraduate students?

2. Literature Review

This section of this research study is hinged on the review of related, current, and relevant literature that focuses on institutional factors and utilisation of digital tools for learning among postgraduate students of Library and Information Science in South-South, Nigeria. The review of related literature is presented as follows.

2.1. Theoretical Framework

This study is anchored on the Technology Acceptance Model (TAM) developed by [10], which provides a theoretical basis for understanding how individuals accept and use technology. The model posits that two primary factors—perceived usefulness and perceived ease of use—determine users' attitudes toward adopting technology. Perceived usefulness refers to the extent to which an individual believes that using a particular system will enhance performance, while perceived ease of use denotes the degree to which the user expects the technology to be free of effort. These two perceptions jointly influence users' behavioural intentions and, ultimately, their actual use of technology.

TAM's relevance extends to higher education, where technology acceptance is shaped not only by personal attitudes but also by institutional environments. [41] expanded TAM into TAM2, introducing additional constructs such as social influence and facilitating conditions, while the Unified Theory of Acceptance and Use of Technology (UTAUT) [42] further incorporated performance expectancy, effort expectancy, social influence, and facilitating conditions. Among these, facilitating conditions—which include institutional support, infrastructure, and resource availability—are particularly significant in determining technology utilisation within academic institutions.

In the context of this study, TAM is employed to explain how institutional factors influence the utilisation of digital tools for learning among postgraduate students of Library and Information Science in South-South Nigeria. Institutional elements such as the provision of adequate ICT infrastructure, access to digital libraries and databases, effective policy implementation, funding support, and training opportunities directly affect students' perceptions of usefulness and ease of use of digital tools. For instance, reliable internet connectivity, well-maintained learning management systems, and continuous institutional support can enhance students' confidence and willingness to engage with digital platforms. Conversely, limited infrastructure and weak institutional support may reduce perceived usefulness, discourage engagement, and hinder adoption.

2.2. Institutional Factors Influencing the Use of Digital Tools for Learning Among Postgraduate Students

The effective utilisation of digital tools for learning among postgraduate students is strongly shaped by institutional factors that determine access, support, and sustainability. In higher education, digital tools enhance learning flexibility, collaboration, and research productivity, but their successful adoption depends largely on the institutional environment [4]. Key factors include technological infrastructure, institutional policies, faculty and student support, institutional culture, digital resource availability, and financial support.

Technological Infrastructure: Adequate technological infrastructure forms the foundation for effective digital learning. The availability of reliable internet connectivity, up-to-date computer systems, and access to digital devices is essential [4]. Without these, students may struggle to access learning management systems, online databases, or virtual classrooms.

Institutional Policies and Strategies: Policies that promote technology integration and innovation are central to sustaining digital learning. [6] emphasise that clear strategies supporting digital education, open resources, and continuous improvement foster a culture of effective technology use. Institutional visions that prioritise digital learning also influence how resources are allocated and managed.

Faculty Support and Professional Development: Faculty competence and attitude towards technology greatly influence digital tool adoption. Professional development initiatives and continuous training help lecturers integrate technology effectively into teaching and research [37]. Ongoing institutional support ensures instructors remain updated with evolving digital pedagogies [5].

Student Support Services: Technical support, digital literacy programmes, and academic advising assist students in using digital tools effectively. Comprehensive support systems help students overcome technological barriers and build confidence in digital learning environments [43].

Institutional Culture and Attitudes: A culture that values innovation and experimentation encourages both students and staff to engage with digital technologies [33]. Institutions resistant to change often face slower adoption rates, limiting digital learning effectiveness [40].

Availability of Digital Resources and Funding: Access to rich digital resources such as e-books, journals, and databases enhances research and self-directed learning [20]. Equally, sustained funding for infrastructure, training, and technologi-

cal upgrades ensures long-term success in digital learning initiatives [3].

2.3. Digital Competencies of Postgraduate Students

Lee, J. et al, in their study on Digital Literacy and Technical Skills among Postgraduate Students, assessed 400 students and found that 68% possessed high digital literacy ($p < 0.01$), while only 55% had advanced technical skills ($p < 0.05$). They concluded that although digital literacy was satisfactory, advanced technical skills required further development, recommending targeted workshops and continuous skill-building programs [22]. [35] in Evaluating Technical Competence in the Use of Digital Learning Tools, examined 450 postgraduate students and reported that 70% were comfortable with basic digital tools ($p < 0.01$), but only 50% were proficient in complex applications ($p < 0.05$). They recommended integrating advanced digital modules into academic curricula.

Willians, R. et al, in Information Literacy among Postgraduate Students, surveyed 400 participants and found that 65% demonstrated strong information literacy ($p < 0.01$), but only 50% could critically assess source credibility ($p < 0.05$) [44]. They suggested specific training in source evaluation. Similarly, [19] in Information Literacy Skills in the Digital Age, revealed that 70% of 450 respondents were adept at locating online information ($p < 0.01$), but only 48% effectively synthesized and applied it ($p < 0.05$), recommending enhanced instruction in information application.

Gonzalez, L. et al, in Postgraduate Students' Information Literacy: A Critical Assessment, surveyed 500 students and found that 75% had strong basic literacy ($p < 0.01$), but only 52% could use advanced databases effectively ($p < 0.05$). They urged the inclusion of advanced literacy training in research courses. Likewise [17, 31] in Evaluating Information Literacy Competencies, found that while 78% of 480 students exhibited basic literacy ($p < 0.01$), only 50% excelled in critical synthesis ($p < 0.05$), advocating workshops and practical exercises to enhance higher-order literacy skills.

2.4. Relationship Between Institutional Factors and the Use of Digital Tools for Learning by Postgraduate Students

The extent to which institutional factors influence the use of digital tools for learning among postgraduate students has been widely studied, including within Nigeria. These factors—technological infrastructure, institutional policies, support services, institutional culture, availability of digital resources, and funding—collectively determine how effectively digital tools are integrated into learning environments. Technological infrastructure is foundational for digital learning. [13] found that only 30% of Nigerian universities had adequate infrastructure, limiting students' ability to engage with online platforms. In contrast, [4] reported that over 80% of students in Israeli universities with strong infrastructure regularly used digital platforms, underscoring its importance. Institutional policies and strategies guide technology integration. [7] observed that supportive policies increased digital tool adoption by 50%, a finding reinforced by [28] who reported higher usage rates in Nigerian universities with defined e-learning policies.

Support services also play a crucial role. [43] noted 40% higher satisfaction among students receiving robust technical and academic support, while [4]found inadequate support in Nigerian universities hindered adoption.

3. Methodology

3.1. Research Design

The study adopted a correlational research design to examine the influence of institutional factors on the utilisation of digital tools for learning among postgraduate students of Library and Information Science in South-South, Nigeria. The correlational design is appropriate because it allows the researcher to determine the degree and direction of the relationship between variables without manipulating them [9]. This design is suitable for identifying patterns of association between institutional factors—such as technological infrastructure, institutional policies, and support services—and the extent of digital tool utilisation for learning purposes. By employing this design, the study seeks to establish empirical relationships that can inform institutional policies and practices aimed at improving the effective use of digital tools among postgraduate students.

3.2. Population of the Study

The population of the study comprised all 161 postgraduate students of Library and Information Science in public universities located in Delta, Edo, and Rivers States, Nigeria. This included students enrolled in both M.Sc. and Ph.D. programmes for the 2023/2024 and 2024/2025 academic sessions. The distribution of the population across institutions was as follows: Delta State University, Abraka (64 students); Ambrose Alli University, Ekpoma (26 students); and Ignatius Ajuru University of Education, Port Harcourt (71 students). These figures were obtained from the departmental administrative offices of the respective universities (2025).

3.3. Sample and Sampling Technique

Given the relatively small and manageable size of the population, the study employed the total enumeration (census) sampling technique, where the entire population served as the sample. This technique ensures that every member of the population is included, thereby eliminating sampling error and enhancing the accuracy of findings. According to [15], total enumeration sampling is appropriate when the population is small,

accessible, and manageable, allowing the researcher to obtain comprehensive data from all respondents. Consequently, the sample for this study consisted of all 161 postgraduate students of Library and Information Science in the three universities under study.

3.4. Research Instrument

Data were collected using a self-structured questionnaire titled "Institutional Factors and Utilisation of Digital Tools for Learning Questionnaire" (IFUDTLQ). The instrument was adapted from validated scales, including the Institutional Support for Online and Blended Learning Scale (Bielaczyc et al., 2021) and the Digital Tools and Online Learning Scale [32], with modifications to suit the current study context. The questionnaire comprised two sections: Section Section A (institutional factors such as infrastructure, policy, and support) and Section B (extent of digital tool utilisation). Items were rated on a five-point Likert scale ranging from Very High Extent (5) to Very Low Extent (1).

3.5. Data Analysis

Data were analysed using both descriptive and inferential statistics. Mean and standard deviation were used to answer research questions one and two, while Pearson's Product-Moment Correlation Coefficient and was applied to answer research question three at the 0.05 level of significance.

4. Results

Table 1. *Questionnaire Response Rate.*

Copies of the Questionnaire Administered	Copies of the Questionnaire Returned	Percentage
161	127	79

Data in Table 1 reveal that a total of 161 copies of the questionnaire were administered and a total of 127 (79%) were filled, returned and used for conducting the study, from which generalisations were made. The response rate of 79% is considered adequate for conducting the study because the standard and acceptable response rate for most studies is 60% and above [11].

Research Question One: What is the extent of availability of institutional factors that can influence the use of digital tools for learning?

Table 2. *Extent of Availability of Institutional Factors.*

S/N	Statement on Institutional Factors	VHE	HE	ME	LE	VLE	$\bar{x}$	St.d	Dec.
1	How adequate is the availability of digital infrastructure in your institution for supporting digital learning	11	17	33	44	22	2.61	1.18	Not Accepted
2	How well does your institution provide support for troubleshooting issues related to digital tools	16	15	48	19	29	2.76	1.28	Not Accepted
3	How easily can you access digital learning resources provided by your institution	21	18	40	14	34	2.83	1.40	Not Accepted
4	How satisfied are you with the functionality of the Learning Management System	15	16	49	18	29	2.76	1.27	Not Accepted
5	How often does your institution offer training sessions or workshops on the effective use of digital tools for learning	10	9	27	33	48	2.21	1.25	Not Accepted
6	How clearly does your institution communicate policies and guidelines regarding the use of digital tools for learning	10	18	29	31	39	2.44	1.28	Not Accepted

S/N	Statement on Institutional Factors	VHE	HE	ME	LE	VLE	$\bar{x}$	St.d	Dec.
7	How adequate is the financial support provided by your institution for purchasing necessary digital tools or software for learning	11	10	27	39	40	2.31	1.24	Not Accepted
8	How effectively does your institution integrate digital tools into the curriculum to enhance learning outcomes	29	37	18	10	33	3.15	1.52	Accepted
9	How accessible are online courses and programs offered by your institution, and how well do they incorporate digital tools for learning	10	15	41	25	36	2.51	1.24	Not Accepted
10	How effectively does your institution promote peer support and collaboration through digital platforms	18	15	41	27	26	2.78	1.30	Not Accepted
N 127 Criterion Mean 3.00 Aggregate Mean = 2.64 St.d = 1.30									

As revealed in Table 2, the aggregate mean of 2.64 is lower than the criterion mean of 3.00, which signifies that the extent of availability of institutional factors supporting the use of digital tools for learning among postgraduate students of Library and Information Science in South-South, Nigeria is generally low. This implies that while there is some institutional effort in integrating digital tools into the curriculum ($\bar{x}$ = 3.15, St.d = 1.52), most other institutional supports—such as infrastructure, training, financial support, and accessibility of resources—are inadequate, limiting students' effective use of digital tools for learning.

Research Question Two: What is the extent of the use of digital tools for learning among postgraduate students?

Table 3. *Extent of Use of Digital Tools for Learning.*

S/N	Statement on Use of Digital Tools	VHE	HE	ME	LE	VLE	$\bar{x}$	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

S/N	Statement on Use of Digital Tools	VHE	HE	ME	LE	VLE	$\bar{x}$	St.d	Dec.
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 3, 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 institutional factors and the use of digital tools for learning by postgraduate students?

Table 4. *Relationship between Institutional Factors and Use of Digital Tools.*

		Institutional Factors	Use of Digital Tools
Institutional Factors	Pearson Correlation	1	.990**
	Sig. (2-tailed)		.000
	N	127	127
Use of Digital Tools	Pearson Correlation	.990**	1
	Sig. (2-tailed)	.000	
	N	127	127

α =0.05

The data in Table 4 show that institutional factors have a very strong positive correlation with the use of digital tools (r =.990, p = 0.000; p < 0.05). This implies that improved institutional factors, such as infrastructure, policy support, and access to facilities, significantly enhance postgraduate students' use of digital tools for learning. Since the probability value (p = 0.000) is less than the alpha level of 0.05, it was therefore concluded that institutional factors statistically significantly influence the use of digital tools for learning by postgraduate students.

5. Discussion of the Findings

This section of the study is focused on the discussion of the findings in line with the research questions raised in the study, which are presented as follows:

Extent of Availability of Institutional Factors

The finding from research question two indicated that the extent of availability of institutional factors supporting the use of digital tools for learning among postgraduate students of Library and Information Science in South-South, Nigeria is generally low. The low availability of institutional factors supporting the use of digital tools suggests that universities in South-South, Nigeria need to strengthen ICT infrastructure, provide reliable internet access, and ensure adequate technical support. Doing so will create an enabling learning environment that empowers postgraduate students of Library and Information Science to effectively engage with digital tools and acquire the competencies required for professional practice in modern information environments.

This finding is consistent with the study of [26], who reported that rigid institutional policies, lack of technical support, and inadequate awareness negatively affected postgraduate students' engagement with digital learning tools in public

universities. Their conclusion that flexible policies and better support structures could enhance students' use of digital technologies underscores the present study's finding that institutional weaknesses limit students' digital learning experiences.

Similarly, [23] found that institutional support mechanisms strongly influenced the adoption of AI-driven learning tools among postgraduate students in Latin American universities. With a significant positive correlation (r = 0.84), their study showed that when institutions provide adequate support, postgraduate students are more likely to adopt and use digital technologies effectively. This aligns with the current study by confirming that institutional factors play a central role in shaping students' engagement with digital tools, regardless of geographical or cultural differences.

However, the present finding contrasts with that of [1] who discovered that institutional support was strongly available and significantly influenced postgraduate students' utilization of e-learning resources in federal universities in South-West Nigeria. The divergence may be attributed to differences in institutional funding, ICT policies, and regional infrastructural development. While universities in the South-West may have benefited from stronger government or institutional investment in digital infrastructure, those in the South-South appear to be lagging behind, as reflected in the present study's outcome.

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 [30] 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, [27] 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 [36], 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: [36] 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 Institutional Factors and Use of Digital Tools

The finding from research question five and hypothesis two revealed that institutional factors statistically and significantly influence the use of digital tools for learning by postgraduate students. The finding proves that improving institutional support—such as providing reliable infrastructure, access to digital resources, and favourable policies—will significantly enhance postgraduate students' use of digital tools for learning, thereby fostering better academic outcomes and professional preparedness in the library and information science field.

This finding is consistent with [2], who found that 68% of the variance in students' use of digital tools could be explained by institutional support, particularly in the areas of reliable internet connectivity, digital library provision, and training opportunities. His study, conducted across federal and state universities in South-West Nigeria, confirmed that institutions with strong ICT infrastructure and supportive policies recorded significantly higher adoption of digital tools. This aligns closely with the present research, which emphasizes the enabling role of institutional factors in postgraduate students' digital engagement.

Similarly, [1] reported that institutional funding, administrative support, and ICT training programs were significantly correlated with postgraduate students' effective use of digital tools, accounting for over 70% of the observed variation in learning practices. His findings highlight the critical role of resource allocation and institutional commitment in shaping students' digital learning behaviors, reinforcing the results of the current study that institutional conditions are strong predictors of technology adoption and use.

However, the present findings contrast with, [13] who discovered that only 30% of Nigerian universities had sufficient technological infrastructure, a limitation that posed a significant barrier to postgraduate students' adoption of digital tools. Their study suggested that even when students are willing to use digital tools, inadequate institutional support severely restricts usage. This result highlights a key divergence from the current study, which shows a significant positive influence of institutional factors, implying that in contexts where institutions do provide sufficient infrastructure and resources, students' use of digital tools increases markedly.

6. Conclusion

Based on the findings, it was concluded that institutional factors such as technological infrastructure, supportive poli-

cies, and academic or technical support were generally inadequate. Similarly, the utilisation of digital tools for learning among postgraduate students was found to be low. However, a significant positive relationship existed between institutional factors and the use of digital tools, showing that improved institutional support enhances students' engagement with digital technologies. These findings suggest that inadequate infrastructure, weak policies, and limited support hinder students' effective use of digital tools. Therefore, universities and policymakers should invest in reliable digital infrastructure, implement strong e-learning policies, and provide continuous capacity-building programmes to strengthen institutional support for digital learning and improve postgraduate education outcomes.

7. Recommendations

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

1) To improve the availability of institutional factors, university management and policymakers should invest in ICT infrastructure, provide reliable internet connectivity, and ensure access to up-to-date digital resources. This can be achieved by prioritising ICT in budget allocations and establishing partnerships with technology providers to enhance institutional support systems.
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) Given that institutional factors significantly affect the use of digital tools, university administrators should develop clear ICT policies, provide continuous technical support, and create enabling learning environments that promote digital engagement. Implementation should involve dedicated ICT support units within faculties to promptly respond to students' digital learning needs.

Abbreviations

LIS	Library and Information Science
IFUDTLQ	Institutional Factors and Utilisation of Digital Tools for Learning Questionnaire
ICT	Information and Communication Technology
LMS	Learning Management Systems
SPSS	Statistical Package for the Social Sciences
NVivo	Qualitative Data Analysis Software
TAM	Technology Acceptance Model
TAM2	Technology Acceptance Model 2
UTAUT	Unified Theory of Acceptance and Use of Technology
M.Sc.	Master of Science
Ph.D.	Doctor of Philosophy
St.d	Standard Deviation
Sig.	Significance
α	Alpha level (Level of significance)
r	Correlation coefficient
p	Probability value
VHE	Very High Extent
HE	High Extent
ME	Moderate Extent
LE	Low Extent
VLE	Very Low Extent
S/N	Serial Number
$\bar{x}$	Mean (X-bar)

Author Contributions

Erikume Progress: Conceptualization, Funding acquisition, Investigation, Methodology, Project administration, Resources, Writing – original draft

Lawrence Arumuru: Data curation, Formal Analysis, Software, Visualization

Edwin Iroroeavwo Achugbue: Supervision, Validation, Writing – review & editing

Conflicts of Interest

The authors declare no conflicts of interest.

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