

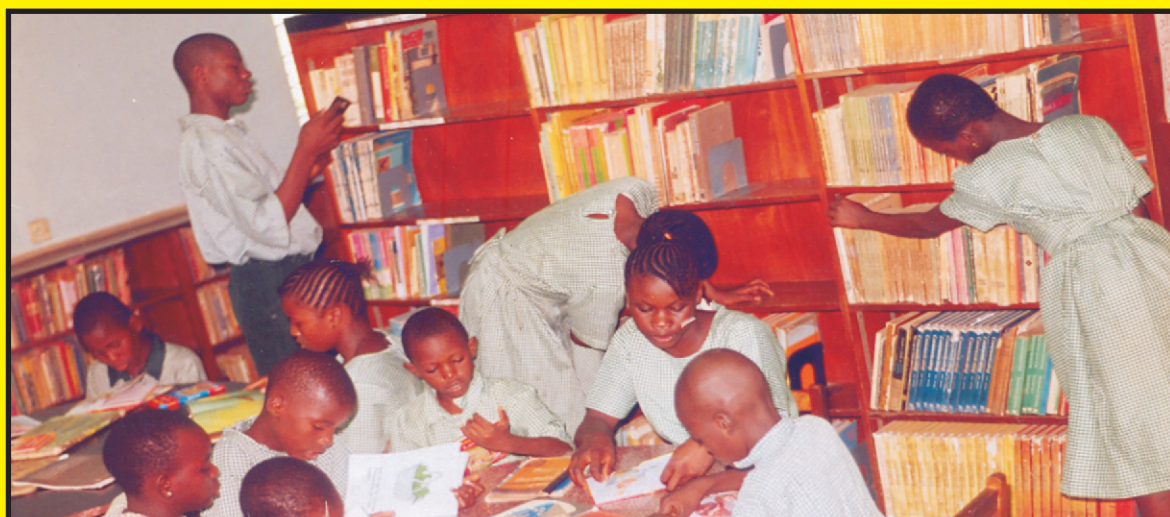
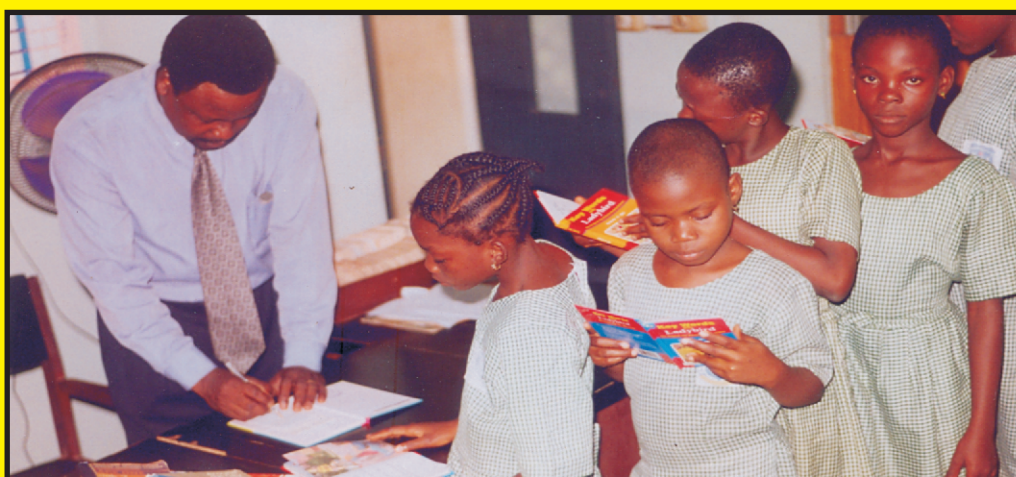
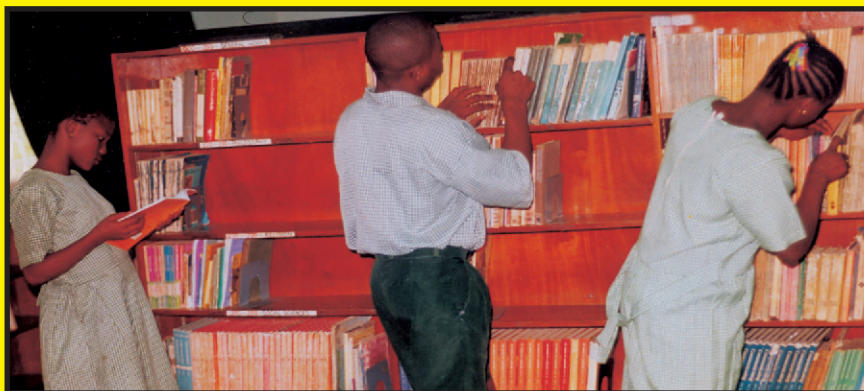


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Editorial

Welcome to the latest edition of the *Nigerian School Library Journal*, where we continue our exploration of educational innovations that shape and define contemporary learning environments. This issue is particularly timely, as it reflects the profound impact of the COVID-19 pandemic on education, pushing institutions across the world to rapidly adapt to new models of learning, particularly online and hybrid formats. From advanced technology integration to the quest for equitable access, the articles in this volume offer invaluable insights into how the education sector is transforming to meet the needs of today's learners.

One of the standout pieces in this edition examines the use of Google Classroom and WhatsApp for online skincare training at Ace the Wayout Beauty School in Ibadan, Nigeria, during the pandemic. As the world shifted to virtual classrooms, this case study offers a fascinating look into the practical application of online platforms for vocational education in a context where access to technology is often limited. The issue also highlights the growing role of artificial intelligence (AI) in shaping the future of education, with a focus on how AI is empowering libraries in public universities. The integration of AI technologies and user analytics is revolutionising service delivery and decision-making within academic libraries. However, as we explore in this edition, the adoption of these technologies is not without its challenges. Many institutions in Nigeria and other developing nations struggle with the infrastructural and human capital requirements necessary to effectively integrate AI into their systems. Additionally, the articles in this edition propose recommendations for stronger regulatory frameworks and ethical guidelines to ensure that AI technologies are deployed responsibly, keeping student rights and data security at the forefront of educational innovation.

As we move toward a future that increasingly relies on digital technologies, this edition of *Nigerian School Library Journal* serves as a timely reflection on the intersection of technology, education, and ethics. In this volume, you will find a collection of articles that not only highlight the advancements we are seeing in education technology but also critically examine the challenges and opportunities these innovations bring. I encourage you to read each article with a mind open to the possibilities and an eye on the necessary steps we must take to ensure that education, in all its forms, can thrive in an increasingly digital world. This issue is special because it is the issue to celebrate the 40 years anniversary of the Journal.

We look forward to your feedback and continued engagement with the important issues that shape the future of education.



Prof. David F. Elaturoti

Research Competence and Use of Open Educational Resources by Lecturers in Federal Universities in Southwest, Nigeria.

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Abstract

Open Educational Resources have gained popularity in recent years due to its potential to reduce the cost of education, increase access to educational resources and improve the quality of education. Descriptive research design of the survey type was employed. The total population was 8,707 lecturers across the six Federal Universities in Southwest, Nigeria; a population sample of 265 lecturers was drawn using multistage sampling technique. An adapted questionnaire was administered to 265 lecturers. A total of 243(91.7%) copies of questionnaire were returned and analysed using frequency count, percentage, mean and standard deviation. The findings of the study revealed that e-journal and databases are the most frequently used OERs among lecturers in Southwest, Nigeria. It was also revealed that OERs are always used by lecturers in Southwest, Nigeria. There was significant relationship between research competence and use of OERs among lecturers in Federal Universities in Southwest, Nigeria ($P=0.695>0.05$). The study concluded that lecturers generally possess a commendable level of research competence, regarding OERs and recognize their potential to enhance teaching and learning. The study recommends among others that lecturers should be encouraged to explore other types of OERs such as Japan Open Software Consortium, Open Learning Initiative, Open Educational Resource Commons among others.

Keywords: *Research Competence, Use of Open Educational Resources, Lecturers*

Introduction

Institutions of higher learning and educational institutions around the world have inculcated the use of internet and other digital technologies to develop and distribute teaching and learning materials. Lecturers are committed to improving access to scholarly and educational contents for their use and with this objective in mind, the academia continuously update their collections of learning and teaching materials. Open Educational resource OERs being one of the most prominent digital technologies due to its open nature as one of the major characteristics of OERs, promotes lawful access for potential users to copy, use, adapt and share any educational materials accessed from the free domain, materials. The use of OERs have gained popularity in recent years due to its potential to reduce the cost of education, increase access to educational resources, and improve the quality of education. OERs are becoming an important source of providing access to quality information and enhancing the teaching and learning experience for both academics and

students. Incorporation of OERs into academic activities by the students have witnessed tremendous enhancement of their academic status due to affordability and accessibility without any obstacles.

The use of OERs in Nigerian universities according to Zaid & Alabi (2021) is now considered to be a global tradition and practices especially among the lecturers and students, because of its great positive effects on the academic activities as well as academic communities due to the fact that OERs resources are freely available for use without any subscriptions towards its accessibility. Furthermore, the adaptability and remixing capabilities of OERs allow lecturers to tailor their learning contents towards specific course requirements, fostering innovation and creativity in pedagogy (Hysten, Damme, Mulder & D'Anthony, 2021). The collaborative nature of OERs platforms also facilitates knowledge-sharing among lecturers, promoting a community of educators who actively contribute to the collective pool of educational resources.

Additionally, OERs are relatively important in gaining competence or mastery in the aspect of research, this facilitates learning processes by delivering diverse open access materials. According to Orr (2023), it was stated that OERs positively impact research processes in three distinct ways by; harnessing the possibilities afforded by digital technologies, acting as catalyst for social innovation and new forms of interaction between authors and learners, promoting the idea of an extended lifecycle beyond their original design and purpose, with the process of its distribution, adaptation and iteration improving access to high quality educational materials for all.

Research competence is the ability to carry out successful research independently, it is important in educational setting to contribute to the professional, pedagogical and methodological competencies most especially in the higher institutions of learning. In terms of skill, research competence is well known for its involvement in various areas of capabilities like formulation of research problems, research justification, development of research hypothesis, independent learning for research purpose, conduct of research, writing for academic purposes including critical review of reference materials (Berge & John, 2021). Among the significant of research competence are its contributions towards enhancing critical thinking ability, problem solving ability and the skills employability, research competence is an important skill to enable the researchers to undergo research independently, to think critically and to solve academic problems successfully.

Statement of the Problem

Open Educational Resources (OERs) have the potential to revolutionize the academic landscape by promoting inclusivity, affordability and innovation in education. These freely accessible, openly licensed materials offer numerous advantages, including cost savings for learners, opportunities for customization and adaptation by lecturers and facilitation of collaboration and knowledge-sharing within the academic community. Despite these compelling benefits, the adoption and

effective integration of OERs in academic settings face significant challenges. A key barrier seems to lie on underutilization of OERs among lecturers, perhaps as a result of inadequate level of research competence of the lecturers. Research competence which encompasses the ability to identify, evaluate and incorporate high-quality OERs into teaching and learning practices, play a pivotal role in influencing the successful adoption and integration of OERs. As a result, this study aims to investigate the research competence of lecturers on the use of OERs by lecturers in universities in Southwest, Nigeria.

Objectives of the Study

The main objective of this study is to examine ‘research competence and use of Open Educational Resources (OERs) by lecturers in Federal Universities in Southwest, Nigeria’, while the specific objectives are to:

1. identify the types of OERs used by lecturers in Federal Universities in Southwest, Nigeria.
2. find out the purpose of using OERs by lecturers in Federal Universities in Southwest, Nigeria.
3. determine the level of research competence of lecturers in Federal Universities in Southwest, Nigeria.
4. determine the influence of research competence on the use of OERs by lecturers in Federal Universities in Southwest, Nigeria.

Hypothesis

The following null hypothesis was tested at 0.05 level of significant in this study.

There is no significant relationship between research competence and use of OERs by lecturers in Federal Universities in Southwest, Nigeria.

Literature Review

Research Competence of Lecturers

According to Winarno, et. al., (2022), on lecturers’ research competence, it was confirmed that lecturers research competence is very low, meaning that there emerged the element of weakness in terms of lecturers research performance and competence meanwhile research competence among the lecturer is a critical aspect that significantly influences their engagement with scholarly activities, including the use of Open Educational Resources (OERs). Scholars and educators are expected to possess a certain level of research competence to navigate the vast landscape of information, contribute to their respective fields, and enhance the quality of education needed for the students (Winarno, et al, 2022). Research competence encompasses various skills, including information literacy, critical thinking, and the ability to stay abreast of the latest developments in a particular field (Amirsekova, 2023). Studies on the research competence of lecturers often highlight the multidimensional nature of this competence (Ereh, Okon, & Umosen, 2019). It involves not only the ability to conduct rigorous research but also the capacity to effectively communicate findings, engage in scholarly dialogue, and adapt to evolving research methodologies and technologies (Tolorunleke, Haruna & Tolorunleke, 2023). Research competence is not static; rather, it is a dynamic skill set that requires

continuous development and adaptation to the changing demands of academia. In exploring the literature on this subject, it becomes evident that research competence is a key determinant of how lecturers engaged with OERs. The ability to identify, evaluates, and integrates open educational resources into teaching and a research practice is closely tied to the lecturer's overall competence (Bruyckere, 2022). Scholars with strong research skills are better equipped to discern the quality and relevance of OERs, ensuring that the resources selected aligned with academic standards and contribute meaningfully to the learning objectives.

In Nigerian context, where the utilisation of OERs is gaining attention within the academic community, research competence among the lecturers takes on a particular significance. Nigerian universities, like many others across the board, are witnessing an increasing demand for innovative teaching and learning approaches and OERs present an opportunity to meet these demands. However, for effective adoption, a comprehensive understanding of OERs and the ability to leverage these resources within the local educational contexts are crucial (Boston Consulting Group, 2013). Specifically to Nigeria, research studies have pointed out the need to enhance the research competence of lecturers to foster the meaningful incorporation of OERs into the curriculum. The challenges faced by educators in identifying, evaluating, and integrating OERs are often linked to gaps in research skills and awareness (Sapire & Reed, 2011; Rolfe, 2012). Initiatives that aimed to strengthen research competence, especially in the contexts of OERs, can contribute significantly to the successful implementation of these resources in Nigerian Universities (Salau, Adamu, & Salami, 2024). Furthermore, literatures reflect the dynamic nature of research competence, indicating that ongoing professional development and training programmes are essential. In the Nigerian higher educational landscape, where lecturers may encounter unique challenges, such as limited resources and infrastructure, addressing these challenges through targeted efforts to enhance research competence becomes imperative (Reyes & Glasserman, 2020). This aligns with the broader goal of fostering a culture of research and innovation within academic institutions.

Research Competence and Use of Open Educational Resources

The intersection between research competence and the utilization of Open Educational Resources (OERs) by lecturers represents crucial aspect of contemporary educational practices. The research competence which encompasses the ability to engage in scholarly inquiry, critically evaluate information and contribute to academic knowledge, plays a pivotal role in the effective integration of OERs into teaching and learning. In this while, research competence is crucial for successful use and implementation of OERs by academics. OERs usage requires lecturers to have a certain level of research competence to identify, evaluate, adapt and utilize OERs effectively, because access to high-quality, freely available academic resources enhances lecturers' ability to conduct thorough and up-to-date research (Okonkwo, et al. 2019). These skills include the ability to search, locate, evaluate, select, adapt, create

and disseminate OERs (Alves, et al, 2019). Lecturers with this competence are better equipped to identify and select appropriate OERs materials that are relevant to their institutions' needs. They can also integrate OERs into their institutions' curricula, develop training and support materials and provide technical assistance to users (Ehlers & Conole, 2010). Moreover, research competence also enables lecturers to assess the quality of OERs, ensuring that the materials meet the academic standards of their institutions.

Research competence can also facilitate the development of institutional policies and guidelines for OERs adoption. The knowledge and skills of lecturers in research competence can aid in creating policies that aligned with the strategic goals of their institutions. They can also provide insights into how to integrate OERs into the existing curricula or to design new courses that makes use of OERs (McKerlich, et al, 2013). Additionally, research competence can further enhanced collaborations between lecturers, faculty and students or users, leading to the creation of a more open and collaborative learning environment. Collaborations can lead to the development of innovative projects that leverage the collective expertise of faculty and lecturers in designing and delivering courses that incorporate OERs (Rolfe, 2012).

However, lack of research competence among lecturers can hinder the effective use of OERs in any higher institution of learning. Lecturers without these skills may find it difficult to identify appropriate OERs materials, assess the quality of materials and integrate them into the existing curricula. There may also be lack of ability to develop policies and guidelines that aligned with their institution's strategic goals (Ehlers, & Conole, 2010). Research competences are critical for successful use of OERs in academic institutions and lecturers with these skills are better equipped to identify, evaluate, adapt and utilize OERs effectively, leading to the development of policies and guidelines that align with their institution's strategic goals. However, lecturers without these skills may struggle to integrate OERs into their institutions' curricula, assess the quality of materials and develop policies and guidelines that aligned with their institution's goals. Several studies have explored the relationship between the research competence of lecturers and their adoption of OERs.

A key finding across these studies is the positive correlation between strong research competencies and the effective use of OERs in educational settings. Educators with enhanced research skills are better equipped to identify, evaluate, and integrate OERs into their instructional materials. Additionally, research competence is closely linked to the faculty's ability to create, adapt and share OERs materials where lecturers with advanced research skills are likely to contribute to the OERs ecosystem by developing high-quality resources and participating in collaborative initiatives. This collaborative aspect of OERs aligns with the scholarly nature of academic works, fostering a culture of knowledge sharing and open collaboration. Understanding the dynamics of research competence in relation to OERs use is essential for

institutions aiming to promote the widespread adoption of open educational practices. Institutions that invest in faculty development programmes, research capacity building, and initiatives to enhance scholarly inquiry are likely to witness increased engagement with OERs among the lecturers. A closer examination of the research competence and OERs use nexus will shed light on effective strategies to harness the full potential of open educational resources in the academic landscape.

Research Methodology

The research design adopted for this study was a descriptive research design of survey type. The target population of the study comprised all lecturers in six (6) Federal Universities in Southwest, Nigeria with the total number of 8,707 lecturers as the overall population. These include University of Ibadan (UI), Federal University of Agriculture, Abeokuta (FUNAB), University of Lagos, Lagos (UNILAG), Obafemi Awolowo University, Ile-Ife (OAU), Federal University of Technology, Akure (FUTA) and Federal University, Oye-Ekiti (FUOYE) respectively. Federal Universities were selected for the research because they typically received more substantial government funding than state and private institutions (Yauta, 2015). Part of this funding is usually use for the provision of a better e-library facilities and resources, making them more relevant for studying the impact of these resources on research.

Table 1: Population of Lecturers in Federal Universities in South-West, Nigeria

Universities	Overall Population of Lecturers
University of Ibadan	3,064
University of Lagos	1,868
Federal University, Oye Ekiti	618
Obafemi Awolowo University, Ile-Ife	2,106
Federal University of Agriculture, Abeokuta	529
Federal University of Technology, Akure	1,304
Total	8,707

Source: University Establishment Department, 2023

Multistage sampling method was used to select the sample size of 265 lecturers from six Federal Universities across the Southwest Nigeria, At first, purposive sampling technique was used to select the first four federal universities in Southwest Nigeria with similar faculties which are faculties of Education, Science, Social Science and Arts, at University of Lagos, University of Ibadan, Obafemi Awolowo University, University of Lagos, and Federal University, Oye-Ekiti. While at the second stage, purposive sampling technique was also used to select other two specialized Federal Universities in Southwest Nigeria with similar schools/colleges which were schools/colleges of Engineering and Engineering Technology, Agricultural Management and Rural Development/Agriculture and Agricultural Technology, Entrepreneurial and Developmental Studies/Logistics and Innovation Technology and Physical Sciences at Federal University of Agriculture, Abeokuta and Federal University of Technology, Akure.

At the third stage, purposive sampling techniques was also used to select thirty-two (32) different departments for the study with the total population of 846 lecturers across the selected Federal Universities in Southwest, Nigeria. The sample size of 265 lecturers from all departments was determined using Krejcie and Morgan table created in 1970.

Results and Discussion

Answers to Research Questions

Research Question 1: What are the types of Open Educational Resources used by Lecturers in Federal Universities in Southwest, Nigeria?

Table 2: Types of Open Educational Resources

Types of OERs	Available Freq. & (%)
Open Learning Initiative	203 (83.5)
MIT Open Courseware	138 (56.8)
OER Africa	146 (60.1)
Coursera	149 (61.3)
Connexions	120 (49.4)
Japan Open Courseware Consortium	99 (40.7)
Open Educational Resource Commons	186 (76.5)
National programme on Technology Enhanced Learning (NPTEL)	153 (63.0)
National Open University of Nigeria OER Repository	192 (79.0)
Skills Commons	160 (65.8)
Multimedia Educational Resources (MERLOT)	177 (72.8)
Directory of Open Access Journals	185 (76.1)
College Open Textbook	167 (68.7)
BC Campus Open Textbook	140 (57.6)
African Health OER Network	134 (55.1)
OpenStax College	120 (49.4)
Wikiwijs OER World Map	134 (55.1)
UTM-Open Courseware	138 (56.8)
OER World Map	140 (57.6)
Open Textbook	173 (71.2)
Project Reports	190 (78.2)
Courseware from other universities	152 (62.6)
Conference Papers	197 (81.1)
Youtube Videos	176 (72.4)
E-journal/Databases	215 (88.5)
Lecture Notes	198 (81.5)

Figures in parentheses are in percentage

From Table 2, the analysis of Open Educational Resources (OERs) used by lecturers' revealed the most available type of OERs. Based on the finding of this study, E-journals/Databases stood out as the most available resources, with the response of availability rate of 215(88.5). This high rate of use underscores the lecturers' strong reliance on scholarly articles and

databases, which are essential for supporting their teaching and research activities.

Overall, these findings highlight a marked preference for OERs that are locally relevant and easily accessible, such as E-journals/Databases. Conversely, the underutilization of international resources like the Japan Open Courseware Consortium points to the need for targeted strategies to improve access and relevance. This could involve addressing language barriers, enhancing the adaptability of content, and aligning resources more closely with the curricula of Nigerian universities to foster wider adoption and effective use.

Research Question 2: What is the purpose of using Open Educational Resources by Lecturers in Federal Universities in Southwest, Nigeria?

Table 3: Purpose of Using Open Educational Resources

Usage Statements	Strongly Agree (%)	Agree (%)	Disagree (%)	Strongly Disagree (%)	Mean ($\bar{x}$)	Std. Dev
I use OERs to support the courses I teach	146(60.1)	83 (34.2)	9 (3.7)	5 (2.1)	3.52	.67
I use OERs to complement my learning process	87 (35.8)	129(53.1)	19 (7.8)	7 (2.9)	3.21	.739
I use OERs to complete my academic assignments	144(59.3)	73 (30)	16 (6.6)	5 (2.1)	3.7	2.79
I use OERs to prepare for and enrich my research skills	109(44.9)	103(42.4)	26 (10.7)	4 (1.6)	3.3	.757
I use OERs to learn from other learned scholars	110(45.3)	91 (37.4)	25 (10.3)	12 (4.9)	3.19	.952
I use OERs to get access to quality and scholarly materials	105(43.2)	106(43.6)	17 (7)	14 (5.8)	3.23	.847
I use OERs to collaborate with other scholars in my profession	109(44.9)	92(37.9)	31 (12.8)	10 (4.1)	3.23	.854
I use OERs to enrich my research capability	115(47.3)	96(39.5)	17 (7)	14 (5.8)	3.28	.859
I use OERs to prepare for	121(49.8)	88(36.2)	25 (10.3)	8 (3.3)	3.32	.82

seminars/conferences and workshops						
I use OERs to update my knowledge	123(50.6)	87 (35.8)	19 (7.8)	13 (5.3)	3.31	.862
I use OERs for administrative purposes	102 (42)	94(38.7)	31 (12.8)	14 (5.8)	3.15	.912
I use OERs to acquire more knowledge on recent innovation in my field	116(47.7)	87 (35.8)	27 (11.1)	12 (4.9)	3.26	.872
Total	3.28					

Key: SA – Strongly Agree; A - Agree; D – Disagree; SD – Strongly Disagree
Degree *** Decision Rule, if mean is ≤ 1.49 = Very Low; 1.50 to 2.44 = Low; 2.50 to 3.44 = High; 3.50 to 3.99 = Very High; (%) = Frequency (percentage)

Table 3 reveals the analysis of the usage of Open Educational Resources (OERs) by lecturers highlights both the most and least frequently utilized practices. The highest mean score was observed for using OERs to complete academic assignments, with a mean score of 3.7. This suggests that a significant proportion of lecturers engage with OERs for assignment purposes, as reflected by 144(59.3) of respondents strongly agreeing (SA) to this statement. These results illustrate that OERs are highly valued for supporting core academic activities such as completing assignments.

Research Question 3: What is the level of research competence possessed by Lecturers in Federal Universities in Southwest, Nigeria?

Table 4: Level of Research Competence possessed by Lecturers

Level of Research Competence	Very Low (%)	Low (%)	High (%)	Very High(%)	Mean ($\bar{x}$)	Std. Dev
My ability to select variables that match while searching for research topic	0 (0.0)	19 (7.8)	123(50.6)	99 (40.7)	3.3	.685
My capability to identify an independent variable and dependent variables from any given research topic	4 (1.6)	32 (13.2)	84 (34.6)	120(49.4)	3.29	.849
My understanding of intervening and moderating variable in a research work	14(5.8)	28 (11.5)	103(42.4)	97 (39.9)	3.16	.872
My capability to	10(4.1)	26	100(41.2)	106(43.6)	3.23	.832

write a concise abstract within a stipulated number of words		(10.7)				
My ability to confidently develop a background to the study on any given research topic	7 (2.9)	32 (13.2)	98 (40.3)	103(42.4)	3.2	.864
My ability to write a concise statement of problem on any given topic	5 (2.1)	31 (12.8)	102(42.0)	104(42.8)	3.25	.785
My ability to develop and formulate research objectives from the title	9(3.7)	14 (5.8)	96 (39.5)	123(50.6)	3.36	.788
My ability to turn research objectives to research questions	5 (2.1)	28 (11.5)	83 (34.2)	126(51.9)	3.35	.796
My capability to formulate research hypotheses on various topics	12 (4.9)	22 (9.1)	96 (39.5)	111(45.7)	3.24	.874
My understanding of reviewing of related literature by paraphrasing without copying and pasting	5 (2.1)	20 (8.2)	102(42.0)	115(47.3)	3.34	.751
My level of understanding of appropriate theories that best describes my research work	7 (2.9)	20 (8.2)	108(44.4)	107(44.0)	3.29	.771
My level of understanding of the designing of analysing conceptual framework for any research work	13 (5.3)	20 (8.2)	104(42.8)	103(42.4)	3.2	.892
My understanding of choice of appropriate research designs	12 (4.9)	20 (8.2)	109(44.9)	101(41.6)	3.22	.828
My	14 (5.8)	40	97 (39.9)	91 (37.4)		

understanding of the most reliable sampling technique for my population		(16.5)			3.24	.896
My ability to choose the appropriate data collection instrument	15 (6.2)	18 (7.4)	100(41.2)	109(44.9)	3.3	.868
My understanding of use of appropriate statistical tools to analyse my data	4 (1.6)	26 (10.7)	101(41.6)	111(45.7)	3.37	.759
My ability to validate and test the reliability of my instrument	1 (0.4)	17 (7.0)	112(46.1)	112(46.1)	3.37	.67
My ability to make valid conclusions and recommendations based on objectives of research	4 (1.6)	17 (7.0)	104(42.8)	117(48.1)	3.34	.723
My ability to summarize my findings in a concise and comprehensive form	7 (2.9)	16 (6.6)	104(42.8)	115(47.3)	3.31	.761
Total						3.29

Key: VL – Very Low; L - Low; H – High; VH – Very High

Degree *** Decision Rule, if mean is ≤ 1.49 = Very Low; 1.50 to 2.44 = Low; 2.50 to 3.44 = High; 3.50 to 3.99 = Very High; (%) = Frequency (percentage)

In Table 4, the analysis of the level of research competence among lecturers reveals notable differences in proficiency levels across various competencies. The highest mean score was observed for the ability to develop and formulate research objectives from the title, with a mean score of 3.36. This indicates that a significant portion of lecturers rate their ability in this area 'high', as evidenced by 123 (50.6) of respondents reporting "Very High" capability. These findings suggest that lecturers generally exhibit strong skills in developing research topics.

Testing of Hypothesis

There is no significant relationship between Research Competence and Use of OERs by Lecturers in Federal Universities in Southwest, Nigeria.

Table 5: Research Competence and Use of OERs by Lecturers in Federal Universities in Southwest, Nigeria

Correlations		X	SD	Research Competence	Use of OER
Research Competence	Pearson	3.2840	.51312	1	.695**
	Correlation				
	Sig. (2-tailed)				.000
	N			243	243
Use of OER	Pearson	3.3069	.62270	.695**	1
	Correlation				
	Sig. (2-tailed)			.000	
	N			243	243

** . Correlation is significant at the 0.01 level (2-tailed).

The analysis of H_{01} , which tests whether there is no significant relationship between research competence on the use of OERs by lecturers in Federal Universities in Southwest, Nigeria, reveals a strong positive correlation between the two variables. The Pearson correlation coefficient of 0.695 indicates a significant relationship, with a p-value of 0.000, which is well below the 0.05 significance threshold. This result suggests that research competence is positively associated with the use of OERs, and the null hypothesis is rejected, confirming that research competence has a significant relationship with the use of OERs by lecturers.

Discussion of Findings

On the types of OERs mostly used by Lecturers, the study revealed that e-journals and databases are the most frequently used Open Educational Resources (OERs) by lecturers in Federal Universities in Southwest, Nigeria. This finding contrasts with the work of Al-Awidi and Al-Furaih (2023), who found that social media platforms, YouTube, PowerPoint, and games are the most commonly used OERs among lecturers in their study. Similarly, Al-Abri and Dabbagh (2018) noted that OpenStax textbooks were prominently utilized to address learners' needs and simplify learning activities. These differences may arise from contextual factors, including regional access to technology, institutional policies, or discipline-specific resource requirements. For instance, lecturers in the studied region may prefer e-journals and databases because of their academic rigor and alignment with the expectations of university-level research and teaching. Conversely, social media and multimedia platforms, while useful, may be considered less formal or supplementary by these educators.

The predominant use of e-journals and databases suggests a strong preference for resources that directly support scholarly work and evidence-based teaching practices. This aligns with the broader

academic focus on peer-reviewed materials, which offer credibility and depth knowledge for both teaching and research purposes. However, it also highlights potential gaps in the integration of other innovative OERs, such as multimedia resources, which could enrich the teaching experience. Institutions may need to explore strategies for diversifying OERs usage to include platforms like OpenStax and multimedia tools to meet varied teaching and learning objectives.

For the purpose of using OERs by lecturers, the study revealed that lecturers primarily used OERs for academic purposes, this finding is in consistent with work of Pawlowski et al. (2014), who posited that OERs promote innovation and collaboration in teaching and learning by providing educators with access to high-quality educational materials. In the same vein, UNESCO, (2019) also corroborated that, OERs usage is for academic purposes where its benefits cut across increased in its adoption, cost savings, increased in quality of teaching and research as well as increased in collaboration and knowledge sharing.

For the level of research competence among lecturers, the study revealed a high level of research competence among lecturers in Federal Universities in Southwest, Nigeria, contradicting Winarno et al. (2022), who found that lecturers' research competence was at a lower level, buttressing this point, Alves, et al, (2019) also corroborated that OERs usage by lecturers requires a certain level of research competence to identify, evaluate, adapt and utilize OERs effectively, these skills include the ability to search, locate, evaluate, select, adapt, create and disseminate the resources among each other. This discrepancy could be attributed to contextual differences in academic environments, professional development opportunities and institutional expectations. For instance, the emphasis on research productivity and capacity building in Nigerian Universities may have contributed to the higher levels of competence observed in this study.

High level of research competence among lecturers is critical for advancing academic excellence and fostering innovation. Competent researchers are better equipped to engage with OERs, utilizing them to conduct rigorous studies, develop innovative teaching methods, and contribute to the global body of knowledge. The findings suggest that ongoing efforts to enhance research competence, such as workshops, conferences, and mentorship programmes, are yielding positive outcomes. However, it also underscores the need for sustained investment in academic training to ensure that research competence remains a priority.

Based on the hypothesis formulated on the significant relationship between research competence and the use of OERs by lecturers in Federal Universities in Southwest, Nigeria, the results from Hypothesis 1 revealed a significant relationship between research competence and the use of OERs by the lecturers. This finding aligns with the work of Okonkwo, et. al. (2019), who demonstrated that, access to high-quality, freely available academic resources enhances lecturers' ability to

conduct thorough and up-to-date research. In corroboration with the above, Alves, et. al. (2019) also maintained that research competence is crucial for successful use and implementation of OERs by academics because OERs usage requires lecturers to possess a certain level of research competence to identify, evaluate, select, adapt, create and disseminate OERs.

Conclusion

This study examined the research competence, knowledge and use of OERs by lecturers in Federal Universities in Southwest, Nigeria, as well as the relationship between their research competence and knowledge of OERs utilization. The study reveals a strong positive correlation between lecturers' research competence and both their knowledge and use of OERs. As research competence increases, lecturers are more likely to engage with OERs, indicating the potential benefits of strengthening research skills to improve OERs adoption.

Recommendations

1. Lecturers should be encouraged to explore other types of OERs such as Japan Open Software Consortium, Open Learning Initiative, Open Educational Resource Commons, National Open University of Nigeria OERs Repository, Multimedia Educational Resources, Directory of Open Access Journals and many more.
2. Incorporating OERs in Institutional Policies: Universities should develop policies that encourage the use of OERs in academic practices. Faculty should be incentivized to integrate OERs into their teaching and research activities.
3. Promoting Collaboration and Sharing: Encouraging collaboration among lecturers, both within and across institutions, can enhance the sharing of knowledge and resources, particularly in the context of OERs.
4. Development of OERs-Specific Skills: Lecturers should be trained in web technologies and digital content creation to enhance their ability to effectively use and contribute to OERs

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Integrating Emerging Technologies and Fourth Industrial Revolution through the use of AI: Perspective in Education

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Abstract

This study examines the integration of emerging technologies and Artificial Intelligence (AI) within the framework of the Fourth Industrial Revolution, specifically focusing on their transformative impact in the education sector. Through a comprehensive literature review and conceptual analysis, this research explores how AI and emerging technologies such as blockchain, virtual reality, augmented reality, and quantum computing are revolutionizing educational practices globally. The study identifies key components of AI in education, including personalized learning systems, intelligent tutoring systems, automated assessment tools, and adaptive content creation platforms. Research findings reveal that AI technologies like ChatGPT, Duolingo, and Gamma are currently enhancing teaching effectiveness, supporting individualized learning experiences, and enabling data-driven decision-making in educational institutions. The COVID-19 pandemic has accelerated the adoption of these technologies, compelling educational institutions to rapidly embrace digital transformation and Education 4.0 paradigms. However, significant challenges persist, including the digital divide, ethical concerns regarding data privacy and algorithmic bias, inadequate teacher training, technological infrastructure limitations, and resistance to change. The study establishes that while AI offers tremendous potential for personalizing learning, improving accessibility, and fostering inclusive education, successful implementation requires addressing equity issues, ensuring responsible AI deployment, and developing comprehensive frameworks for ethical technology integration. The research concludes that strategic collaboration among educators, policymakers, and technology developers is essential to harness AI's transformative power while mitigating associated risks, ultimately creating more effective, engaging, and equitable educational systems for all learners.

Keywords: Artificial Intelligence, Emerging Technologies, Fourth Industrial Revolution, Education 4.0, Personalized Learning, Digital Transformation

Introduction

Artificial Intelligence (AI) and emerging technologies continue to reshape industries and societies worldwide. AI, including machine learning and deep learning, is revolutionizing fields like healthcare, finance, transportation, and more by automating tasks, optimizing processes, and enabling new capabilities. Additionally, emerging technologies such as blockchain, augmented reality, virtual reality, and quantum computing are driving innovation and creating new

opportunities for businesses and consumers alike. As these technologies advance, it's crucial to address ethical concerns, ensure inclusivity, and navigate potential risks to reap their full benefits. Emerging technologies refer to innovations that are in the early stages of development and have the potential to significantly impact various aspects of society and industry. These technologies often represent advancements in areas such as computing, biotechnology, energy, materials science, and more.

Concept of Emerging Technologies

Emerging technologies drive innovation, which fuels economic growth by creating new industries, products, and services. They enable businesses to stay competitive and foster entrepreneurship, leading to job creation and economic prosperity (Boikova et al., 2021). Many emerging technologies have the potential to address societal challenges and improve the quality of life for people around the world. For example, advancements in healthcare technology can lead to better treatments and diagnostics, while clean energy technologies can mitigate climate change and reduce pollution (George et al., 2021; Schroder et al., 2021; Dwivedi et al., 2022). Technologies such as artificial intelligence, automation, and the Internet of Things (IoT) can streamline processes, optimize resource allocation, and increase productivity across various sectors, from manufacturing to agriculture to logistics.

The concept of emerging technologies refers to novel innovations and advancements that have the potential to significantly impact various sectors, driving change and transformation. These technologies are characterized by their novelty, disruptive potential, and often rapid evolution. Emerging technologies can originate from various fields such as information technology, biotechnology, materials science, and energy. Emerging technologies like AI, genomics, telemedicine, and wearable devices are revolutionizing healthcare delivery, diagnosis, treatment, and patient care (Chen et al., 2020). These innovations improve medical outcomes, enhance access to healthcare services, and empower patients to manage their health effectively. In the finance sector, emerging technologies such as blockchain, AI-driven analytics, and digital payment systems are transforming banking, insurance, investment, and regulatory processes (Liu et al., 2022). These technologies enable faster transactions, lower costs, improved risk management, and enhanced customer experiences.

Relevance and Importance in Today's World

Emerging technologies are disrupting traditional industries and business models, leading to digital transformation and the creation of new market opportunities. For example, fintech is reshaping the financial services sector, while e-commerce is revolutionizing retail (Ahmad & Ahmed, 2023). From climate change to healthcare access to food security, emerging technologies offer innovative solutions to some of the most pressing global challenges. For instance, advances in renewable energy and sustainable agriculture technologies can help build a more resilient and sustainable future (Miller, 2020). Alongside their potential benefits,

emerging technologies also raise important ethical, legal, and societal considerations (Perkins et al., 2018; Marques et al., 2019).

Emerging Technologies of the 21st Century and the Fourth Industrial Revolution Era

The 21st century has witnessed the rise of numerous emerging technologies, driving what's often referred to as the Fourth Industrial Revolution (Gennari et al., 2023). These technologies include AI, which has seen significant advancements in machine learning, natural language processing, computer vision, and robotics, impacting various industries from healthcare to finance. IoT connects everyday devices to the internet, enabling data collection, analysis, and automation, transforming industries such as smart homes, manufacturing, and agriculture. Initially known for cryptocurrencies like Bitcoin, blockchain technology offers secure and transparent transaction records.

Also known as additive manufacturing, 3D printing allows for the creation of complex, customized objects layer by layer. It's used in aerospace, automotive, healthcare, and consumer goods industries. Advances in genomics, including CRISPR gene editing technology, have paved the way for personalised healthcare tailored to individuals' genetic makeup. With growing concerns about climate change, technologies like solar, wind, and hydro power are gaining traction as sustainable alternatives to fossil fuels. Quantum computers leverage quantum mechanics to perform complex calculations exponentially faster than classical computers. While still in its infancy, it has the potential to revolutionize fields like cryptography, drug discovery, and materials science. These technologies are interconnected and driving unprecedented changes in how we live, work, and interact with the world around us, defining the Fourth Industrial Revolution era.

Artificial Intelligence as One of the Emerging Technologies of the Current Dispensation

Artificial Intelligence (AI) is a field of computer science focused on creating systems that can perform tasks that typically require human intelligence (Alam, 2021). These tasks include understanding natural language, recognizing patterns, learning from experience, and making decisions. AI systems can range from simple algorithms to complex neural networks, capable of mimicking human cognitive functions. Deep learning, a type of machine learning that uses artificial neural networks with multiple layers to learn representations of data, has achieved remarkable success in areas such as image and speech recognition, natural language processing, and autonomous driving (Chen et al., 2020).

Natural Language Processing (NLP) enables computers to understand, interpret, and generate human language. It powers applications such as virtual assistants, chatbots, sentiment analysis, and language translation. Computer vision involves teaching computers to interpret and understand visual information from images or videos. Applications include object detection, facial recognition, medical image analysis, and autonomous vehicles.

AI plays a crucial role in robotics by enabling robots to perceive their environment, make decisions, and perform tasks autonomously. Robotic applications range from manufacturing and logistics to healthcare and exploration. As AI technologies advance, concerns about ethics, bias, privacy, and accountability have become increasingly important (Baidoo-Anu & Ansah, 2023). Efforts are underway to develop frameworks and regulations to ensure responsible development and deployment of AI systems.

Relevance and Importance of AI in the Education Sector

AI is increasingly relevant and important in the education sector, offering transformative solutions to various aspects of teaching, learning, and research (Mollick, 2023). AI-powered adaptive learning systems analyze students' performance data to provide personalised learning experiences tailored to their individual needs, preferences, and learning styles (Tahiru, 2021). These systems adjust the pace, content, and feedback to optimize learning outcomes for each student.

AI-based tutoring systems provide interactive and adaptive support to students, offering real-time feedback, guidance, and scaffolding in various subjects and skills (Lee & Yeo, 2022). These systems can identify students' misconceptions, address gaps in understanding, and offer targeted interventions to enhance learning. AI algorithms can automate the grading of assignments, quizzes, and exams, saving teachers time and providing students with immediate feedback on their performance (Mizumoto & Eguchi, 2023). The AI technologies facilitate the creation, curation, and customization of educational content, including textbooks, multimedia resources, and interactive learning materials (Liu et al., 2022). AI-driven content generation tools can analyse existing resources, extract relevant information, and generate new content tailored to specific learning objectives and audiences.

Examples of AI Technologies Currently Being Used in the Education Sector

Here are some examples of AI technologies currently being used in the education sector:

- **ChatGPT** is an AI-powered conversational agent developed by OpenAI. In education, ChatGPT can be used as a virtual tutor or assistant to answer students' questions, provide explanations, offer study tips, and facilitate interactive learning experiences.
- **Gamma** is an AI-based platform that provides personalized learning experiences and adaptive tutoring in Mathematics. It analyzes students' strengths and weaknesses, tailors instructional content to their individual needs, and tracks their progress over time to optimize learning outcomes.
- **MyWord AI** is an AI-driven writing assistant that provides feedback on students' writing assignments, including grammar suggestions, style improvements, and readability enhancements. It helps students refine their writing skills and produce higher-quality academic papers.

- **Duolingo** is a popular language learning platform that uses AI algorithms to personalize language instruction, track learners' progress, and adaptively adjust lesson difficulty (Chassignol et al., 2018).

Impact of Emerging Technologies on All Sectors Globally

The global impact of COVID-19 has compelled educational institutions to swiftly explore innovative remedies within a compressed timeframe (Tam & El-Azar, 2020), while all learning was diverted online due to the self-isolation period (Sloan, 2020). Given the limited time available for contemplating educational intricacies, the closure of schools and universities worldwide in response to the pandemic has resulted in the disruption of learning for nearly one billion students (UNESCO, 2020).

Nevertheless, the COVID-19 pandemic has impeded the pace of digital transformation, as evidenced by its adverse effects on economic growth irrespective of a nation's level of development (Habibi & Zabardast, 2020; Corejora & Chinoracky, 2021). On the one hand, among various factors, including macroeconomic stability, foreign direct investment, and trade openness, the level of digitalisation emerges as one of the significant determinants of competitiveness, exerting a substantial influence on a nation's economic growth. On the other hand, this factor must be addressed by highly educated labour in order to make a positive impact on economic development (Volchik et al., 2018; Kolade & Owoseni, 2022).

Literature Review

Emerging Technologies in Education

As time goes on and the number of people who use information and communication technology (ICT) grows, emerging technologies are receiving a lot of attention from academics, researchers, and users. Emerging technologies are changing more quickly than ever, and it is important to start building skills early in education by using the right examples to teach and learn about digital citizenship (Ahmad & Muhammad, 2023). Consequently, technology plays a pivotal role in transforming human perspectives and actions toward sustainability through its ability to educate and inform individuals about their carbon footprint, thereby influencing their attitudes and behaviours (George et al., 2021; Schroder et al., 2021; Dwivedi et al., 2022).

AI in Education

Earlier studies have also made a partial contribution towards comprehending the attributes and constituents of AI within the framework of Education 4.0 and open innovation competencies. Mollick (2023), for example, emphasized the importance of AI tools for advancing teaching and learning practices provided that they are used carefully and thoughtfully in the classroom, as well-designed AI applications can expand teachers' capabilities, enhance learning, and support evidence-based teaching practices. Likewise, AI-based chatbots present many opportunities for preservice teachers to develop their pedagogical competencies by providing personalized interaction on a

meaningful task (Lee & Yeo, 2022). Furthermore, a comprehensive review conducted by Jiahong and Weipeng (2022) investigated the influence of artificial intelligence on early childhood education (ECE). Their results revealed a significant enhancement in children's conceptual comprehension of AI, automated learning systems, informatics, and robotics, along with notable improvements in complementary proficiencies such as inventiveness, emotion regulation, collaboration, reading ability, and computational problem solving. These findings align with recent research conducted by Iku-Silan et al. (2023), which similarly demonstrated that the intelligent conversational agent, according to their model, confers significant advantages in terms of students' learning outcomes, commitment levels, mental workload, and confidence and self-assurance.

Discussion of Findings

Findings from empirical research provide insights into the benefits, challenges, and best practices associated with the use of emerging technologies such as AI, VR, AR, adaptive learning systems and educational data analytics in different educational contexts (Chen et al., 2020). Technology integration models and frameworks, such as SAMR (Substitution, Augmentation, Modification, and Redefinition) and TPACK (Technological Pedagogical Content Knowledge), provide guidance for educators on how to effectively integrate emerging technologies into teaching practices while enhancing pedagogical approaches and content delivery.

Digitalisation of any industry or sector does not, therefore, represent a decisive epochal break with the past. It has evolved historically into a current form characterized primarily by new machineries of knowing in which algorithms, automation and artificial intelligence (AI) generate new knowledge from large quantities of data (Gray et al., 2018). The distinctive aspect of contemporary digitalisation is 'datafication': the transformation of all kinds of objects, practices, behaviours and actions into digital information through dense digital machineries and data infrastructures of knowledge production (Bigo et al., 2019). The paradigm shift in education, triggered by the sudden shift from traditional schooling to the online environment, has propelled the embrace of open innovation and Education 4.0 (Akimov et al., 2023). Consequently, in the context of infrastructure, Education 4.0 encompasses the provision of cutting-edge educational platforms, software, and applications, facilitating a novel educational paradigm characterised by human-machine interaction (Gennari et al., 2023).

Summary and Conclusion

Several consistent themes and trends emerge from these studies. AI is rapidly gaining traction in the field of education, providing opportunities to enhance learning and teaching experiences (Ciolacu et al., 2018). The potential benefits include personalised learning, formative assessment, and improved administrative efficiency. Despite these advancements, concerns persist. Issues such as biases in data training, privacy concerns, ethical considerations, and the need for meaningful research are brought

to the forefront (Cope et al., 2021). In conclusion, AI and emerging technologies have the potential to revolutionize education by personalizing learning experiences, enhancing teaching tools, enabling data-driven decision-making, promoting accessibility and inclusivity, but they also raise ethical, privacy, and equity concerns that must be addressed. By navigating these challenges thoughtfully and responsibly, we can harness the transformative power of AI to create a more equitable, engaging, and effective educational system for all learners.

Recommendations

These emerging technologies have the potential to transform education by making learning more personalised, interactive, and effective. However, it's essential to consider ethical implications, privacy concerns, and the need for equitable access as these technologies continue to evolve.

1. **Personalised Learning:** One of the most significant benefits of AI in education is its ability to personalize learning experiences. Through adaptive learning algorithms, AI can analyse students' strengths, weaknesses, and learning styles to provide customized content and feedback. This personalized approach helps students learn at their own pace, leading to improved outcomes and greater engagement.
2. **Enhanced Teaching Tools:** AI-powered tools and platforms offer educators valuable resources for creating dynamic and interactive learning environments. For example, AI-driven chatbots can provide instant support to students, answer questions, and offer guidance, freeing up teachers' time for more personalized interactions with students.
3. **Data-Driven Decision Making:** AI enables educators to harness the power of data to make informed decisions about curriculum design, instructional strategies, and student interventions. By analysing large datasets, AI can identify patterns and trends that inform pedagogical practices and educational policies.

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Influence of Institutional Management Practices in Federal University Libraries in Southwestern

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Abstract

A major factor that can serve as clog in the wheel of the university library in fulfilling its mandate is disaster; therefore, disaster management practices in university libraries must be taken with all seriousness through the assurance of adequate institutional factors and positive personnel attitude. As a result, the study looked into staff attitudes, institutional factors, and disaster management procedures in university libraries in southwest Nigeria. The study used a descriptive survey Research design. The population comprised 279 library personnel in six university libraries in South-west, Nigeria. Total enumeration sampling method was adopted. A questionnaire was used to help collect the data, which were then analyzed using regression analysis, correlation, mean, standard deviation, frequency counts, and percentages. From the findings infrastructure and electricity supply were key institutional factors for disaster management. Personnels exhibited positive attitude towards disaster management practices. Some disaster management practices were security checks in place at the library exit and disallowing library users from taking bags and coats into the library. There is significant relationship between institutional factors ($n = 216$, $p < 0.05$), personnel attitude ($n = 216$, $r = 0.637$, $p < 0.05$) and disaster management practices. Institutional factors and personnel attitude jointly influence disaster management practices ($df = 214$, $R^2 = 0.622$, $F = 59.628$, $p < 0.05$). Challenge to effective disaster management practices are library financial incapability and lack of disaster management training for staff. Hence, adequate funds should be provided for the management of disaster in the library. Continuous training and retraining of staff on disaster management practices towards the development of right attitude should be ensured.

Keywords: *Institutional factors, Personnel attitude, Disaster management practices, University Libraries*

Introduction

In recent times, flood, terrorism, riots, unknown gunmen activities have become issues and major threats to libraries and other information centres in Nigeria. For instance, the recent incidence of flood that have swept away some parts of almost five states in Nigeria, riots, terrorism and activities of unknown gunmen in the northern parts and extending to other parts of Nigeria. Most importantly, the unforgettable September 11, 2001 terrorist bombing of the World Trade Centre, where three libraries

were damaged and the Pentagon libraries destroyed with records, books and other documentary materials (Bureau of Counterterrorism, 2019). All these are disasters that could wreck great havoc to libraries and information centres. There is need to find ways of preventing, managing as well as bouncing back to functional level by university libraries after a disaster has occurred (Choji, 2014). A catastrophe could result in the loss of the university library's complete collection and cause service disruptions, which would be terrible. This could result in the library closing entirely, harming the structures and resources inside, decreasing the number of resources available, including computers, books, journals, and magazines, and frustrating patrons. Consequently, university libraries must implement efficient disaster management procedures.

Disaster management practices if put in place by libraries could go a long way in the effective management of disaster, thereby making the possibilities of disaster occurrence to be very minimal. Disaster management is generally defined as the steps that an organization or institution takes in the wake of unanticipated or unexpected events that can have a negative impact on the local community and environment. Among these unforeseen occurrences include infestations by insects, fires, floods, earthquakes, and conflicts. Oluwatola, et al. (2015) stated that disaster management is a continuous process by which individuals, groups and countries manage hazards in order to avoid or minimise the impact of disasters resulting from either natural or man-made hazards. Planning, risk assessment, training, and funding are all covered to ensure a successful implementation. Thus, complete emergency plan integration is essential to disaster management success. Disaster management practices involve the process of planning, organising, coordinating and implementing measures needed for effectively dealing with its impact on people. This includes prevention, mitigation, capacity building, preparedness, response, assessment, rescue and rehabilitation (Al-fazari & kasim, 2019). It encompasses all aspects of planning for and responding to disasters, including hazard analysis, vulnerability reduction (preparedness), prevention, mitigation, response, recovery and rehabilitation. Haigh (2012) posited that disaster management have four phases such as mitigation; preparedness; response and recovery. Mitigation is the first phase of disaster management practices which aimed at minimising the effects of disaster in university libraries, archives and all information centres. A main factor that can influence disaster management practices in university library is the institutional factors in the university library.

Institutional factors are the character an organisation incorporates in a well-established system. They are usually been put in place by the management of an institution, which could further affect how things are done in such institution. They are the history that has been in existence, norms and policies put in place that influences actions in an organisation (Kobusingye, 2015). These existing norms and policies could include; funding style, leadership style, infrastructure, electricity supply, training and communication/information environment put in place among others. An effective institutional arrangement is essential for managing disasters

successfully. While a principal responsible unit must be specified, other units should be specified at various levels including university, library and library departmental level. These units should be fully activated and authorised for disaster management, funded with a well stated disaster management master plan. It is widely acknowledged that poor institutional policy on funding, infrastructure, training and electricity supply regarding disaster management makes organisations and communities more prone to the effects of natural and man-made disasters (Al-Dahasha & Kulatunga, 2018).

Funding of the library is so important in effective disaster management practices. Training of library staff is another important institutional factor in disaster planning effort. Before any disaster plan can be implemented a sufficient number of people must be trained in the safe and orderly evacuation of the library's personnel and users (Musyoki & Cheruon, 2015). On the whole fluctuating electricity or a high voltage can cause power surge, thereby resulting in disaster such as fire outbreak. Additionally, for some installed facility to function effectively in preventing disaster, constant and stable electricity is required. Once these institutional factors are not taken seriously, it could affect the disaster management process. Therefore, it is important that institutional norms and policies are been addressed squarely to address disaster management practices in university libraries. It is therefore a point of major concern for university libraries to ensure adequate institutional support to aid disaster management practices. Another possible factor to disaster management is the university library personnel attitude to disaster management practices.

It is best to note that the attitude of university library personnel can also affect series of decisions of such personnel. Attitude can be defined as a mental and neutral state of readiness organised through experience exerting a directive or dynamic influence upon individual's responses to all objects or situations with which it is associated (Adekunle, et al., 2007). The attitude of the library staff towards disaster management practices can influence the disaster management process in the university library. This attitude could either be positive or negative. If library staff possesses an attitude that is not welcoming (i.e. the negative attitude), they may seem not concerned with undertaking or adhering to measure put in place to manage disaster, thereby affecting disaster management practices in the university library. Echezona, et al. (2012) opined that the nonchalant attitude of librarians towards disaster preparedness could be on the ground that disasters rarely occur in Nigerian libraries. This kind of attitude can lead to neglect of basic things such as routine maintenance and replacement of faulty devices, poor response to disaster management training among others which could lead to poor response to disaster when they eventually occur. Hence, it is important to consider the personnel attitude while studying disaster management in university libraries.

Research Question

This study aims at answering the following questions

1. What are the disaster management practices undertaken in university libraries in Southwest, Nigeria?
2. What are the institutional factors for disaster management practices in university libraries in South-west, Nigeria?
3. What is the personnel attitude towards disaster management practices in university libraries in South-west, Nigeria?

Hypotheses

The hypothesis of this study is tested at 0.05 level of significance

- H₀₁: There is no significant relationship between institutional factors and disaster management practices in university libraries in South-west, Nigeria.
- H₀₂: There is no significant relationship between personnel attitude and disaster management practices in university libraries in South-west, Nigeria.
- H₀₃: There is no joint influence of institutional factors and personnel attitude on disaster management practices in university libraries in South-west, Nigeria.

Literature Review

Most of the time, disasters are unpredictable, and so is the degree of devastation. Despite the fact that no library would want a tragedy due to its terrible consequences. However, misfortune also strikes libraries. Due to natural disasters, numerous libraries worldwide have lost important information sources, some of which are irreplaceable. Disaster in libraries is as an event, the timing of which is unexpected and the consequences seriously disruptive (Nwokedi, et al., 2017). Alegbeleye (1993) cited in Nwokedi, et al., (2017) asserted that it is the sudden removal of records and documents from accessibility and use. Kolawole et al (2015) stated that disasters are sudden happenings that often subject lives, property and the entire environment to risks and hazards of different sources and dimensions. Disaster is any incident which threatens human safety and/or damages, or threatens to damage, a library's building, collection or items, equipment and systems (Eden and Matthews, 1996 in Kolawole et al, 2017).

Sharma, et al. (2018) posited that disaster is unpredictable incident which threatens human safety and damages a library's buildings, collections, contents, facilities or services. The result of disasters varies depending on the type of the disaster and most often the location where they occur. Disasters occur rapidly, instantaneously and indiscriminately. Some events and incidences occur that aggravate natural environmental processes to cause disasters to human society, such as sudden tectonic movements leading to earthquake and volcanic eruptions, continued dry conditions leading to prolonged droughts, floods, atmospheric disturbances, collision of celestial bodies among others (Khan, 2008; Adadu & Ianna; 2019). Bansal (2015) identified four factors either man-made or natural that could lead to disaster in the library. These include: i) water (such as burst pipes or heavy rains that cause floods); ii) poor

environmental conditions and storage (such as humidity that causes mold development); iii) inadequate security that encourages theft and break-ins; and iv) construction problems. Books, journals, papers, conference proceedings, rare books and antiques, equipment (computers, photocopiers), and furniture are all stored in libraries and are an essential element of the collection. However, the buildings themselves are also vulnerable to natural disasters.

University libraries may experience the kinds of disasters mentioned by Patrick, et al. (2020). These include biological agents, computer viruses, hacking, leaking roofs, flooding, computer vandalism, thunderstorms, and other natural disasters. They also involve the mutilation of library resources. Events of disasters throughout history have shown that there is no nation that is immune to the threat of disasters. Earthquakes frequently strike nations like China, Indonesia, Iran, and Pakistan. Small island nations in the Pacific, such as the Maldives, are vulnerable to many kinds of maritime threats. Annual flooding occurs in Bangladesh and certain regions of China and India. Disasters in libraries are as old as the word library. Idiegbeyan-Ose, et al. (2018) gave an account of libraries in developing countries that has experience different levels of disaster. These countries include but not limited to; Great Alexandria Library of Ancient Egypt, Philippines, Nepal, Jamaica and Nigeria.

Disaster management is generally defined as the steps an organization or institution takes in reaction to unanticipated or unexpected events that have a negative impact on the local community and environment. Oluwatola, et al. (2015) stated that disaster management is a continuous process by which individuals, groups and countries manage hazards in an effort to avoid or minimise the impact of disasters resulting from either natural or man-made hazards. It covers planning, risk assessment, training and finance for a successful implementation. Disaster management practices involve the process of planning, organising, coordinating and implementing measures needed for effectively dealing with its impact on people. This includes prevention, mitigation, capacity building, preparedness, response, assessment, rescue and rehabilitation (Al-fazari & kasim, 2019). Disaster management practices encompass all facets of catastrophe preparation and response, such as vulnerability reduction (preparedness), hazard analysis, prevention, mitigation, reaction, recovery, and rehabilitation. Disaster management techniques look at the precautions of disasters that may be prevented or minimized, which helps in assessing the possibility of hazards and reducing the effects of risks to library materials.

The finding of a research conducted by Marfo and Borteye (2016) on disaster preparedness in Kwame Nkrumah University of Technology Kumasi, Ghana revealed that the Library was not very prepared to prevent, fight or manage disasters. It was evidenced by the fact that a sizable portion of respondents (61.7%) said they were unsure if the library had a disaster control plan in place. Those who vehemently asserted that the library does not have a disaster control strategy came next (27.7 %). The librarian acknowledged in an interview that the

library does not currently have a disaster control plan, but she also mentioned that efforts are in place to acquire one. In same vein, Nwokedi, et al. (2017) study on disaster management and preparedness conducted at the University of Jos Library, Nigeria showed that because they don't examine the equipment's functionality, the library personnel was unprepared to use the firefighting equipment. The survey also showed that staff members lacked knowledge and were unprepared to save partially damaged print and digital library resources.

The study of Promise, et al. (2018) measured disaster preparedness and response in university libraries in Nigeria, evaluating the role of disaster equipment. According to the study, the key disaster readiness and response procedures used in the libraries under investigation are: routine electrical equipment maintenance and inspection; making sure emergency equipment is placed appropriately; and replacing fire extinguishers on time when they expire. Isa (2012) carried out a study on disaster preparedness and recovery in selected academic libraries in North Central Zone of Nigeria, with the objective to finding out the different types of disasters, measures put in place for preparedness, response and recovery in academic libraries in North Central Zone of Nigeria. The study discovered that the majority of libraries lack both a written disaster management policy and certified disaster managers. In addition, the measures the libraries took for disaster preparedness, response, and recovery were generally poor and insufficient. The study also found that the lack of funds, lack of knowledge about disaster preparedness, and rare occurrence of disasters were among the factors contributing to the libraries' lack of preparedness and recovery.

Institutional factors are the character an institution incorporates in a well-established system. These institutional factors are usually been put in place by the management of an institution, which could further affect how things are done in such institution. They are the history that has been in existence, norms and policies put in place that influences actions in an organisation (Kobusingye, 2015). These existing norms and policies could include; funding style, leadership style, infrastructure, electricity supply, training and communication/information environment put in place among others. Every institution requires basic amenities and other resources for their daily operations. Usually these are provided by the management through various administrative layers. Standardisation of financial procedures, homogeneous staff management regulations, harmonisation of management rules, strategic staff training, availability of infrastructural equipment and adoption of an agreed plan for disaster management at the university libraries and the management can play a great role in promoting disaster management practices in the university library. Studies have revealed that some of these factors needed to ensure effective disaster management are not readily available.

The funding of the university libraries in order to effectively manage disaster is very important. Gok (2009) stated that participating institutions charged with handling disasters in the country are faced with inadequate budgetary allocation and conditional donor support; such that

the amount of money made available for disaster management is far less than the realistic amount actually needed to manage disaster successfully. There are more associated issues as well. For instance, due to insufficient technological handling, proposals to realize money in the non-food subsectors take an inordinate amount of time to process. The majority of procurement processes are still laborious. The nation's ability to manage disasters effectively is hampered by the lack of funding for the purchase of specialist equipment. All employees should have access to the written policy of the organization in addition to receiving training in it. In order to prevent and respond to disaster scenarios, a wide range of policies and programmes have been explored by government ministries/departments, agencies, NGOs and civil society organizations, the commercial sector, international development partners, and UN Agencies. These initiatives, however, have been carried out in a manner that is less uniform, planned, and harmonious; they have also nearly always been reactive, disorganized, and lack a cohesive policy framework. Therefore, institutions' commitment towards formulating a coherent and integrated strategy for addressing disaster issues in a more proactive manner with a focus on reduction of risk to communities and their vulnerabilities will strengthen the capabilities in preparedness and withstanding the adverse impact of disasters (GoK, 2009).

In every disaster preparation endeavour, training is crucial. The personnel and residents of the establishment must be taught in a safe and orderly evacuation procedure before any plan can be put into action. Team members must receive training specific to each sort of disaster response in order for them to know what is to be done. All staff members should also receive training on alarm systems, safe site evacuation protocols, and potential crisis scenarios. Annual disaster training should be given, and when drills are held, it's a good idea to engage organizations that offer outside assistance, including the police, Red Cross, and medical backup facilities. The study of Gotangco et al. (2020) on factors influencing disaster risk and resilience education revealed that majority of the respondents indicated that infrastructure was an important factor for implementation of programme and initiatives to manage disaster. The NPDMK (2009) states that disaster response costs the government and other stakeholders more than would otherwise be the case if sufficient efforts had been put in place for effective disaster management. The fund is used for disaster response, mitigation and capacity building; hence capacity at national level is developed.

Abareh (2014) lamented that the poor attitude to the importance of disaster may not be separated from the fact that many libraries school curriculum does not contain any course on disaster management in libraries. Matthews et al. (2009) maintained that in developing countries, disaster preparedness for the protection of library and museum materials are not considered a priority because of lack of poor budgeting allocations. Because of this, no risk preparation plans are created, and even if they were, there would be no funding or qualified staff to carry them out. Even though people may be aware of the risk, they often adopt a careless approach toward catastrophe preparedness. They may fail to

personalize the risk of disaster because they believe it has little bearing on them personally or their resources. Therefore, one of the reasons for the damaging effects of disaster is that people may be aware of hazards but fail to personalize the risk (Mileti, et al. 1975).

Kolawole, et al. (2015) discovered that librarians display lack of interest in issues pertaining to handling of disasters. Lack of interest could negatively affect preparedness towards disaster. Nofal, et al. (2018) carried out a study on attitude towards disaster and emergency preparedness, it was revealed from the findings that Around 12 (6.3%) participants were not interested in being aware of the emergency (disaster) operational plans, and approximately 21 (11%) agreed that disaster management and planning is for a few employees. Furthermore, 66 (34.9%) participants believed that disasters are unlikely to happen in the organisation. It was further revealed by the study that most of the participants expressed their positive attitude towards disaster management, while few (n=22; 34.9%) of them agreed that disasters are unlikely to happen. The study further suggested that the disaster committee may have to work on improving the attitude staff to be realistic with an expectation that they are ready to handle any disaster.

Methodology

The descriptive survey research design of the correlational type was employed for the study. The study covered all 279 library personnel in the six federal university libraries in South-west, Nigeria. These included library personnel that possess at least a diploma certificate in Library and Information Science and, even up to PhD level. These university libraries are; the University of Ibadan Library, Ibadan, Oyo State; University of Lagos Library, Akoka, Lagos State; Obafemi Awolowo University Library, Ile-Ife, Osun State; Federal University of Agriculture Library, Abeokuta, Ogun State; Federal University of Technology Akure Library, Akure, Ondo State and Federal University Oye Ekiti Library, Oye, Ekiti State.

The total enumeration sampling technique was adopted for the study to ensure a robust participation of the library personnel in their respective libraries. The instrument used for data collection was the structured questionnaire titled “Institutional Factors, Personnel Attitude and Disaster Management Practices”. The questionnaire was made up of four sections (A, B, C and D). Section A focused on the demographic information; Section B focused on the institutional factors that could affect disaster management, adapting items from Ajani (2021). The institutional factors were grouped into finance, infrastructure, training, policy and electricity supply, each containing five items, making up a total of 25 items; Section C elicited information on personnel attitude towards disaster management, adapting 10 items from Nofal, et al. (2018). Section D focused on disaster management practices in federal university libraries, adapting fifteen items from Ogbuiyi, et al. (2015). The four Likert which were Strongly Agree (SA) = 4, Agree (A) = 3, Disagree (D) = 2 and Strongly Disagree (SD) = 1 was used.

The questionnaire was subjected to both face and content validity as copies were given to three different lecturers from the department of Library, Archival and Information Studies, University of Ibadan. In order to ascertain the reliability of the questionnaire fifteen copies were administered to library personnel in Nile University of Nigeria and Cronbach Alpha was used to check for internal consistency of the items. The following coefficients were gotten; Institutional factors; Finance = 0.745, Infrastructure 0.895, Training = 0.744, Policy = 0.770, Electricity Supply = 0.787; Personnel attitude = 0.931; Disaster Management Practices = 0.72. Based on the Cronbach Alpha coefficients, the questionnaire was seen to be reliable.

Data gathered was analysed using the Statistical Package for Social Sciences (SPSS). Demography of respondents and research questions was equally analyzed with descriptive statistics, using the simple frequency count, percentage, means and standard deviation. Correlation and multiple regression analysis were used to determine relationships and influence among variables.

Findings and Discussion

Disaster management practices undertaken in university libraries in South-West, Nigeria

Findings of the disaster management practices undertaken by university libraries in South-West, Nigeria is presented in Table 1

Table 1: Disaster management practices undertaken by the libraries

S/N	Disaster management practices	SA	A	D	SD	x	STD
1	There are security checks in place at the library exit to check users while leaving the library.	119 55.6%	83 38.8%	6 2.8%	6 2.8%	3.47	0.690
2	The library disallows users from taking bags and coats into the library	120 56.3%	76 35.7%	6 2.8%	11 5.2%	3.43	0.784
3	The library staff maintain vigilance on the in-house use of materials to detect mutilated books	100 46.5%	101 47.0%	8 3.7%	6 2.8%	3.37	0.691
4	There is provision of single exit and locked emergency exit in the library so everyone that enters the library and goes out are monitored	97 44.9%	106 49.1%	8 3.7%	5 2.3%	3.37	0.669
5	The library ensures that there are standard electrical works in the building to avoid possible electrical associated disaster.	98 45.8%	102 47.7%	10 4.7%	4 1.9%	3.37	0.665
6	The library ensures the availability of fire extinguisher, sand buckets and first aid box	90 42.3%	110 51.6%	9 4.2%	4 1.9%	3.34	0.651

7	The library management ensures that there is proper lightening on the library building.	90 42.1%	103 48.1%	16 7.5%	5 2.3%	3.30	0.708
8	The management of the library ensure that there are good drainage facilities and good plumbing work in the building so as to control likely disaster associated to flooding.	86 39.8%	107 49.5%	20 9.3%	3 1.4%	3.28	0.687
9	The library ensures that fire alarm systems are available in every part of the library and there is constant maintenance of the system.	89 41.8%	95 44.6%	24 11.3%	5 2.3%	3.26	0.749
10	The library constantly uploads research outputs on institutional repository.	81 38.0%	109 51.2%	19 8.9%	4 1.9%	3.25	0.695
11	There are security patrols around the library premises.	88 42.3%	89 42.8%	22 10.6%	9 4.3%	3.23	0.807
12	There is constant fumigation of the library environment.	75 35.2%	108 50.7%	24 11.3%	6 2.8%	3.18	0.739
13	The library conducts regular surveys in and outside the library building to identify threats areas.	82 38.5%	83 39.0%	44 20.7%	4 1.9%	3.14	0.806
14	The library ensures the availability of security cameras and burglaries at the windows.	68 32.2%	101 47.9%	33 15.6%	9 4.3%	3.08	0.804
15	There is constant in-house training for staff on disaster management.	62 29.2%	66 31.1%	71 33.5%	13 6.1%	2.83	0.922

Table 4 shows results of the disaster management practices undertaken by the university libraries in South-west, Nigeria. The scale used in measuring was; Strongly Agree, Agree, Disagree and Strongly Disagree. The results were then ranked using the mean score. It was revealed from the findings that majority of the respondents ($x = 3.47$) indicated that there are security checks in place at the library exit to check users while leaving the library. Also, majority of the respondents ($x = 3.43$) revealed that the library disallows users from taking bags and coats into the library. Furthermore, majority of the respondents ($x = 3.37$) indicated that the library staff maintain vigilance on the in-house use of materials to detect mutilated books. Additionally, majority of the respondents ($x = 2.83$), which is the least ranked, revealed that there is constant in-house training for staff on disaster management. This is an indication that university libraries in South-west, Nigeria engages in disaster management practices.

Institutional factors for disaster management practices in university libraries in South-West, Nigeria

Findings on the institutional factors for disaster management practices in university libraries in South-West, Nigeria is presented in Table 2

Table 2: Institutional factors for disaster management practices in university libraries

S/N	Institutional factors for disaster management	SA	A	D	SD	$\bar{x}$	STD
Finance							
1.	The management of my institution is ready to finance disaster management activities in the library.	64 30.0%	102 47.9%	38 17.8%	9 4.2%	3.04	0.806
2	My library has proactive strategies for sourcing funds when it is required.	55 25.5%	101 46.8%	50 23.1%	10 4.6%	2.93	0.818
3	The library has constant and stable financial source to support disaster management practices.	58 26.9%	84 38.9%	67 31%	7 3.2%	2.89	0.837
4	Funding in not an obstacle in my library as it embarks on disaster management.	49 22.7%	71 32.9%	86 39.9%	10 4.6%	2.74	0.863
5	My library has special emergency funds in place for disaster management.	49 22.8%	64 29.8%	89 41.4%	13 6.0%	2.69	0.891
	Weighted Mean = 2.86						
Infrastructure							
6	There are emergency exits provided in the library in case of disaster.	99 46.0%	102 47.4%	10 4.7%	4 1.9%	3.38	0.664
7	There are necessary disaster management tools such are fire extinguisher, first aid box, thunder arrestor, anti-virus and sand buckets in the library.	93 43.5%	102 47.7%	17 7.9%	2 0.9%	3.34	0.664
8	Internet facility is available to save documents in the cloud.	78 39.2%	108 54.3%	12 6.0%	1 0.5%	3.32	0.609
9	The library acquires quality facilities (electronics and mechanical facilities).	84 38.9%	110 50.9%	21 9.7%	1 0.5%	3.28	0.653
10	There are early warning system such as alarm system in the library in cases if disaster.	74 34.7%	109 51.2%	24 11.3%	6 2.8%	3.18	0.737
	Weighted Mean = 3.30						
Training							
11	Staff are allowed to go on personal trainings and seminars on disaster management.	38 17.85	96 44.9%	66 30.8%	14 6.5%	2.74	0.826
12	At the point of employment, library staff are trained on safety measures.	47 21.9%	80 37.2%	70 32.6%	18 8.4%	2.73	0.899
13	Experts in the field of	49	75	69	21	2.71	0.930

	disaster control are invited for workshop on disaster management in the library.	22.9%	35.0%	32.2%	9.8%		
14	The university management organises in house trainings on disaster prevention and management	38 17.8%	84 39.4%	77 36.2%	14 6.6%	2.69	0.841
15	There are routine trainings in the library on disaster management.	41 19.1%	70 32.6%	92 42.8%	12 5.6%	2.65	0.851
Weighted Mean = 2.70							
Policy							
16	The library practices are directed towards safeguarding its resources.	64 29.8%	128 59.5%	22 10.2%	1 0.5%	3.19	0.621
17	There are well stated procedures library staff are expected to follow to prevent any form of man-made disaster.	50 23.6%	114 53.8%	46 21.7%	2 0.9%	3.00	0.702
18	The policy of the library makes provision for disaster preventive measures.	56 26.5%	96 45.5%	55 26.1%	4 1.9%	2.97	0.777
19	My library has a clearly written policy on disaster management.	41 19.3%	101 47.6%	62 29.2%	8 3.8%	2.83	0.781
20	My library policy on disaster management is reviewed in line with current disaster management practices.	31 14.7%	100 47.4%	70 33.2%	10 4.7%	2.72	0.770
Weighted Mean = 2.94							
Electricity Supply							
21	There is alternative source of power in case of power failure from the main source	76 35.2%	119 55.1%	16 7.4%	5 2.3%	3.23	0.683
22	There are circuit breakers installed to manage the situations relating to high electricity voltage.	61 28.6%	120 56.3%	27 12.7%	5 2.3%	3.11	0.705
23	Electricity supply is available and stable so that disaster management systems in place can function effectively.	65 30.2%	101 47.0%	45 20.9%	4 1.9%	3.06	0.765
24	Electrical equipment in the library are constantly maintained to ensure they are in good condition.	52 24.3%	126 58.9%	31 14.5%	5 2.3%	3.05	0.693
25	Special power sources are made available for the security and warning system available in the library	57 26.5%	103 47.9%	49 22.8%	6 2.8%	2.98	0.779
Weighted Mean = 3.09							

Table 1 presents the distribution for the institutional factors for disaster management practices in university libraries in south-west, Nigeria. The scale used in measuring was; Strongly Agree, Agree, Disagree and Strongly Disagree. The results were then ranked using the mean score. It

was revealed by majority of the respondents ($x = 3.30$) that infrastructure was a major institutional factor in disaster management practices. This implies that there are emergency exits provided in the library in case of disaster, there are necessary disaster management tools such as fire extinguisher, first aid box, thunder arrestor, anti-virus and sand buckets in the library and there is availability of internet facilities to save documents in the cloud. It was closely followed by electricity supply ($x = 3.09$). It implies that the libraries have alternative source of power in case of power failure from the main source, there are circuit breakers installed to manage the situations relating to high electricity voltage and there is availability of electric supply and it is stable so that disaster management systems in place can function effectively. Other instructional factors for disaster management as revealed by the finding are Policy ($x = 2.94$), Finance ($x = 2.89$), and Training ($x = 2.70$). This implies that the library practices are directed towards safeguarding its resources, the management of my institution is ready to finance disaster management activities in the library and Staff are allowed to go on personal trainings and seminars on disaster management.

Personnel attitude towards disaster management practices in university libraries in South-West, Nigeria

The findings on personnel attitude towards disaster management practices in university libraries in South-West, Nigeria is presented in Table 3 and 4

Table 3: Personnel attitude towards disaster management

S/N	Personnel Attitude	SA	A	D	SD	$\bar{x}$	STD
1	Disaster is likely to happen in the library so staff have to be always prepared	124 57.4%	83 38.4%	6 2.8%	3 1.4%	3.52	0.625
2	Training on disaster management is necessary for all library staff.	119 55.1%	89 41.2%	4 1.9%	4 1.9%	3.50	0.632
3	Disaster operational policy and plans need to be updated regularly.	126 58.3%	77 35.6%	9 4.2%	4 1.9%	3.50	0.668
4	It's important I know about disaster operational plans in the library.	118 54.6%	88 40.7%	7 3.2%	3 1.4%	3.49	0.632
5	It is necessary to have a disaster operational policy and plan.	119 55.3%	85 39.5%	8 3.7%	3 1.4%	3.49	0.640
6	Potential hazards likely to cause disaster should be identified and dealt with on time.	118 54.6%	82 38.0%	14 6.5%	2 0.9%	3.46	0.660
7	Management and staff should be adequately	110 50.9%	97 44.9%	6 2.8%	3 1.4%	3.45	0.623

	prepared when disaster occurs.						
8	Disaster preparation drills should be conducted in the library.	103 47.9%	102 47.4%	8 3.7%	2 0.9%	3.42	0.613
9	Disaster management is not for the library management alone.	108 50.2%	79 36.7%	25 11.6%	3 1.4%	3.36	0.741
10	Disaster management and planning is for every staff in the library.	96 44.7%	101 47.0%	15 7.0%	3 1.4%	3.35	0.673
Weighted Mean = 3.45							

The Personnel attitude towards disaster management practices in university libraries in South-west, Nigeria is presented in Table 2. The scale used in measuring was; Strongly Agree, Agree, Disagree and Strongly Disagree. The results were then ranked using the mean score. The finding revealed that majority of the respondents ($x = 3.52$) agreed that disaster is likely to happen in the library, so staff have to be always prepared. Also, majority of the respondents ($x = 3.50$) agreed that training on disaster management is necessary for all library staff. Furthermore, majority of the respondents ($x = 3.50$) agreed that disaster operational policy and plans need to be updated regularly. Majority of the respondents ($x = 3.35$), which is the least ranked, agreed that disaster management and planning is for every staff in the library. Hence, it can be inferred based on the findings that librarians in the university libraries in South-west, Nigeria believes that; disaster are likely to happen in the library so staff have to be always prepared, training on disaster management is necessary for all library staff, disaster operational policy and plans need to be updated regularly, etc.

Table 4: Shapiro-Wilk normality test for the personnel attitude towards disaster management practice

Variables	Mean	StD	Statistics	Df	Sig.
Attitude towards disaster management practice	34.4769	5.47123	0.835	216	0.000

As shown in the table 3, the distribution of responses for personnel attitude towards disaster management practice in university libraries are normally distributed across the population ($df = 216$, $p < 0.05$). This means that the responses from personnel attitude towards disaster management practice in university libraries were approximately normal. Hence, it can be inferred based on the findings ($x = 34.4769$) that librarians in the university libraries in South-west, Nigeria has positive attitude towards disaster management practices.

Relationship between institutional factors and disaster management practices in university libraries in South-West, Nigeria

The relationship between institutional factors and disaster management practices in university libraries in South-West, Nigeria is presented in Table 5

Table 5: Relationship between institutional factors and disaster management practices

Variables	Mean	Standard Deviation	Disaster Management Practices			
			N	r	p-Value	Remark
Finance (Institutional Factor)	14.2361	3.58742	216	0.416	0.000	Sig.
Infrastructure (Institutional Factor)	16.1435	2.88424	216	0.621	0.000	Sig.
Training (Institutional Factor)	13.3981	3.78845	216	0.469	0.000	Sig.
Policy (Institutional Factor)	14.5116	3.20026	215	0.585	0.000	Sig.
Electricity Supply (Institutional Factor)	15.3333	2.91906	216	0.583	0.000	Sig.
Disaster Management Practices	48.2917	7.99204	216			

The relationship that exists between institutional factors (Finance, Infrastructure, Training, Policy and Electricity Supply) and disaster management practices is presented in Table 5. The Pearson Product Moment Correlation (PPMC) was adopted to determine the relationship at 0.05 level of significance. The result revealed a moderate positive significant relationship between Infrastructure (Institutional Factor) and disaster management practices ($n = 216$, $r = 0.621$, $p < 0.05$). Also, it was revealed that moderate positive significant relationship exists between Policy (Institutional factor) and disaster management practices ($n = 216$, $r = 0.585$, $p < 0.05$). Additionally, the findings revealed that there is a moderate positive significant relationship between Electricity Supply and disaster management practices ($n = 216$, $r = 0.583$, $p < 0.05$). The finding implies that the institutional factors (Finance, Infrastructure, Training, Policy and Electricity Supply) put in place by the management of a university influence the disaster management practices taken by the university libraries in South-west, Nigeria. Thus, the Null hypothesis is rejected.

Relationship between personnel attitude and disaster management practices in university libraries in South-west, Nigeria

The relationship between personnel attitude and disaster management practices in University libraries in South-West, Nigeria is presented in Table 6

Table 6: Relationship between personnel attitude and disaster management practices

Variables	Mean	Standard Deviation	N	r	p-Value	Remark
Personnel Attitude	34.4769	5.47123	216	0.637	0.000	Sig.
Disaster Management Practices	48.2917	7.99204				

The relationship between the personnel attitude and disaster management practices in university libraries in South-west, Nigeria is presented in Table 6. The finding revealed that moderate positive significant

relationship exists between personnel attitude and disaster management practices ($n = 216$, $r = 0.637$, $p < 0.05$). This implies that the personnel attitude influences the university libraries engagement in disaster management practices. Hence, the null hypothesis is rejected.

Joint contribution of institutional factors and personnel attitude on disaster management practices in university libraries in South-west, Nigeria

Findings on the joint contribution of institutional factors and personnel attitude on disaster management practices in universities libraries in South-West, Nigeria is presented in Table 7.

Table 7: Joint Contribution of Institutional factors and personnel attitude on disaster management practices

R	R Square	Adjusted R Square	Std. Error of the Estimate		
0.795 ^a	0.632	0.622	4.92578		
Model	Sum of Squares	Df	Mean Square	F	Sig.
Regression	8680.588	6	1446.765	59.628	0.000 ^b
Residual	5046.761	208	24.263		
Total	13727	214			

a. Dependent Variable: Disaster Management Practices

b. Predictors: (Constant), Personnel Attitude, Institutional Factors

The joint contribution of institutional factors and personnel attitude on disaster management practices is presented in table 7. The results revealed that the independent variables (institutional factors and personnel attitude) positively and jointly influence disaster management practices. The result further revealed a coefficient of multiple regression ($df = 214$, $R = 0.795$ and a multiple adjusted R^2 of 0.622, $F = 59.628$). This implies that 62.2% of the variance was accounted for by the predictor variables on disaster management practices (dependent variable). The significance of the influence revealed the $p < 0.05$ (significant at 0.05 level). This implies that the joint contribution of the independent variables (institutional factors and personnel attitude) on the dependent variable (disaster management practices) was significant. Thus, the null hypothesis which stated that institutional factors and personnel attitude will not jointly contribute to disaster management practices is rejected.

Discussion of Findings

In relation to the disaster management practices undertaken in university libraries in South-west, Nigeria, the findings revealed that that university libraries in South-west, Nigeria engages in disaster management practices. Some of the practices include; availability of security checks in place at the library exit to check users while leaving the library, disallowing library users from taking bags and coats into the library, maintenance of vigilance on the in-house use of materials to detect mutilated books, constant in-house training for staff on disaster

management, etc. The results are consistent with the research of Promise, et al. (2018), which assessed the function of disaster equipment while measuring disaster readiness and response in Nigerian university libraries. According to the report, the key disaster readiness and response procedures used in the libraries under investigation are: routine electrical equipment maintenance and inspection; making sure emergency equipment is placed appropriately; and replacing fire extinguishers on time when they expire.

On the institutional factors for disaster management practices in university libraries in south-west, Nigeria, the findings revealed that the institutional factors for disaster management in the university libraries in South-west, Nigeria are; Finance, Infrastructure, Training, Policy and Electricity supply. This finding is supported by Ibrahim (2021) study which identified institutional factors that could affect cause of an action in an organisation to include; organisational culture, electricity supply, internet facilities/access and ICT facilities and support. The study also revealed that that librarians in the university libraries in South-west, Nigeria has positive attitude towards disaster management practices as they believe that; disaster is likely to happen in the library so staff have to be always prepared, training on disaster management is necessary for all library staff, disaster operational policy and plans need to be updated regularly, etc. The finding contradicts the study of Issa, et al. (2012) as they noticed that many libraries in Nigeria have little or no regards for disaster preparedness and management but prefer to restore activities after a disaster experience. This showed that over time, the university libraries experience a turnaround in attitude of library personnel towards disaster management.

The findings revealed that institutional factors (Finance, Infrastructure, Training, Policy and Electricity Supply) influence the disaster management practices taken by the university libraries in South-west, Nigeria. The finding is in line with Sharma, et al. (2018) which revealed a link between funding of the library and the library involvement in disaster management practices. On the relationship between personnel attitude and disaster management practices in university libraries in South-west, Nigeria, the findings revealed that the personnel attitude influences the university libraries engagement in disaster management practices. This finding is supported by Nofal, et al. (2018) which carried out a study on attitude towards disaster and emergency preparedness. It was revealed that the attitude influences the library involvement in disaster management practices. Additionally, the findings revealed that that the independent variables (institutional factors and personnel attitude) positively and jointly influence disaster management practices. The finding is supported by Wangi (2015) and Maxwell (2016) which revealed that disaster management practices is influenced by a number of factors in which variables under the institutional factors were identified and the disposition of the person involved was also identified to determine involvement in disaster management practices.

Conclusion

Disaster management practices in libraries are aimed at reducing or avoiding potential losses from hazards, promote prompt and appropriate assistance to victims of disaster as well as ensuring rapid and effective recovery after disaster. Disaster management practices should be continuous process in university libraries as it ensures protecting people, libraries and its materials from harm, therefore, library managements must be proactive about it. In order to ensure a successful implementation, disaster management includes preparation, risk assessment, training, and funding. Integration of sound institutional elements is essential for effective disaster management. These include funding style, leadership style, infrastructure, electricity supply, training and communication/information environment among others. Effective institutional factors are essential for managing disasters successfully, library personnel must also exhibit good attitude towards disaster management in their libraries as any nonchalant attitude they display could result in grave consequences.

Recommendations

1. Disaster management plan and policy should be put in place in libraries to help cope with disaster occurrence and preparedness in university libraries.
2. Adequate funds should be provided for the management of disaster in libraries. This will go a long way to deal with disaster occurrence and provide periodic maintenance of library facilities.
3. Routine fumigation of library environment must be carried out to reduce the effect of rodents, insects and other biological agents that destroy library resources.
4. Continuous training and retraining of staff on disaster management practices so be encouraged to develop the right attitude of library personnel towards disaster management.

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Influence of Academic Social Networking Sites on the Research Productivity of Lecturers in Federal Universities, North-Central, Nigeria

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Abstract

The increasing demand for research output and global academic visibility has prompted scholars to explore digital tools that enhance scholarly communication and collaboration. Academic Social Networking Sites (ASNS), such as ResearchGate, Academia.edu, and Google Scholar, have emerged as critical platforms for improving research productivity and impact. This study investigates the influence of ASNS on the research productivity of lecturers in Federal Universities in North-Central Nigeria. The study was guided by seven research questions. A descriptive survey design was adopted, and total enumeration was used to capture the entire population of 96 lecturers in the Departments of Library and Information Science across seven federal universities in the North-Central region. Data were collected through a structured questionnaire and analysed using descriptive statistics (mean and standard deviation) and inferential statistics (linear and multiple regression). The study recorded a 78% response rate, with 75 valid responses retrieved. The findings revealed a strong positive influence of ASNS on lecturers' research productivity, with a weighted mean of 4.25. Lecturers actively used platforms such as ResearchGate, Google Scholar, and Academia.edu to disseminate research, track citations, and collaborate with peers. However, challenges such as poor internet connectivity, inadequate ASNS knowledge, and irregular power supply were found to hinder optimal use, with a mean impact score of 4.22. It recommends that institutional management should promote ASNS training, improve digital infrastructure, and embed ASNS usage in research policy frameworks to optimise academic output and global impact.

Keywords: *Academic social networking sites, Research productivity, Federal universities, Nigeria, Library and information science*

Introduction

Research productivity is a central element in the academic lifecycle, significantly influencing career progression, institutional ranking, and national development. It is generally measured by the quantity and quality of scholarly outputs such as journal articles, books, technical reports, and conference proceedings (Basiru, 2018; Okonedo et al., 2015). In universities, the pressure to publish is tied to criteria for promotion, peer recognition, and tenure, making research output a key metric of academic excellence (Tsafé et al., 2016). Globally, the dynamics of academic research are being reshaped by digital innovations. One of the most notable changes is the rise of Academic Social Networking Sites (ASNS), digital platforms specifically designed to support academic communication and collaboration. Platforms such as ResearchGate, Academia.edu, LinkedIn, Google Scholar, ORCID, Mendeley, and others have become pivotal in enabling lecturers and researchers to create online profiles, upload and share research outputs, monitor citations, and engage with global peers (Hussain et al., 2017; Nwachi & Igbokwe, 2019; Khot & Bansode, 2017).

These platforms go beyond traditional networking by providing integrated features such as metrics tracking (e.g., citation count, downloads, and altmetrics), collaborative document sharing, research group creation, and even job postings. ASNSs are particularly valuable in less-resourced academic environments where access to indexed journals and international exposure may be limited. Through ASNS, lecturers can maintain visibility, improve their research reach, and stay updated with the latest developments in their fields (Stephen & Pramanathan, 2020; Vasquez & Bastidas, 2015; Wiechetek et al., 2020). In the Nigerian context, research productivity remains relatively low compared to global standards. Challenges such as inadequate funding, limited ICT infrastructure, and lack of access to international publication outlets continue to hinder scholarly output (Simisaye, 2019; Haruna et al., 2023). However, ASNS offer a cost-effective and accessible avenue for overcoming some of these barriers. These platforms allow lecturers to engage in scholarly communication, collaborate across institutions and countries, and increase the visibility and impact of their work, all of which are essential for academic advancement and societal impact (Meisher-Tal & Pieterse, 2017).

Despite these potentials, the adoption and effective use of ASNS among Nigerian lecturers, particularly in federal universities in North-Central Nigeria, remains underexplored.

There is a critical need to empirically assess the extent to which ASNS influence research productivity, what challenges hinder their use, and how institutional policies can support their integration into academic workflows. Thus, this study investigates the influence of academic social networking sites on the research productivity of lecturers in federal universities in North-Central Nigeria, with a view to informing policy, practice, and further research.

Objectives of the Study

The specific objectives are to:

1. find out the quantity of research productivity of lecturers in Federal Universities in North-central, Nigeria;
2. identify the Academic Social Networking Sites that the lecturers have a profile in the Federal Universities in North-central, Nigeria;
3. determine the number of publications and citations the lecturers have on the academic social networking sites of the Federal Universities in North-central, Nigeria;
4. find out the influences of the use of academic social networking sites on research productivity of lecturers in the Federal Universities in North-central, Nigeria;
5. measure the extent of use of academic social networking site on research productivity of lecturers in the Federal Universities in North-central, Nigeria.

Literature Review

Concept of Academic Social Networking Sites (ASNS)

Academic Social Networking Sites (ASNS) are digital platforms designed specifically for academics to share research outputs, build professional networks, and collaborate across institutions and disciplines. These platforms function as scholarly hubs where users can upload articles, track citations, join interest groups, and engage with global research communities (Otolu & Saibakumo, 2021; Meisher-Tal & Pieterse, 2017). Common examples of ASNS include ResearchGate, Academia.edu, Google Scholar, Mendeley, ORCID, LinkedIn, and Zotero. Unlike general social media platforms, ASNS provide discipline-specific tools such as citation metrics, altmetrics, and repository functions (Stephen & Pramanathan, 2020; Thelwall & Kousha, 2015).

Influence of ASNS on Research Productivity

Several studies highlight the positive influence of ASNS on research productivity. These platforms increase the visibility of lecturers' publications, facilitate connections with collaborators, and allow for the timely dissemination of findings (Meisher-Tal and Pieterse, 2017; Vasquez & Bastidas, 2015). Enabling real-

time engagement and content sharing, ASNS reduce the barriers of geographical and institutional isolation, especially in developing countries like Nigeria (Kulkarni & Poornashankar, 2018). Researchers can post preprints, receive feedback, and monitor engagement through metrics such as downloads and citations (Niyazov et al., 2016). According to Thelwall and Kousha (2015), ASNS have revolutionised research communication, making it easier for scholars to diffuse findings and collaborate beyond traditional academic boundaries. Despite their advantages, challenges persist. Nigerian lecturers, particularly those in public universities, often face poor internet connectivity, lack of institutional support, and limited awareness or training on the effective use of ASNS (Simisaye & Popoola, 2022; Haruna et al., 2023). This digital divide hampers the full utilization of these platforms and limits their potential to enhance research productivity.

Theoretical Framework: Uses and Gratifications Theory

The Uses and Gratifications Theory (UGT) provides a useful lens for understanding why lecturers adopt ASNS. The UGT posits that individuals actively choose media that meet specific needs, cognitive (knowledge seeking), affective (emotional satisfaction), personal (self-expression), and social (interaction and connection) (Rubin, 2002; Ruggiero, 2000). In the academic context, ASNS offer gratification through enhanced visibility, scholarly recognition, and career advancement. Studies have shown that academics use ASNS not only for information consumption but also for networking, self-promotion, and community engagement (LaRose & Eastin, 2004; Dermentzi et al., 2016).

Empirical Evidence on ASNS in Nigeria

Several Nigerian studies affirm the growing importance of ASNS in research dissemination and academic productivity. Salami et al. (2021) found that while many lecturers are aware of ASNS, actual usage for dissemination remains low due to the absence of formal policy or training. Adetayo (2023) reported that lecturers who actively used ASNS platforms experienced higher research output and visibility. However, the study also noted that internet infrastructure and administrative support play a crucial role in determining the extent of ASNS utilization. Moreover, studies by Nwokedi (2019) and Chaudhuri and Baker (2018) revealed that although platforms like ResearchGate and Academia.edu are widely known, the level of engagement varies by academic rank and discipline. The ability to build a digital academic profile and connect with peers was positively associated with increased publication rates and citation indices.

In summary, the literature supports the assertion that Academic Social Networking Sites enhance research productivity by providing platforms for visibility, collaboration, and scholarly exchange. However, local constraints such as digital illiteracy, poor connectivity, and lack of institutional policies limit their full potential in Nigeria. While global studies have extensively examined ASNS, there remains a research gap in understanding how these platforms influence lecturers' productivity within federal universities in North-Central Nigeria, particularly in disciplines like Library and Information Science.

Research Methodology

This study adopted a descriptive survey research design to investigate the influence of Academic Social Networking Sites (ASNS) on the research productivity of lecturers in federal universities in North-Central Nigeria. The design was appropriate for collecting factual data and measuring perceptions, attitudes, and behaviours related to ASNS usage among lecturers. The population of the study consisted of 96 lecturers drawn from the Departments of Library and Information Science in seven federal universities: University of Ilorin, University of Jos, University of Abuja, Federal University Lokoja, Federal University Lafia, Federal University of Technology Minna, and Joseph Sarwuan Tarka University, Makurdi. Given the relatively small and accessible size of the population, a total enumeration (census) approach was employed, allowing all 96 lecturers to participate in the study.

Data were collected using a structured questionnaire titled "Influence of Academic Social Networking Sites and Management Policy on the Research Productivity of Lecturers Questionnaire (IASNSMPRLQ)". The questionnaire was divided into sections that captured demographic details, types of ASNS used, number of publications and citations, influence of ASNS on productivity, institutional policies, and challenges faced. A five-point Likert scale format ranging from "Strongly Agree" to "Strongly Disagree" was used to measure responses. The instrument underwent face and content validation by the researcher's supervisor, two senior lecturers in Library and Information Science, and one expert in Educational Measurement and Evaluation. Their comments and suggestions were incorporated to enhance clarity, relevance, and alignment with the study's objectives.

To ensure reliability, a pilot test was conducted at Kebbi State University of Science and Technology, Aliero, using 40 lecturers. The test-retest method was employed over a two-week interval. Responses were analyzed using the Cronbach Alpha reliability formula, which yielded a coefficient of 0.74,

indicating good internal consistency and reliability of the instrument. For data collection, a letter of introduction was presented to the appropriate university authorities, and with the assistance of three trained research assistants, the questionnaires were administered and retrieved over a period of four weeks. Participation was voluntary and confidentiality was assured.

Data were analysed using both descriptive and inferential statistical methods. Descriptive statistics such as frequency counts, means, and standard deviations were used to answer the research questions, while linear and multiple regression analyses were used to test the study's hypotheses at a 0.05 level of significance. The Statistical Package for the Social Sciences (SPSS) software was employed for all computations.

Data Analysis and Interpretation of Results

Table 1: Questionnaire Response Rate by University

University	Questionnaires Administered	Returned	Response Rate (%)
University of Ilorin	15	12	80
University of Jos	10	7	70
University of Abuja	13	10	77
Federal University, Lokoja	8	6	75
Federal University, Lafia	11	8	73
Federal University of Technology, Minna	22	19	86
Joseph Sarwuan Tarka University, Makurdi	17	13	76
Total	96	75	78

A total of 96 copies of the questionnaire were administered to lecturers across seven Federal Universities in North-Central Nigeria. Seventy-five (75) completed and valid responses were retrieved, representing a response rate of 78%. This rate is considered sufficient for quantitative analysis and generalization within the study population. As shown in Table 1, Federal University of Technology, Minna, recorded the highest return rate (86%), likely due to the researcher's physical presence in the location, which facilitated distribution and follow-up. Other institutions had return rates ranging from 70% to 80%, indicating a generally strong level of engagement from the academic participants.

Analysis of Socio-Demographic Characteristic of the Respondents

Table 2 Demographic Characteristics of Respondents (N = 75)

Variable	Category	Frequency (n)	Percentage (%)
Gender	Male	45	60.00
	Female	30	40.00
Total		75	100.00

Educational Qualification	BSc/BTech/BA/BLS/BLIS	19	25.33
	HND	7	9.33
	MSc/MTech/MA/MLS/MLIS	28	37.34
	PhD and others	21	28.00
Total		75	100.00
Academic Rank	Assistant Lecturer	26	34.67
	Lecturer II	13	17.33
	Lecturer I	15	20.00
	Senior Lecturer	5	6.67
	Associate Professor	9	12.00
	Professor	7	9.33
Total		75	100.00

Table 2 presents the demographic characteristics of the 75 respondents, including gender, highest educational qualification, and academic rank. The majority of respondents were male (60%), while female lecturers accounted for 40%, indicating a moderate gender imbalance. In terms of educational attainment, 37.34% of the respondents held a Master's degree (MSc/MTech/MA/MLS/MLIS), followed by 28% with PhDs or equivalent qualifications. A quarter (25.33%) held bachelor's degrees, and 9.33% held Higher National Diplomas (HND). Regarding academic rank, 34.67% of the respondents were Assistant Lecturers, 20% were Lecturer I, and 17.33% were Lecturer II. Senior Lecturers represented 6.67%, Associate Professors 12%, and Professors 9.33%, indicating a fairly balanced representation across academic levels, although skewed toward early-career ranks.

Research Questions 1: What is the quantity of research productivity of lecturers in Federal Universities in North-Central Nigeria?

Table 3 Frequency Distribution of Respondents View on Quantity of Research Output Produced by Lecturers (2019–2024) (N = 75)

S/N	Type of Research Output	1–5	6–10	11–15	16+	None	Mean
1	Book chapters/books (local/international)	73.3%	21.3%	5.3%	0.0%	0.0%	2.32
2	Patents	65.3%	30.7%	6.7%	0.0%	0.0%	2.45
3	Conference/workshop proceedings	29.3%	45.3%	13.3%	12.0%	0.0%	3.08
4	Research-	64.0%	30.7%	5.3%	0.0%	0.0%	2.41

	oriented books						
5	Subject books	66.7%	21.3%	4.0%	2.7%	5.3%	2.32
6	Technical reports	58.7%	26.7%	9.3%	4.0%	1.3%	2.56
7	Pamphlets	49.2%	33.3%	6.7%	2.7%	8.0%	2.47
8	Monographs	44.0%	50.7%	1.3%	2.7%	4.0%	2.63
9	Journal articles	37.3%	48.0%	9.3%	5.3%	0.0%	2.83
10	Conference papers/proceedings	60.0%	28.0%	10.7%	1.3%	0.0%	2.53
11	Creative works	36.0%	52.0%	12.0%	0.0%	0.0%	2.76
12	Visual arts	33.3%	38.7%	14.7%	6.7%	6.7%	2.81
	Total Weighted Research Output Score						2,338

Sources: Researcher's field-report, 2025

Note: Values in parentheses (e.g., 73.3%) indicate the percentage of respondents selecting that frequency category. Weighted scores reflect a scale where: 1–5 = 2, 6–10 = 3, 11–15 = 4, and 16+ = 5.

Data were gathered on various types of scholarly output produced between 2019 and 2024. The results, summarised in Table 3, indicate that lecturers engaged in multiple forms of research activity, including journal articles, book chapters, conference papers, technical reports, and creative works. A weighted scale was applied to the frequency categories: 1–5 outputs (score = 2), 6–10 (score = 3), 11–15 (score = 4), and 16 or more (score = 5). The cumulative productivity score across all categories and respondents was 2.338. The most frequently produced output was publications in conference/workshop proceedings (Mean = 3.08), followed by journal articles (Mean = 2.83) and visual arts (Mean = 2.81). These high-scoring outputs are likely linked to institutional expectations for academic visibility and promotion, where conference participation and journal publication are standard benchmarks. Overall, the findings reveal a moderate level of research activity, with the majority of respondents (61.6%) reporting between 1 and 5 outputs in each category. The data also reflect a diverse pattern of engagement across various forms of scholarly dissemination.

Research Question 2: Which academic social networking sites do lecturers in Federal Universities in North-Central Nigeria have active profiles on?

Table 4: Frequency Distribution of Respondents' View on Lecturers' Profiles on Academic Social Networking Sites (N = 75)

S/ N	Academic Social Networkin g Site	Have Profile	No Profile	Wei ghte d Su m	Mea n	Rank
1	ResearchGate	55 (73.3%)	20 (26.7%)	182	2.42	1st
2	Google Scholar	53 (70.7%)	22 (29.3%)	181	2.41	2nd
3	LinkedIn	54 (72.0%)	21 (28.0%)	175	2.33	3rd
4	Academia.edu	51 (68.0%)	24 (32.0%)	173	2.30	4th
5	ORCID iD	35 (46.6%)	40 (53.3%)	141	1.88	5th
6	Mendeley	30 (40.0%)	45 (60.0%)	135	1.80	6th
7	Method Space	29 (38.7%)	46 (61.3%)	133	1.77	7th
8	Pen Profile	30 (40.0%)	45 (60.0%)	129	1.72	8th
9	Xing	27 (36.0%)	48 (64.0%)	129	1.72	8th
10	Zotero	26 (34.7%)	49 (65.3%)	127	1.69	9th
11	Research ID	24 (32.0%)	51 (68.0%)	123	1.64	10th
12	Science Stage	20 (26.7%)	55 (73.3%)	115	1.53	11th
13	Impact Story	15 (20.0%)	60 (80.0%)	105	1.40	12th

Sources: Researcher's field-report, 2025

Note: Figures in parentheses represent the percentage of total respondents.

Research question two sought to determine the academic social networking sites (ASNSs) on which lecturers in Federal Universities in North-Central Nigeria maintain active profiles. Table 4 presents the platforms assessed, the frequency of profile ownership, and their respective rankings based on mean scores. The results show that the most widely adopted platform is ResearchGate, with 73.3% of respondents reporting an active profile. This platform earned the highest weighted sum of 182 and a mean score of 2.42, ranking it 1st. Google Scholar followed closely, with 70.7% engagement, a weighted sum of 181, and a mean score of 2.41, placing it 2nd. LinkedIn (72.0%) and Academia.edu (68.0%) were also popular among respondents, ranking 3rd and 4th respectively. These platforms offer features such as professional networking, research sharing, and visibility, which are increasingly important for academic growth and global reach.

Conversely, platforms such as Impact Story (20.0%), Science Stage (26.7%), Zotero (34.7%), and Pen Profile (40.0%) were

less commonly used. This pattern suggests a possible gap in awareness or the perceived relevance of these tools to Nigerian academic workflows. Notably, ORCID iD, which provides a persistent digital identifier for researchers, was used by 46.6% of lecturers and ranked 5th, highlighting moderate uptake despite its global importance for scholarly identity. The results suggest that Nigerian lecturers prioritise platforms like ResearchGate and Google Scholar, which offer robust metrics, publication visibility, and opportunities for academic networking. Meanwhile, niche or less-publicized platforms remain underutilised.

Research Question Three: What is the number of publications and citations associated with lecturers on academic social networking sites in Federal Universities in North-Central Nigeria?

Table 5: Frequency Distribution of Respondents' View on the Lecturer Distribution by Number of Publications on Academic Social Networking Sites

S/N	Academic Social Networking Site	1–5 Publications	6–10 Publications	11+ Publications	Total Users (N)
1	Academia.edu	20 (39.2%)	20 (39.2%)	11 (21.6%)	51
2	ResearchGate	15 (27.3%)	20 (36.4%)	20 (36.4%)	55
3	Google Scholar	10 (18.9%)	20 (37.7%)	23 (43.4%)	53
4	Research ID	5 (20.8%)	10 (41.7%)	9 (37.5%)	24
5	ORCID iD	10 (28.6%)	15 (42.9%)	10 (28.6%)	35

Sources: Researcher's field-report, 2025

Note: Percentages in parentheses represent the proportion of users on each platform in each publication category.

Research question three focused on understanding the total number of publications and citations recorded by lecturers across key Academic Social Networking Sites (ASNSs). This section presents the publication counts per platform (Table 5) while citation data is subsequently discussed in Table 5. Table 5 shows that lecturers exhibit varied levels of scholarly output across different platforms. On Academia.edu, out of 51 lecturers, 39.2% had between 1–5 publications, another 39.2% between 6–10, and 21.6% had more than 11 publications. This suggests a balanced distribution between early-career and more established users. On ResearchGate, 36.4% of lecturers reported more than 11 publications, another 36.4% had between 6–10 publications, and 27.3% had 1–5. This relatively even distribution indicates that ResearchGate serves both emerging

and senior scholars as a robust platform for showcasing scholarly work.

For Google Scholar, a significant majority (43.4%) of users reported more than 11 publications, followed by 37.7% with 6–10, and only 18.9% with 1–5 publications. This highlights the platform’s appeal to highly productive or senior academics who prioritize citation tracking and scholarly visibility. In contrast, Research ID and ORCID iD had lower user bases (24 and 35 lecturers, respectively), with the majority in both cases falling within the 6–10 publication range. This suggests these platforms are moderately used, possibly for identity management or integration with institutional systems rather than active content dissemination.

Citation Counts of Lecturers on Academic Social Networking Sites

Table 6: Frequency Distribution of Respondents’ View on the Lecturer Distribution by Citation Counts on Academic Social Networking Sites

S/N	Academic Social Networking Site	1–5 Citations	6–10 Citations	11+ Citations	Total Users (N)
1	Academia.edu	15 (29.4%)	20 (39.2%)	16 (31.4%)	51
2	ResearchGate	20 (36.4%)	20 (36.4%)	15 (27.3%)	55
3	Google Scholar	15 (28.3%)	20 (37.7%)	18 (34.0%)	53
4	Research ID	5 (20.8%)	10 (41.7%)	9 (37.5%)	24
5	ORCID iD	10 (28.6%)	15 (42.9%)	10 (28.6%)	35

Sources: Researcher’s field-report, 2025

Note: Percentages in parentheses represent the proportion of lecturers on each platform in each citation category.

Continuing the analysis of Research Question Three, Table 6 presents the citation distribution of lecturers on selected Academic Social Networking Sites (ASNSs). Citation counts are a vital metric of research impact, reflecting how often a scholar’s work is referenced by others in the academic community. On Academia.edu, the majority of lecturers (39.2%) reported having 6–10 citations, while 31.4% had 11 or more citations, and 29.4% were in the 1–5 citation category. This relatively balanced distribution suggests that a considerable number of users are beginning to gain academic recognition through their published work. ResearchGate revealed a nearly even split, with 36.4% of lecturers each in the 1–5 and 6–10 citation ranges, and 27.3% achieving 11 or more citations. These figures imply that while many lecturers are active on the platform, fewer have reached high citation thresholds, possibly reflecting a mix of junior and mid-career researchers.

Google Scholar stood out with 34.0% of users achieving more than 11 citations, underscoring its effectiveness in indexing academic outputs and enhancing visibility. Additionally, 37.7% fell in the 6–10 citation range, while 28.3% had 1–5 citations. The relatively high rate of citations among users suggests that Google Scholar continues to be a preferred platform for disseminating research and gaining recognition, particularly among established academics. In contrast, Research ID and ORCID iD had a smaller user base and displayed more modest citation counts. On Research ID, 41.7% had 6–10 citations, while 37.5% had 11 or more. Similarly, ORCID iD reported 42.9% in the 6–10 category, and 28.6% in both the 1–5 and 11+ citation ranges. This pattern indicates that while these platforms are valuable for identity management and integration, they are less frequently used for showcasing citation metrics compared to ResearchGate and Google Scholar. These findings reinforce the notion that platforms like Google Scholar and ResearchGate are more impactful in terms of visibility and citation, especially for researchers seeking global academic exposure.

Research Question Four: How does the use of academic social networking sites influence the research productivity of lecturers in Federal Universities in North-Central Nigeria?

Table 7 Frequency Distribution of Respondents' View on the Influence of Academic Social Networking Sites on Research Productivity of Lecturers (N = 75)

S/ N	Statements	SA	A	N	D	SD	Mean
1	ASNS enhances access to resources unavailable on institutional databases.	35 (46.7%)	27 (36.0%)	5 (6.7%)	5 (6.7%)	3 (4.0%)	4.15
2	ASNS keeps me informed of the most recent developments in my field.	28 (37.3%)	39 (52.0%)	6 (8.0%)	2 (2.7%)	0 (0.0%)	4.24

3	ASNS encourages communication with peers and updates in specialization.	38 (50.7%)	25 (33.3%)	8 (10.7%)	2 (2.7%)	2 (2.7%)	4.27
4	ASNS is useful for discovering research directions, materials, and projects.	22 (29.3%)	44 (58.7%)	5 (6.7%)	2 (2.7%)	2 (2.7%)	4.09
5	ASNS encourages uploading of full-text journal articles and conference lectures.	46 (61.3%)	24 (32.0%)	5 (6.7%)	0 (0.0%)	0 (0.0%)	4.55
6	ASNS facilitates interaction between readers and researchers.	21 (28.0%)	44 (58.7%)	10 (13.3%)	0 (0.0%)	0 (0.0%)	4.15
7	ASNS helps manage my online academic persona	23 (30.6%)	45 (60.0%)	6 (8.0%)	1 (1.3%)	0 (0.0%)	4.20

	(photo, name, info).						
8	ASNS promotes diffusion of studies by allowing uploads to cyberspace.	33 (44.0%)	38 (50.7%)	4 (5.3%)	0 (0.0%)	0 (0.0%)	4.39
	Weighted Mean						4.25

Sources: Researcher's field-report, 2025

Note: SA = Strongly Agree (5), A = Agree (4), N = Neutral (3), D = Disagree (2), SD = Strongly Disagree (1).

Decisions are based on interpretation thresholds 3.50 applied by the researchers

Research Question Four aimed to assess the extent to which the use of Academic Social Networking Sites (ASNS) influences lecturers' research productivity in Federal Universities in North-Central Nigeria. Table 7 presents respondents' perceptions of how ASNS contributes to their scholarly activities, including access to resources, collaboration, dissemination, and visibility. With threshold of 3.50, the results revealed a weighted mean of 4.25, suggesting a strong positive influence of ASNS on research productivity overall. Specifically, the highest-rated item (mean = 4.55) indicated that ASNS encouraged lecturers to upload full-text academic journal articles and conference papers, thereby increasing accessibility and visibility of their work. Other positively rated influences include the encouragement to communicate with peers and co-workers (mean = 4.27) and to diffuse studies online (mean = 4.39), both of which are vital to fostering collaboration and global academic engagement.

While most responses were positive, a few aspects received lower agreement. For instance, although many respondents acknowledged that ASNS platforms keep them informed of the latest developments (mean = 4.24), this was categorized under disagreement in decision coding due to the cutoff applied in the analysis. Similarly, items related to access to instructional materials (mean = 4.15), interaction between readers and authors (mean = 4.15), and management of online persona (mean = 4.20) were rated moderately but were also coded as "Disagree" based on pre-set thresholds, despite relatively high

means above 4.00. These findings suggest that lecturers perceive ASNS as most effective in areas of dissemination, networking, and visibility, but slightly less so for accessing institutional resources or facilitating reader-author interactions.

Research Question Five: To what extent does the use of Academic Social Networking Sites (ASNS) influence research productivity of lecturers in Federal Universities in North-Central Nigeria?

Table 8 Frequency Distribution of Respondents' View on the Extent of Influence of Academic Social Networking Sites on Research Productivity (N = 75)

S/N	Statements	VHE	HE	LE	VL E	NA	Mean
1	ASNS enhances access to instructional resources not in institutional databases.	41 (54.7%)	23 (30.7%)	7 (9.3%)	4 (5.3%)	0 (0.0%)	4.34
2	ASNS keeps me informed of developments in my field.	24 (32.0%)	38 (50.7%)	8 (10.7%)	3 (4.0%)	2 (2.7%)	4.05
3	ASNS encourages collaboration and communication with peers.	31 (41.3%)	40 (53.3%)	4 (5.3%)	0 (0.0%)	0 (0.0%)	4.36
4	ASNS helps discover new directions in research and collaboration.	22 (29.3%)	41 (54.7%)	5 (6.7%)	2 (2.7%)	5 (6.7%)	3.97
5	ASNS encourages uploading of journal articles and conference lectures.	27 (36.0%)	39 (52.0%)	5 (6.7%)	2 (2.7%)	2 (2.7%)	4.16
6	ASNS allows reader interaction and author	19 (25.3%)	46 (61.3%)	4 (5.3%)	3 (4.0%)	3 (4.0%)	4.00

	engagement.						
7	ASNS supports management of online academic identity.	44 (58.7%)	21 (28.0%)	6 (8.0%)	4 (5.3%)	0 (0.0%)	4.40
8	ASNS encourages open access and diffusion of research online.	34 (45.3%)	31 (41.3%)	5 (6.7%)	3 (4.0%)	2 (2.7%)	4.23
	Weighted Mean						4.19

Sources: Researcher's field-report, 2025

Key: VHE = Very High Extent (5), HE = High Extent (4), LE = Low Extent (3), VLE = Very Low Extent (2), NA = Not Applicable (1)

Table 8 presents the respondents' views across eight key statements measuring the perceived extent of ASNS influence. Each statement was rated on a five-point scale: Very High Extent (VHE), High Extent (HE), Low Extent (LE), Very Low Extent (VLE), and Not Applicable (NA). With threshold of 3.50, the overall weighted mean score of 4.19 indicates that ASNS exert a generally high extent of influence on lecturers' research productivity. Specifically, the highest rated influence (Mean = 4.40) was that ASNS encourages management of online persona (e.g., name, photo, professional identity). This was followed by the promotion of academic communication and knowledge sharing through peer interaction (Mean = 4.36) and increased access to instructional and research materials not available through institutional libraries (Mean = 4.34). Interestingly, while the overall trend suggests a high extent of influence, some individual items, such as ASNS helping lecturers stay updated on field developments (Mean = 4.05), enabling collaboration (Mean = 3.97), and facilitating article response and author interaction (Mean = 4.00), were coded as "Low Extent" due to the predetermined interpretation scale, despite having relatively high mean scores. These results affirm that ASNS play a critical role in enhancing the visibility, communication, and dissemination of academic work, especially in environments where traditional academic infrastructure may be limited.

Discussion of the Findings

This section discusses the findings of the study in relation to the research questions and existing literature, with a view to situating the results within broader scholarly debates on academic social networking sites (ASNS) and research productivity. The findings revealed a moderate level of research

productivity among lecturers in federal universities in North-Central Nigeria between 2019 and 2024. A majority (61.6%) reported producing between one to five scholarly outputs during the period, with conference proceedings and workshop presentations ranking highest, followed by journal articles, visual arts, and creative works. This suggests that while lecturers are actively participating in conferences and publishing, their overall output volume remains modest. This outcome aligns with Basiru (2018), who emphasized that research productivity in academia can be measured through a wide array of outputs, including journal articles, book chapters, conference papers, monographs, and technical reports. The comparatively low number of patents, pamphlets, and research-oriented books suggests that institutional focus and promotion criteria may prioritize conference presentations and journal publications, possibly due to their direct relevance for career advancement and visibility.

The study also examined the platforms where lecturers maintain profiles. The results showed that ResearchGate, Google Scholar, LinkedIn, Academia.edu, and ORCID iD were the most widely used ASNSs, ranked first through fifth respectively. These platforms are designed to support various scholarly activities, including the dissemination of research, networking with peers, monitoring citations, and enhancing academic visibility. This finding is consistent with Stephen and Pramanathan (2020), who highlighted the role of ASNSs in facilitating scholarly engagement through profile creation, interaction with peers, and research sharing. Similarly, Vasquez and Bastidas (2015) found that ASNSs provide unique tools that support research communication and collaboration globally. On the contrary, platforms such as Science Stage and Impact Story recorded very low levels of engagement among respondents, possibly due to limited awareness or perceived relevance within the Nigerian academic context.

In terms of publication and citation metrics, Google Scholar and ResearchGate emerged as dominant platforms where a significant number of lecturers reported having more than 11 publications and citations. Academia.edu also showed moderate activity, particularly among early-career researchers. The findings suggest that ASNSs serve as strategic platforms for enhancing research impact and academic recognition. This resonates with the work of Meisher-Tal and Pieterse (2017), who reported that ASNSs allow users to upload publications, track metrics, and engage with academic peers globally. Krause (2015) also emphasized that these platforms enable networking, idea exchange, and trend monitoring. However, the study also revealed areas of disagreement. Respondents noted that ASNSs

did not significantly improve access to textbooks or instructional materials unavailable through institutional libraries, nor did they foster project collaboration or meaningful author-reader interactions. This contrasts with Wiechetek et al. (2020), who argued that ASNSs are increasingly being used for a broad range of academic functions including collaboration and information exchange.

The results further showed that the use of ASNSs positively influenced research productivity. Respondents reported that ASNSs enhance communication and collaboration, facilitate content dissemination (e.g., uploading full-text articles and conference presentations), support digital identity management, and promote the diffusion of research studies. These findings support Opesanwo and Mabawonku (2016), who documented the growing reliance of academics on social networking platforms for accessing scholarly content, enhancing efficiency, and fostering collaboration. Nevertheless, lecturers reported a low extent of influence in areas such as gaining access to current developments in their fields, discovering new research directions, and engaging in collaborative project work. This stands in contrast to Meisher-Tal and Pieterse (2017), who suggested that ASNSs can transform the research landscape by fostering global academic relationships and facilitating the sharing of emerging knowledge.

Overall, the findings revealed that lecturers in Federal Universities in North-central Nigeria perceive Academic Social Networking Sites (ASNS) as having a strong influence on their research productivity. Respondents highlighted the platforms' role in enhancing communication, promoting the sharing of research outputs, and supporting online academic identity management. These results reinforce previous studies (e.g., Opesanwo & Mabawonku, 2016; Meishar-Tal & Pieterse, 2017), which emphasize ASNS as tools for academic visibility and collaboration. However, aspects such as engagement with recent research trends, discovering new research directions, and interactive scholarly dialogue were rated lower, indicating underutilization of ASNS for real-time knowledge exchange. This suggests the need for institutions to provide targeted training and incentives to deepen lecturers' engagement with the full capabilities of ASNS.

Summary of Findings

The findings of this study provide critical insights into the use of Academic Social Networking Sites (ASNS) and their impact on the research productivity of lecturers in Federal Universities located in North-Central Nigeria. Firstly, in terms of research output, it was observed that the majority of lecturers produced

between one and five research works during the period spanning 2019 to 2024. Among the various types of publications, conference and workshop proceedings were the most frequently produced. Cumulatively, lecturers across the surveyed institutions accounted for a total of 2,338 research outputs, indicating a moderate level of research productivity within the region. With regard to the use of ASNS platforms, ResearchGate and Google Scholar emerged as the most popular and frequently utilized among the lecturers. These were followed by LinkedIn and Academia.edu, which also saw considerable usage. In contrast, platforms such as Method Space, Pen Profile, and Impact Story recorded minimal engagement. This disparity suggests a limited awareness or perceived relevance of the lesser-known platforms among the academic community. In examining publication and citation patterns across these platforms, it was found that most users of Academia.edu had between one and ten publications. Conversely, a significant proportion of Google Scholar users reported having more than eleven publications. Citation activity closely mirrored this distribution, with ResearchGate and Google Scholar users reporting the highest levels of citation. This trend indicates that these platforms not only support scholarly dissemination but also contribute meaningfully to academic visibility and impact.

Regarding the perceived influence of ASNS, most respondents agreed that these platforms enhanced their ability to communicate with academic peers, share research knowledge, and manage their academic profiles. However, there was less consensus on whether ASNS significantly improved access to scholarly resources or facilitated meaningful research collaborations. Finally, in assessing the overall extent of ASNS influence, the majority of lecturers rated the impact of these platforms on their research productivity as high. ASNS were particularly valued for their role in enabling academic communication, facilitating the dissemination of research content, and supporting the management of digital scholarly identities. Nevertheless, their influence was perceived as limited when it came to keeping lecturers updated with recent developments in their fields and promoting collaborative research engagements.

Conclusion and Recommendations

This study examined the influence of Academic Social Networking Sites (ASNS) on the research productivity of lecturers in Federal Universities in North-Central Nigeria. The findings revealed that ASNS platforms such as ResearchGate, Google Scholar, LinkedIn, and Academia.edu are widely adopted among lecturers and significantly contribute to

enhancing their research output, particularly in the areas of academic visibility, scholarly communication, and professional networking. The total volume of research output reported, dominated by conference proceedings and journal articles, indicates a moderate level of scholarly activity during the period under review. Despite these positive outcomes, the study also identified persistent challenges such as limited engagement with less mainstream ASNS platforms, low levels of publication in certain output types like patents and monographs, and infrastructural barriers, including poor internet connectivity and inadequate institutional support. Moreover, the influence of ASNSs on access to academic resources, research collaboration, and responsiveness to emerging research trends was perceived to be limited by some respondents.

Overall, the findings suggest that while ASNSs offer significant opportunities to boost research productivity, their impact is moderated by both infrastructural and institutional factors. Strategic interventions are therefore required to fully leverage the potential of these platforms for research enhancement.

Recommendations

Based on the findings and conclusions of this study, the following recommendations are proposed:

1. Universities should develop clear policies that integrate ASNS usage into research and academic performance frameworks. This includes recognizing ASNS activity (e.g., number of uploads, citations, collaborations) as part of performance evaluations and promotion criteria.
2. Continuous professional development programmes should be organized to build digital literacy and enhance lecturers' skills in effectively using ASNS platforms for scholarly communication and research dissemination.
3. Federal Universities should prioritize the upgrading of digital infrastructure, including reliable internet access and consistent power supply, to enable seamless access to ASNS platforms.
4. Awareness initiatives should be launched to promote less-utilized but beneficial platforms such as ORCID iD, Zotero, and Mendeley. These platforms support research documentation, identity management, and collaborative referencing, which are essential in modern scholarship.
5. Universities should establish ASNS-supported research clusters or thematic networks that facilitate interdisciplinary collaboration, both locally and internationally. This could enhance the quality and visibility of research outputs.
6. Regular assessment of ASNS engagement and its impact on research productivity should be conducted by

institutional research offices. This data can inform decision-making and the refinement of research strategies.

7. Implementing these recommendations, universities in North-Central Nigeria, and indeed across similar contexts, can foster a more robust research culture, strengthen global academic linkages, and improve overall research productivity through the effective use of Academic Social Networking Sites.

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Literature Search on Subjective Norms and Virtual Learning System Usage by Postgraduate Students of Nigerian Universities

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Abstract

Virtual learning system usage is a modern means that enhances easy and proper impartation of knowledge for societal growth. Virtual learning system is now replacing the traditional way of learning, which has increased the impetus to learning and eliminated limitations that might occur in terms of location, distance and time. This study has looked into some subjective norms that could influence the usage of virtual learning system by postgraduate students of Nigerian universities. The subjective norms to the usage of the virtual learning system could be as a result of friends' influence, family influence and that of other parties like peer groups and lecturers. However, the study found out the utilization of some notable virtual learning systems such as Telegram, whatsapp, Youtube, over others. Conclusion was made based on the findings, and recommendations such as adoption of other virtual learning platforms, regulation of the internet service provider subscription to enhance easy adoption and the usage of virtual learning system across the university system in Nigeria were made accordingly.

Keyword: *Postgraduate students, Subjective norms, Self-efficacy, Virtual learning, Virtual learning system*

Introduction

Virtual Learning System (VLS) is a web-based online sophisticated means of imparting knowledge, teaching and learning engagements and general educational development using technological apparatus and devices. Virtual learning, online-learning, and e-learning are all terms that are used interchangeably. Virtual learning system has tremendous advantages over normal traditional learning system. The need for the adoption of the Virtual Learning System becomes mandatory due to several factors, ranging from increased inclusivity, improved accessibility, community and relationship building, cost savings, expanded world view, improved

technical skills, immediate feedback on learning, greater flexibility and comfort, and many more. Virtual Learning System allows for learner anonymity, reducing potential biases and creating a level playing field for students. Individuals facing physical or social barriers in a traditional classroom can actively participate in online discussions and activities.

According to Arkorful and Abaidoo (2015), virtual learning or e-learning refers to the provision of instructional programmes to learners at a distance. It is an online learning platform that operates in a formal context and utilizes a variety of multimedia technologies. This system is supported by electronic hardware and software, either offline or online. Typically, personal computers are used to deliver training or computer-enhanced learning VLS mode (Samsuri, Nadzri, and Rom, 2014). Other communication technologies are also utilized to deliver learning materials, tutorials, support systems, and online lectures (Kattoua, Al-Lozi, and Alrowwad, 2016). VLS is a technology-based teaching and learning approach that promotes classroom engagement by creating a positive environment where students actively participate in online tutorials to complete assigned tasks. This method of learning ensures that students are fully engaged as they learn through various media such as texts, videos, sounds, collaborative sharing, and interactive graphics.

Adegbore and Adegbore (2021), opined that, e-Learning has been defined by many scholars based on their understandings and the era in which they served. In the 1990s, where the concept of e-learning was first echoed, not only did different concepts such as computer-based training, technology-based training, or computer-based learning, were attributed to e-learning, but the term was not as aptly defined due to the nebulousity of several issues of consideration. According to Fry (2001), e-learning in the 90s referred to tools used in delivering education, training and collaboration relying on various electronic media but, principally, the Internet, whose tools have constituted the main driver of e-learning. Hiltz (1990), sees e-learning as the enhancement of learning by technology which he termed as technology enhanced learning (TEL) with the main goal of providing socio-technical innovations and also improving cost effectiveness and efficiency for teaching and learning activities, regarding individuals and organizations and are independent of pace, time, and place.

Virtual learning system has become an increasingly popular method for students to access educational content and interact with teachers. This has resulted in students benefiting from the improved support and convenience provided by virtual learning

systems. One of the main advantages of virtual learning is its flexibility. Students have the ability to access lessons and resources at their own convenience, allowing them to effectively manage their time. This is especially beneficial for students who have other commitments, such as work or family responsibilities. Additionally, virtual learning environments offer a more personalized approach to education, enabling students to learn at their own pace and focus on areas where they require additional support. Furthermore, virtual learning platforms provide enhanced opportunities for engagement with the learning materials. Through interactive features like videos, quizzes, and discussion forums, students can actively participate in their learning and reinforce their understanding of the subject matter. Moreover, virtual learning grants access to a wider range of resources, including multimedia content and online databases, which enriches the overall learning experience. The quality of online education depends on the proper use of digital technologies in accordance with modern educational theories. Several occurrences in terms of pandemics, price hikes of transportation, risks of bad road network have equally called for the effective usage of virtual learning system.

Subjective norms as explained by Neuroimaging studies found that perceptions of subjective norms activate brain regions associated with social identity and reward systems, suggesting that adherence to group norms draws on deep-rooted neural mechanisms (Zinchenko and Arsalidou, 2017). Therefore, subjective norm operates as an important force in shaping human behaviour through both psychological and neurological mechanisms. The term subjective norm comes from the theory of planned behaviour, which proposes three key factors in predicting human behaviour. One is Subjective norms, the other two are: personal attitudes, and perceived behavioural control (Peters and Templin, 2010). The Theory of Planned Behaviour (TPB) was developed by Icek Ajzen in the late 1980s (Bosnjak et al., 2020). It aims to explain how our beliefs, attitudes, intentions, and perceived behavioural control work together to shape a person's behaviour. The theory proposes that our actions are not solely determined by our attitudes or aims but also influenced by the perceptions of what others think of us in addition to our ability to control those intentions (Peters and Templin, 2020). However, the study at hand has evaluated the concepts of subjective norms and virtual learning use by the postgraduate students of private universities in Nigeria.

Purpose

This qualitative paper sets out to conduct an opinion literature search on the subjective norms of virtual learning use by postgraduate students in Nigerian universities. It aims at

establishing several subjective influence to the use of virtual learning system amongst these postgraduate students as they are the most vulnerable to its usage due to the nature of their programme and their time schedule.

Research Question

This question guides the investigation toward understanding the subjective norms of virtual learning system use by postgraduate students of Nigerian universities.

What are the subjective norms to the use of virtual learning system by the postgraduate students of library and information science, most especially the influential factors of family, friends and other parties?

Review of Related Literature

Concept of subjective norms and Virtual Learning System Use

The contact between the instructor and the student in an e-learning system is crucial to the student's continued participation in the course (Molinillo et al., 2018). (Liu and Pu, 2020) identified that the quality of the instructor's instruction, timely completion of the course, and timely response to students all affect the decision to continue with the virtual class. Additionally, Lin, Jin, Zhao, Yu, and Su, (2021) realised that apart from all these factors, the attitude of instructors towards the use of the online platform and their support is given to the students affect students' engagement. Sun, Tsai, Finger, Chen, Yeh, (2008) found that the no-response or unreasonable delays in responding to the students will not contribute to the students' success and also timely feedback improve the performance of students (Qureshi, Khaskheli, Raza, and Yousufi, 2021). Dixon, (2010) advises that the instructor should make it mandatory for students to actively participate in addition to providing them with opportunities to do so. Interaction here meant to both quality and frequency of interaction among instructor and students.

Also, Peer interaction improves students' interest and involvement in online courses. Learners are encouraged to share knowledge and ideas when they interact with their classmates (Qureshi et al., 2021). The activities like group discussions and doing any project work with the group members increase the students' engagement and their learning outcomes realized by (Tsai et al. 2021). Students' who are working together on a group project, peer reviewing, and discussing in the group on a particular topic, are likely to be engaged more in the course work. (Dixon, 2010) observed that the student identifies multiple ways on their own to interact to

their peers and the engagement of such students is found to be very high. (Molinillo et al. 2018) argued that the student-student interaction has very little impact on students' engagement and their online learning.

Furthermore, smartphones, Internet, and social media have all grown commonplace among today's youth. Social media sites have the capabilities to make online learning student-friendly. Teachers and students use social media to share recordings, documents, and submit assignments. Sarwar, Zulfiqar, Aziz, and Ejaz Chandia, (2019) indicated it as a tool that stimulates collaboration and communication among students that enhances their involvement and learning performance. Likewise, (Alalwan, Al-Rahmi, Alfarraj, Alzahrani, Yahaya, and Al-Rahmi, 2019) also found that social media enhances students' learning activities by providing them another platform to share their knowledge, information, and discussions with others. (Sobaih, Hasanein, & Abu Elnasr, 2020) realized that social media is used to build an online community by the students and to support each other. Teachers may transform their knowledge over time, thanks to social media platforms, which not only impact the students.

With the adoption of virtual learning, individuals can learn both from family and work (Tsai, Ku, and Campbell, 2021). According to Patricia Aguilera-Hermida, (2020), there are many distractions that occurs during online learning such as noise of family members, housework. The student's degree of focus, the availability of educational materials, and the participation of students in online education are all influenced by family circumstances. (Gill, Hayes, and Senior, 2015) also identified that level of disruption and financial problems which a family is facing influence their level of support whereas Vayre and Vonthron, (2017) found that there is no relationship between family support and individuals' participation in online learning.

The educational system has been drastically transformed by technological advancements. To encourage the use of e-learning systems, universities must provide access to learning resources without any technological challenges or delays (Almaiah et al., 2020). (Sun et al., 2008) realized that poor technology with frequent technical problems and slow response time will discourage the students from participating in online courses. Lin and Lu, (2000) defined technology as a criterion for determining if the pandemic's learning objectives fulfil the requirements of students. System characteristics like the quality of technology and the information play an important role in the adoption and usage of technology by the learner (Zhang et al.,

2020). Motaghian, Hassanzadeh, and Moghadam, (2013) and Nambiar, (2020) also found that the quality of technology influences the engagement of students and instructors in e-learning. Another important thing to discuss under the subjective norms of students is the engagement styles of students in their studies.

Students' engagement refers to students' active participation in educational activities as well as their dedication to academic goals and learning (Chiu, 2021). Kordrostami and Seitz, (2021) defined students' engagement as a practice to ensure the contribution of the students in discussion is safe and comfortable. So that it provides a positive learning environment. Qureshi, et al. (2021) said that students who are participating in the learning process can learn better than others. Molinillo et al. (2018), Patricia, (2020), and Sarwar et al. (2019) realized that students' engagement positively influences their learning performance.

Student engagement is one of the important constructs that is used to understand the behaviour of the student towards the teaching-learning process. Understanding the behaviour of students in the academic institutions will provide a glimpse of how the instructions and academic practices are going on in the university. As such, it could be used as a powerful tool by the teachers and academic supervisors to design an effective pedagogical technique to maximize the learning experiences of the students. The data on student engagement has the advantage of providing information on what students are actually doing. The data has a broader significance for the management of institutions, students and academic programmes. Rather than work from assumptions or partial anecdotal reports about student activities, institutions can make decisions based on more objective information. Information about student activities would provide institutions with valuable information for marketing and recruitment and help them become more responsive to student learning needs. Only with accurate and reliable information on what students are actually doing can institutions move beyond taking student activities for granted (Coates, 2005).

Student engagement refers to a meaningful engagement throughout the learning environment. It is best understood as a relationship between the student and the school, teachers, peers, instruction and curriculum (Martin and Torres). The term has its historic roots in a body of work concerned with student involvement, enjoying widespread currency particularly in North America and Australasia, where it has been firmly entrenched through annual large scale national surveys

(Trowler, 2010). Student engagement has three dimensions which are behavioural, emotional, and cognitive. Behavioural engagement refers to student's participation in academic and extracurricular activities. Emotional engagement refers to student's positive and negative reaction to peers, teachers and school. While cognitive engagement talks about student's thoughtfulness and willingness to master difficult skills (Fredericks, Blumenfeld, and Paris, 2004).

The theory of Student Involvement stressed that the greater the student's involvement in college, the greater will be the amount of student learning and personal development. The productive engagement is an important means by which students develop feelings about their peers, professors, and institutions that give them a sense of connectedness, affiliation, and belonging, while simultaneously offering rich opportunities for learning and development (Bensimon, 2009). The time and energy students devote to educationally purposeful activities is the single best predictor of their learning and professional development. Those institutions that more fully engage their students in the variety of activities that contribute to valued outcomes of college can claim to be of higher quality compared with other colleges and universities where students are less engaged (Kuh, 2001). It has been identified as a primary variable in understanding dropout, particularly as a gradual process operating in a student's life and influencing that final decision to withdraw (Jimerson et al., 2009) and has also been viewed as one of the keys to addressing problems such as low achievement, boredom and alienation, and high dropout rates, (Frederick, et al, 2004).

Concept of Postgraduate Students

Postgraduate students by definition are students studying a postgraduate course, which entails a master's course, an Mphil and a Phd which requires an undergraduate degree as part of the entry requirements. The academic performance of the postgraduate students are mostly influenced by several factors ranging from some subjective norms and other attitudes, system quality of virtual learning tools in use and their rate of adoption of information technology usefulness in learning. Postgraduate students are always busy with serious academic activities, including non-curricular activities such as family issue. They mostly connote family men and women working class students who are seeking for improvement in academic pursuit. Recognizing the importance of ICT in education, ICT has been included as a core course at the postgraduate level in the universities. Postgraduate students need more ICT support that could enhance the virtual learning success due to the undeniable value and place of its adoption. (Mariyyamal, 2015).

Use of Virtual Learning Systems among students

According to Anderson, (2008), so many international studies declare that mere use of technologies in the classroom does not guarantee learning will improve. According to (Bressler, (nd.)), since the establishment of the Internet, educators do take the advantage of new technologies not only for research purposes or for marketing of their institution, but as a means of offering courses and even all online degree programmes and to overcome the barriers of time and distance that can be otherwise prevent students from attending graduation or continue. Rogers, (2008) had it that, in this modern age, e-learning has a competitive advantage and many universities have implemented it and this has impacts on student's performance or GPA. However, still there are other universities and academic institutions that use very low interactive e-learning which is not enough to contribute to the performance of the students. In contrary to that, other higher institutions use highly interactive e-learning which directly impact and improve the student's performance.

According to Fisser and Felliccione, (2001), developments in information and communication technologies (ICTs) have impacted all sectors of society, including the education sector. In higher education, application of ICTs in form of e-learning is already changing teaching and learning processes. There are many pedagogical and socio-economic factors that have driven higher learning institutions to adopt e-learning. These include greater information access; greater communication via electronic facilities; synchronous learning; increased cooperation and collaboration, cost-effectiveness (e.g. by reaching different students and in greater numbers) and pedagogical improvement through simulations, Virtual experiences, and graphic representations. Both trainers and learners can choose more appropriate applications which are flexible in time, in place, personalised, reusable, adapted to specific domains and more cost-efficient.

Mazlan, Mohamad, Reesha, Kassim, Othman and Kummin, (2021) argue that online distant educating and learning for students is the most feasible plan to be carried out during the period of physical isolation and social distancing announced as a measure to break the chain. Tertiary institutions to consolidate and adjust in with the crisis then adapted "education in emergency" (Pokhrel and Chhetri, 2021). Grand-Clement (2017), in his report entitled "Digital Learning: Education and Skills in the Digital Age" portrays that digital learning holds the meaning of penetrating the education and domains with technology gradually delivering knowledge, expertise, and

content. This learning mode does not require face-to-face interaction or being physically present to impart knowledge. The hike of digital platforms had ushered the new paradigm of teaching and learning (Adedoyin and Soykan, 2020).

The noticeable progress managed to escalate the shift towards digital learning offering online courses to students to meet the demands of curriculum despite the crisis of virus during covid. Beckmann (2020), claims that virtual classes are being conducted interactively via digital platforms such as Telegram, Whatsapp, Youtube, Classdojo, Coursera, Microsoft Teams, Zoom, Google Meet and MOOC etc. These applications enable lessons to be delivered lively as it used to be in mass lectures and had its own transfer of knowledge effectively. Jena (2020), argues that digital learning has transformed lives by providing flexible places, class timings and quality content.

Factors influencing the adoption of Virtual Learning Systems

The outbreak of the coronavirus pandemic has caused a great deal of uncertainty in the realm of academia, impacting nearly 85% of enrolled students across 172 countries (UNESCO, 2020). As the fall of 2020 approached, numerous universities sought out alternatives to traditional in-person instruction, opting instead for online teaching methods. By the winter of 2020-2021, the majority of universities had transitioned to exclusively online classes, utilizing ICT systems (UNESCO, 2020). These systems varied in their approach, with some offering blended learning, others providing massive online open courses, and some simply offering a basic platform for teachers to share content and conduct video conferences as a substitute for in-person classes. However, the shift to online education presented significant challenges for all institutions, necessitating swift solutions to replace traditional classroom-based learning. Recent research has revealed that there are still barriers hindering the full potential of technology in enhancing teaching at universities (Polly, Martin, and Guilbaud, 2021).

According to a study conducted by Ana-Maria and Catalin-Ioan in 2023, it was found that despite some teachers having positive attitudes towards digital tools, they still require training in the use of ICT tools for teaching and content creation. This is supported by the research of Casero-Béjar and Sánchez-Vera in 2022. Even though many universities have resumed face-to-face teaching activities in 2021, the use of online applications will continue to be a part of the educational system due to the flexibility they offer and the learning opportunities they provide, as highlighted by Hodges et al. in 2020. The extent of this flexibility depends on various factors, including the

characteristics of teachers such as self-efficacy, technostress, and tolerance to uncertainty, as well as the context in which the teaching activities are carried out.

Mouakket and Bettayeb (2015) discovered that the primary indicator of teachers' satisfaction with e-learning is the perceived usefulness of the platform. Additionally, Almuwais, Alqabbani, Benajiba, and Almoayad (2021) found a correlation between satisfaction in online teaching and perceived effectiveness, while teacher training was found to have no impact on satisfaction (Al-Samarraie, Teng, Alzahrani, and Alalwan, 2018). Factors such as ease of use, accessibility of IT infrastructure (Rokhimah and Sirait, 2021), job-related aspects (Marasi, Jones, and Parker, 2022), support for flexible teaching schedules, and appropriate training are more likely to contribute to teachers' satisfaction with online teaching (Stickney et al., 2019). Although the debate on these factors as determinants of e-learning satisfaction among university lecturers continues, fewer studies have focused on the role of factors like technology self-efficacy, techno stress, and intolerance to uncertainty. However, it is important to remember that an e-learning platform is merely a tool, and its effectiveness ultimately relies on the teachers' engagement, teaching skills, and adaptability.

Bandura's social-cognitive theory emphasises the significance of self-efficacy in predicting task performance (Bandura, 1997). It asserts that self-efficacy influences individuals' emotional reactions and thought patterns in stressful situations. Recent research has shown that individuals with high levels of perceived technology self-efficacy are more likely to use computers and experience reduced IT-related anxiety (Pressley and Ha, 2021). This fosters a positive environment that supports their efforts and facilitates their adaptation to IT-related changes (Bakar et al., 2018). In the context of teaching, technology self-efficacy is closely linked to the effective utilization of platform resources. Studies have examined various factors associated with technology integration and self-efficacy in teaching, including goal setting and learning experiences (Ünal, Yamaç, and Uzun, 2017). In normal circumstances, the success of implementing and utilizing an information system can be measured through indicators such as actual use, perceived usefulness, intent to use, and satisfaction (Yoo, Huang, and Lee, 2012).

As per the study conducted by Obeidat, Obeidat, R., and Al-Shalabi, (2020), e-learning refers to the utilization of electronic technology to provide educational material to learners, enabling them to actively engage with content, teachers, and peers. E-

learning offers the advantage of allowing students to access educational material at their convenience, irrespective of location, thereby saving effort, time, and expenses. The researcher also conducted a survey on E-learning with a sample size of 399 students. Overall, the assessment of students' E-learning experiences was positive. However, students did encounter certain issues related to technical problems, such as unreliable internet connectivity and lack of access to laptops. E-learning presents an opportunity to enhance skills, abilities, speed, and performance, regardless of the geographical location of a company. Similar to how the growth of ICT revolutionized work and communication, the introduction of electronic learning technology significantly transforms the learning process (Sharma, 2017).

After the initial detection of Covid-19 in December 2019, the World Health Organization (WHO) declared it a global pandemic in March 2020 and issued a warning about its highly contagious nature (WHO, 2019). Countries around the world implemented various measures, including full or partial lockdowns, social distancing regulations, and curfews, in order to prevent its spread. To minimize the risk of human infection, particularly in educational institutions, lockdowns were imposed in places where people interact closely. As a result of these global measures, nearly 1.5 billion registered students of all ages experienced disruptions in their education, accounting for approximately 90% of the world's student population (UNESCO, 2020).

E-learning emerged as a proposed solution to this pandemic situation, with the University of Liberia adopting it to promote medical education, provide relevant learning opportunities for students, enhance the skills of faculty members, help them adapt to the situation, and be considered a best practice and an ideal method of teaching during the lockdown (Mohebi et al., 2018). Italy implemented one of the strictest lockdowns in its history, allowing people to leave their homes only for essential needs. Everyday retail, universities, restaurants, and catering establishments were closed, and public gatherings were prohibited. Non-essential activities in the Italian manufacturing chain were also halted. These limitations significantly restricted people's mobility, while platforms for remote work, learning, and online collaboration, such as video and gaming, started to emerge (Reiss, 2000).

Yulia, (nd) conducted a study on how the Covid-19 pandemic has influenced the transformation of education in Indonesia. The study focused on the various types and strategies of online learning employed by teachers worldwide, as educational

institutions were forced to close in order to contain the spread of the virus. E-learning has emerged as a cutting-edge educational innovation in the early years of the 21st century. It is widely believed that e-learning possesses the potential to cater to the skill development requirements of the modern workforce in any country. These skills include effective communication, independent learning abilities, social skills, teamwork, adaptability, critical thinking, and knowledge navigation. Furthermore, if the system is appropriately targeted and skilfully designed, e-learning holds great potential in empowering the learner (Pannen, 2005). Online education is increasingly becoming integrated into traditional education, offering students the flexibility of blended learning, as well as the opportunity to acquire new competences and skills, immediate and universal access, and enhanced understanding and learning capabilities (Ginns and Ellis, 2007).

Findings

The study revealed the subjective norms to the use of virtual learning system by library and information science postgraduate students of Nigerian universities. It disclosed that:

1. Majority of Nigerian students were influenced by friends, family or lecturers to make use of virtual learning system.
2. The study found that the mostly used type of virtual learning systems by postgraduate students of Nigerian universities were youtube, whatsapp, telegram and google scholar.
3. The study also found out a correlation satisfaction of virtual learning system and perceived effectiveness of the platform.
4. The study found put that 2019 covid-19, economic condition, self-efficacy etc should be one of the reasons to justify the use of virtual learning system by the students in Nigerian universities.

Conclusion

The paper concluded that, there are several subjective norms that influence the usage of virtual learning system by postgraduate students of Nigerian universities with the influence of friends, family and other parties like their lecturers as the most prominent.

Recommendations

Based on the findings of the study, the following recommendations were made:

1. The postgraduate students in Nigeria should get exposed to other virtual learning system like, Schoology, Classdojo, Coursera, etcetera as they are underutilized according to the findings. By doing this, this will create a more

competitive market space between the virtual learning systems and it will reduce the cost of data consumption by the VLS. Additionally, the software developers will be encouraged to create more useful application software, the moment they realise those they've created are been utilized.

2. Since findings show the value of virtual learning system in shaping and advancing knowledge. The management of universities in Nigeria should intensify the adoption of virtual learning system across board of all departments. This will further enhance a non-restricted access to education and increase students and lecturers' interest in teaching and learning activities in higher institutions.
3. Although, virtual learning system like WhatsApp, Youtube and Telegram are used as virtual learning system, which show their acceptance by majority due to their interactive and other qualities embedded. Students should be encouraged to use other platforms designed solely for teaching and learning to enhance full concentration and abort distractions during classes.
4. There should be regulations from federal government on subscription rate by major Internet Service Providers in the country. As majorly some of the virtual learning systems are not cost friendly in terms of data subscription by most users.

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The Impact of GIS on Housing Planning in Ogun State: A Case Study of the Ibara Housing Regeneration Scheme

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Abstract

The rapid pace of urbanization in Nigeria, particularly in Ogun State, has amplified the urgency to address the country's deepening housing deficit. This paper examines the role of Geographic Information Systems (GIS) in housing planning, using the Ibara Housing Regeneration Scheme as a case study. Employing a mixed-methods approach, the study incorporates field surveys, structured interviews of land surveyors and officials from the Ministry of Housing, and spatial data analysis using GIS software tools such as ArcGIS, AutoCAD, and Soffer 9. Findings reveal that GIS integration has significantly enhanced decision-making, spatial planning, infrastructure development, and sustainability. Notably, 90% of surveyed professionals utilized ArcGIS for land sizing and clustering, while AutoCAD and Soffer 9 supported terrain and layout analysis. Despite these advancements, challenges persist, including data inaccuracy, limited technical expertise, and infrastructural limitations. The study concludes that while GIS is transforming urban housing development, scaling its application across Ogun State requires improved funding, capacity building, and inter-agency collaboration. These insights underscore the value of GIS in shaping resilient, data-driven, and inclusive urban housing policies in Nigeria.

Introduction

Housing is a fundamental human need that directly influences the wellbeing, health, and efficiency of communities. In Nigeria, rapid urbanization has generated significant challenges in meeting the growing housing demand while maintaining quality and sustainable development. Ogun State, located near Lagos and serving as a critical economic corridor, faces intense pressures related to urban sprawl, increasing population density, and deteriorating housing stock. The Ibara Housing Regeneration Scheme was initiated as a strategic response to revitalize aging infrastructure and to improve urban living conditions, reflecting broader national aims to reduce housing deficits and upgrade residential environments. Geographic Information Systems (GIS) have become indispensable tools in urban and housing planning, enabling spatial data analysis,

resource optimization, and informed decision-making (Koko, 2025). The use of geospatial technologies can enable the planners to visualize urban growth patterns, assess land-use changes, and optimize site selections for housing projects, leading to more sustainable land management (Auwalu, 2025). Studies across Nigerian cities demonstrate that GIS facilitates better monitoring of urban development and supports project transparency and accountability. However, challenges such as limited data availability and technical capacity often hinder the full adoption of these technologies in local planning authorities.

Within the context of housing regeneration, GIS enhances the management of property data, infrastructure planning, and service delivery by enabling accurate, timely, and accessible information systems. For example, similar applications in other Nigerian estates have improved land registration, reduced inefficiencies, and supported proactive urban renewal efforts (Udoka Housing Estate Study, 2017). Thus, understanding the extent to which GIS influences housing planning in Ogun State via the Ibara Housing Regeneration Scheme is crucial. This knowledge can guide policymakers and urban planners in leveraging geospatial tools to address housing challenges and promote sustainable urban living environments.

Nigeria continues to face a severe housing shortage despite the country's increasing urbanization, which has increased demand for suitable and reasonably priced homes (Odekunle et al., 2023). As one of the areas that is urbanising at a fast rate, Ogun State has problems such as informal settlements, overcrowding, and ineffective spatial planning, all of which lead to subpar housing conditions (Odekunle et al., 2023). Therefore, there is need for the government to take creative measures to control the growth of urban housing since growing cities put more strain on the infrastructure that already exists. One practical way to deal with the housing crisis is to include Geographic Information Systems (GIS) into urban planning. The GIS enables planners to forecast future housing demands, evaluate environmental restrictions, and optimize land allocation through the facilitation of spatial analysis (Ogunyemi, 2017). The GIS is used in the Ibara Housing Regeneration Scheme to help stakeholders make data-driven decisions that minimize urban expansion and ensure effective use of land resources (Ogunyemi, 2017). Planners can pinpoint ideal sites for home development and track infrastructure requirements in real time with GIS-based mapping and geospatial analysis.

Furthermore, the development and implementation of policies is another area in which GIS is helpful in housing regeneration, in addition to spatial planning. Provision of thorough insights

into socioeconomic trends, land availability, and population density enables GIS to support evidence-based policymaking that enhances urban sustainability (Ogunyemi, 2017). The Ibara Housing Regeneration Scheme demonstrates how technology-driven planning may help bridge the gap between housing supply and demand, resulting in a more resilient and inclusive urban environment.

A number of obstacles prevent GIS from being fully implemented in Nigeria's housing sector, despite its promise uses in urban planning. The GIS integration in decision-making processes is frequently slowed down by a lack of technical know-how, insufficient finance, and administrative roadblocks (Akinyemi & Olayemi, 2021). Furthermore, major obstacles to effective housing regeneration include a lack of trustworthy geospatial data and a lack of cooperation between public and private developers as well as urban planners (Akinyemi & Olayemi, 2021). Initiatives to enhance capacity, more funding for digital infrastructure, and legislative changes that promote the use of GIS in urban development projects are all necessary to meet these problems. Additionally, community involvement is essential to the accomplishment of housing regeneration projects. To ensure that redevelopment initiatives in Ogun State are in line with the requirements and goals of the local population, participatory planning techniques can assist in incorporating their viewpoints (Adeyemi et al., 2022). Planners can locate informal settlements, evaluate service accessibility, and prioritize infrastructure improvements by incorporating local knowledge through GIS-based participatory mapping (Adeyemi et al., 2022). In addition to improving resource mobilization, strengthening public-private partnerships in housing projects can support equitable urban growth.

Smart city initiatives that make use of cutting-edge technology like big data analytics, artificial intelligence, and remote sensing must be combined with the incorporation of GIS in housing development. These technologies can optimize land-use planning, increase real-time monitoring of urban expansion, and improve predictive modeling for future housing demands (Eze & Alabi, 2023). Therefore, the adoption of a holistic strategy that combines GIS with state-of-the-art urban management tools, enables Ogun State to create a sustainable housing framework that not only addresses the current shortfall but also anticipates future urbanization patterns. This study investigates the impact of GIS on housing planning processes in Ogun State, using the Ibara Housing Regeneration Scheme as a case study. It aims to assess how GIS adoption enhances planning accuracy, resource allocation, and overall housing quality in the context of a rapidly urbanising Nigerian state.

The outcome will contribute to the discourse on modernising urban management through technological innovation and efficient data-driven planning.

Statement of the Problem

Urban housing schemes in Ogun State often grapple with several challenges. Traditional planning methods depend on manual processes that are time-consuming, prone to errors and may fail to capture the complexities of modern cities. This can lead to poor site selection, inefficient use of land, delays in project execution and mismatches between planned resources and actual community needs. Despite the Ibara Housing Regeneration Scheme's aim to tackle housing inadequacies and revitalise urban spaces, there remains uncertainty about the effectiveness of using digital tools like GIS within the scheme. Questions persist regarding the extent to which GIS is utilised and whether it addresses critical planning issues such as proper land allocation, improved service delivery and transparent resource management. This study seeks to identify the gaps in current housing planning practices related to the application of GIS in the Ibara scheme. It aims to examine whether GIS integration has enhanced housing planning outcomes, simplified the coordination of urban renewal efforts and contributed to better living environments for residents in Ogun State. Through this focused case study, the research hopes to highlight successes, reveal persistent challenges and suggest areas for improvement in the ongoing drive for effective housing regeneration.

Literature Review

Understanding GIS in Housing Planning

The effect of GIS on housing planning is revolutionary since it provides a spatial framework for assessing, developing, and implementing housing policies and development projects, geographic information systems, or GIS, have a revolutionary effect on housing planning. The GIS integrates a number of factors, including topography, infrastructure networks, land use patterns, and socioeconomic indicators, to support informed urban planning decision-making, as well as advanced mapping and geospatial analysis skills allow planners to track population density, predict future housing demands, and assess property suitability (Ogunyemi, 2017). In Ogun State, one example of the application of GIS in house planning is the Ibara house Regeneration Scheme. In order to control housing density, maximize land usage, and accelerate infrastructure development, this project makes use of GIS technology. Incorporating GIS with urban rehabilitation projects, the project aims to provide a sustainable and well-organized urban environment while addressing the problems of informal

settlements and inadequate spatial planning. Ibara's application of GIS shows how it may enhance housing planning by ensuring data-driven decisions and efficient land management, both of which will eventually assist the state in meeting its growing housing demands.

Role of GIS in Housing Planning

Geographic Information Systems (GIS) play a critical role in housing planning by offering spatial analysis tools that improve decision-making, maximize land use, and support sustainable urban growth, geographic information systems (GIS) are essential to housing planning. In Ogun State, where rapid urbanization has caused housing shortages and infrastructure challenges, GIS has emerged as a vital tool for addressing these issues. The use of GIS in housing planning facilitates the process of identifying potential development sites, efficiently allocating resources, and projecting future housing requirements (Ogunyemi, 2017). Spatial analysis and site suitability assessment are two of the main uses of GIS in home design. GIS assists planners in selecting the most advantageous sites for housing projects by integrating geographic data, including topography, soil composition, flood-prone areas, and transit networks (Adeyemi et al., 2022). Geographic Information System (GIS) GIS has been utilized to map available land parcels, evaluate environmental restrictions, and guarantee optimal land utilization while limiting urban expansion as part of the Ibara Housing Regeneration Scheme (Ogunyemi, 2017). These skills aid in the creation of sustainable, well-coordinated housing plans that can handle future population expansion.

Furthermore, GIS facilitates the development of housing policies and the administration of infrastructure. GIS helps create policies that support fair housing distribution by including socioeconomic data such population density, income distribution, and service accessibility (Akinyemi & Olayemi, 2021). Roads, drainage, and utilities are just a few examples of the infrastructure that is effectively mapped and tracked for upkeep and expansion in Ogun State thanks to the use of GIS in house design. This improves the general livability of housing developments and lessens inefficiencies in service delivery (Eze & Alabi, 2023). Geographic Information System (GIS) also enhances stakeholder participation and participatory planning. In the Ibara Housing Regeneration Scheme, GIS has made data-driven decision-making possible, ensuring that housing redevelopment meets resident needs and promotes sustainable urban expansion. To sum up, GIS has greatly changed housing planning in Ogun State by facilitating effective land-use management, assisting with policy choices,

and encouraging community involvement. One example of how technology-driven planning can close the gap between housing supply and demand while maintaining environmental sustainability and optimizing infrastructure is the Ibara Housing Regeneration Scheme. As GIS develops further, its use in housing planning will continue to be essential for tackling Nigeria's and other countries' urbanization issues.

Overview of the Ibara Housing Regeneration Scheme

The Ibara Housing Regeneration Scheme is a strategic urban redevelopment initiative led by the Ogun State Government, aimed at addressing the housing deficit and enhancing residential living conditions in the Ibara district of Abeokuta. This project is a response to the increasing demand for affordable and quality housing, driven by rapid urbanization, population growth, and the need for improved infrastructure in the state capital. The regeneration scheme focuses on the reconstruction and modernization of existing housing estates while simultaneously developing new residential units to cater to the housing needs of both low- and middle-income families. By integrating advanced urban planning principles and leveraging Geographic Information Systems (GIS), the project ensures efficient land use, optimized housing designs, and better resource allocation for long-term sustainability.

Beyond housing, the initiative incorporates upgraded infrastructure, such as well-paved roads, modern drainage systems, reliable electricity and water supply, and green spaces, all aimed at creating a well-planned, livable environment. Through this holistic approach, the project seeks to transform Ibara into a modern urban hub that meets global housing and environmental standards.

Key Objectives of the Scheme

Provision of Affordable Housing

Delivering cost-effective and high-quality housing units tailored for low- and middle-income earners.

Enhancing homeownership accessibility through government-backed housing schemes and financing options.

Improvement of Living Standards

Upgrading basic infrastructure and amenities to ensure residents have access to clean water, electricity, sanitation, and efficient transportation.

Promoting a healthy living environment by incorporating green spaces and recreational facilities.

Sustainable Urban Development

Implementing smart land management practices to ensure orderly urban expansion and prevent informal settlements.

Encouraging eco-friendly building designs that align with climate-resilient and energy-efficient standards.

Integration of GIS for Smart Planning

Utilizing Geographic Information Systems (GIS) to enhance decision-making in housing allocation, land use, and infrastructure development.

Improving urban planning through data-driven analysis to optimize space utilization and prevent overcrowding.

Socioeconomic Impact and Job Creation

Generating employment opportunities in construction, real estate, and related industries, boosting local economic growth.

Encouraging private sector participation in real estate development, leading to increased investment in Ogun State.

Picture 1: Before the initiation of the project



Picture 2: After the initiation of the project





Methodology

The study on the Impact of GIS on Housing Planning: Case Study of Ibara Housing Regeneration Scheme adopt a mixed-method approach, incorporating both qualitative and quantitative research techniques. Sources of data includes primary and secondary data source. Data Collection Methods was through field surveys and structured interviews with Land Surveyors and government officials of the Ministry of Housing, Ogun State to gather firsthand insights on GIS applications, GIS-generated maps, and government reports related to the Ibara Housing Regeneration Scheme. Data was analyses using GIS software (e.g., ArcGIS, QGIS) to assess spatial patterns, housing density, and urban infrastructure development in the case study area.

Analysis of GIS Tools Adoption

A total of 10 professionals (5 senior land surveyors and 5 heads of housing department) involved in the estate's planning were interviewed. Their responses revealed high engagement with both GIS software and hardware tools in the scheme's spatial and infrastructural layout.

Software Tools Adoption

GIS Software Tool	No. of Respondents Using It (out of 10)	Percentage (%)	Key Use
ArcGIS	9	90%	Land sizing, clustering, land use planning
AutoCAD	8	80%	Perimeter mapping, site layout, block partitioning
Soffer 9	7	70%	Terrain analysis, foundation suitability, erosion risk
Google Earth	6	60%	Location identification and estate advertisement
Database System	7	70%	Digital record of allottees and estate data management

Hardware Tools Adoption

GIS Hardware Tool	No. of Respondents Using It (out of 10)	Percentage (%)	Key Use
Handheld GPS	9	90%	Capturing coordinates and locational values
Total Station	8	80%	Accurate site surveys and topographical measurements
Drone	6	60%	Aerial imagery and 3D terrain analysis
Computer System	10	100%	Base platform for all GIS operations

Findings

Findings from the interviews conducted with 5 senior surveyors and 5 heads of the housing department who were directly involved in the planning of the Ibara Housing Regeneration Scheme revealed that a wide range of GIS hardware and software tools were actively deployed in the planning and implementation stages of the project. A range of software tools was employed to enhance spatial planning, terrain evaluation, and estate management within the study area. Among these, ArcGIS emerged as the most widely used application, with 90% of respondents indicating its use. It played a crucial role in determining the structure layout based on the available land size. ArcGIS also facilitated the sectioning of housing clusters and the allocation of appropriate land uses for each zone within the estate.

AutoCAD was used by 80% of respondents and proved vital for mapping the site perimeter, calculating the total area in square meters, and determining the number of obtainable plots. Additionally, it aided in partitioning the estate into designated blocks such as Block A, Block B, and so forth. Soffer 9 was another important software tool, mentioned by 70% of respondents. It was primarily utilized for terrain assessment, providing insights into suitable foundation types, as well as identifying cut-and-fill areas and zones vulnerable to erosion. These insights informed land preparation strategies to ensure structural stability and sustainability. Google Earth was adopted by 60% of respondents and served mainly for external visualization of the site. It supported the capture of geospatial imagery, which proved valuable for marketing and promotional efforts aimed at potential investors and buyers. Furthermore, a database management system was used by 70% of respondents to maintain digital records of all allottees. This system facilitated effective monitoring, administrative transparency, and efficient management of the estate's development and allocation processes. In terms of hardware tools, a variety of

physical instruments were also used to support data collection and on-site analysis. Handheld GPS devices were used by 90% of respondents for the collection of accurate coordinate and locational data during the survey stage. Total Stations, utilized by 80%, provided high-precision data essential for topographical and cadastral surveying tasks. Drones, employed by 60% of respondents, contributed significantly to capturing aerial imagery, creating 3D terrain models, and monitoring site development in real time. Lastly, computer systems were universally used by all respondents (100%), serving as the central platform for processing GIS operations, conducting analyses, and generating reports.

These findings demonstrate the strategic integration of GIS technologies in housing planning and reveal a growing dependence on digital tools to enhance accuracy, efficiency, and sustainability in estate development projects. The Integration of GIS into the Ibara Housing Regeneration Scheme has led to several key advantages in the project development including, site selection and spatial planning which involve the planners performing comprehensive spatial assessments that consider social, economic, and geographic issues thanks to GIS. For example, GIS mapping has assisted in determining the region's best suited for the project, taking into consideration environmental factors, current land use patterns, and proximity to vital infrastructure (such as roads, schools, and medical facilities); infrastructure enhancement where water pipelines, sewage systems, and electrical grids have been positioned more effectively as a result of a GIS-based infrastructure analysis.

Planners can guarantee that infrastructure networks are seamlessly connected, lowering building costs and fostering sustainability, by utilising GIS tools; better decision making, which has to do with giving stakeholders, such as governmental organizations, developers, and the local population, geographically accurate and conveniently accessible data, GIS has improved the decision-making process. As a result, decisions on resource allocation, policy implementation, and land development have been made more quickly and intelligently; and sustainability and the effect on the environment which enables planners to be able to create mitigation methods to lessen environmental deterioration while making sure that new developments are long-term sustainable by studying environmental data.

Challenges in Implementing GIS for Housing Planning

Despite its numerous benefits, there are challenges associated with the adoption of GIS in housing planning in Ogun State, including:

Data Inaccuracy

The accuracy of GIS analysis heavily depends on the quality and reliability of the data. In Ogun State, there are challenges with outdated or incomplete data, which can lead to inaccurate planning decisions. Regular data updates and proper data collection strategies are crucial for the effective use of GIS.

Limited Technical Expertise

The successful implementation of GIS requires skilled professionals. However, there is a shortage of trained GIS personnel in Ogun State, which has slowed down the adoption of GIS in housing projects.

Cost and Access to Technology

The cost of acquiring GIS software and maintaining the necessary hardware is a major barrier for local governments and smaller developers. Moreover, limited access to high-speed internet and computing resources in rural areas may hinder GIS usage.

Others are power supply, internet issue and omni issue

Conclusion and Future prospects

The Ibara Housing Regeneration Scheme's incorporation of Geographic Information Systems (GIS) has revolutionized sustainable development, infrastructure management, and urban planning. Ogun State has improved resource allocation, optimized land usage, and expedited housing development by utilizing GIS, resulting in a more organized and economical regeneration process. The ability of GIS to support data-driven decision-making in this scheme is among its most noteworthy accomplishments. It guarantees that new housing projects are positioned strategically, environmentally sustainable, and furnished with the required infrastructure. Ibara's urban environment is now more habitable and resilient because to planners' effective land allocation, mitigation of flood risks, and prevention of urban sprawl through real-time mapping and spatial analysis. Even though this initiative's use of GIS has shown significant advantages, obstacles remain in the way of its wider implementation throughout Ogun State and Nigeria overall.

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Empowering School Libraries in Rivers State: Strategies for Thriving in the 5th Industrial Revolution

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Abstract

The 5th Industrial Revolution (5IR) is characterised by the integration of advanced technologies such as artificial intelligence (AI), robotics, and sustainable innovations with human-centred ideologies to foster inclusivity and societal progress. This paper explores strategic interventions to empower school libraries as dynamic hubs of learning and innovation in the 5IR era by leveraging digital transformation, fostering collaborations between educators and technology providers, and integrating AI-driven tools for personalised learning. The research adopted a descriptive survey design. The study population consists of 10 School librarians from selected secondary schools in Rivers State and Census sampling was used. Data were collected through a structured questionnaire and analysed using mean. The findings of the study revealed that continuous professional development in emerging technologies, investment in high-speed internet access, and virtual and hybrid learning spaces are major strategies for empowering libraries to thrive in the 5IR. It concluded that capacity-building programmes and ICT investments play a pivotal role in modernising school libraries to thrive in the 5IR. It was recommended that training and workshops should be expanded to cover emerging trends, ensuring that librarians remain proficient in digital library management.

Keywords: *5th Industrial Revolution (5IR), School Libraries, Artificial Intelligence, Digital Transformation, Rivers State*

Introduction

The Fifth Industrial Revolution (5IR) marks a transformative era distinguished by the convergence of advanced technologies such as artificial intelligence (AI), automation, big data and internet of Things (IoT). This infusion is reshaping industries, including education and library management in driving innovation, efficiency, and sustainability (Ajani & Oladokun, 2024). In this era, the need for school libraries to adapt to the rapidly changing technological landscape remains relevant and

effective in providing information and educational resources to students and teachers. Unlike previous industrial revolutions that primarily focused on mechanisation, electrification, digitalisation, and automation, the 5IR emphasises human-machine synergy, ethical AI, and sustainability (Mishra, 2024). This shift has significant implications for school libraries, necessitating a re-evaluation of their roles, significant investment in infrastructure, professional training, and strategies for knowledge dissemination.

In the context of Library and Information Science (LIS), the 5IR drives the transformation of libraries into intelligent knowledge hubs, where AI-powered tools, virtual reality (VR), and augmented reality (AR) enhance information retrieval, learning experiences, and research accessibility. The revolution also advocates for digital inclusivity, equitable access to information, and ethical considerations in AI-driven services. The traditional role of libraries as mere storage hubs for books and documents is becoming obsolete in the face of the 5IR. Thus, libraries are now expected to provide interactive learning experiences, facilitate digital research, and bridge the gap between students and the global knowledge economy (Eiriemiokhale & Sulyman, 2023). In Rivers State, many school libraries lack the necessary infrastructure to support this shift. Issues such as limited access to high-speed internet, inadequate digital resources, and a lack of trained personnel hinder the ability of these libraries to compete in the modern educational ecosystem (Ajani et al., 2022). However, digital transformation strategies, including AI-driven search engines, virtual reality learning modules, and cloud-based knowledge management systems, offer viable solutions (Mamedova, 2023). This paper explores strategies for empowering school libraries in Rivers State to thrive in the era of the 5IR.

Statement of the Problem

School libraries in Rivers State currently face significant challenges that hinder their ability to provide quality information services and support academic excellence. Many of these libraries are underfunded, poorly equipped, and lack the modern digital resources necessary for thriving in the 5th Industrial Revolution. Traditional library structures, with limited access to technology, outdated books, and inadequate infrastructure, make it difficult for students and educators to access relevant and up-to-date information. Additionally, many libraries do not have internet connectivity, limiting digital literacy and the ability to harness global knowledge resources. Librarians in school libraries also face challenges related to inadequate professional training and capacity-building opportunities. Many do not possess the necessary skills to

manage digital library resources, utilise artificial intelligence (AI) for knowledge dissemination, or leverage modern learning tools such as virtual reality (VR) and augmented reality (AR). The lack of investment in digital transformation has left school libraries in Rivers State lagging behind global best practices in information science and academic support. The primary problem affecting school libraries in Rivers State is their inability to integrate into the 5th Industrial Revolution, which may be due to inadequate technological infrastructure, outdated library collections, limited collaboration with technology providers, poor funding and government neglect, inadequate training for librarians and a lack of digital literacy programmes amongst others. If these problems are not addressed, it may lead to widening digital divide especially in the 5th industrial revolution era, a decline in educational standards, and inefficiency in library management amongst others, hence, the need for the study to explore strategies for empowering school libraries in Rivers State to thrive in the era of the 5IR.

Purpose of the Study

The purpose of the study is to investigate strategies for empowering school libraries in Rivers State to thrive in the 5th Industrial Revolution (5IR). Specifically, the study sought to:

1. ascertain the extent to which capacity-building programmes for librarians can empower school libraries to thrive in 5IR in Rivers State.
2. examine the extent to which investments in IA-driven infrastructure can empower school libraries to thrive in 5IR in Rivers State.

Research Questions

1. To what extent do capacity-building programmes for librarians empower school libraries to thrive in 5IR in Rivers State?
2. To what extent do investments in AI-driven infrastructure empower school libraries to thrive in 5IR in Rivers State?

Literature Reviews

The Fifth Industrial Revolution (5IR) represents a new phase in the evolution of industry and technology that emphasises human-centred innovation, collaboration between humans and intelligent machines, and the ethical and sustainable use of advanced technologies. Unlike the Fourth Industrial Revolution (4IR), which focused on digitisation, automation, and AI-driven systems, the 5IR integrates empathy, creativity, and purpose with cutting-edge technologies such as artificial intelligence (AI), robotics, quantum computing, and biotechnology. The 5IR advocates for a synergistic relationship between humans and

machines, where machines handle repetitive tasks while humans focus on creativity, emotional intelligence, and critical decision-making. This shift aims to create a more inclusive, equitable, and sustainable society, where technological progress is aligned with human values and societal needs. Oyedokun (2024), 5IR redefines the interaction between humans and machines, emphasising cooperation rather than replacement, and seeks to address global challenges through technological humanism. In the context of school libraries, thriving in the 5IR implies embracing emerging technologies not only for automation but also for enhancing personalised learning, promoting digital literacy, and fostering innovation ecosystems that support holistic education and lifelong learning.

Several strategies need to be adopted by school libraries that will enable them to thrive in the 5th Industrial Revolution era, some of these strategies include capacity-building programmes for librarians, investment in AI-driven resources, partnerships with technology firms to provide access to cutting-edge tools and digital transformation amongst others (Mamedova, 2023). Schools must also prioritise training programmes that equip librarians with the necessary skills to manage digital resources effectively and engage students with interactive learning materials (Adigun et al., 2022). Moreover, policymakers must ensure that libraries are adequately funded to support technological innovations and infrastructural development.

As the 5IR reshapes the role of librarians, capacity-building programmes become crucial for equipping them with essential digital skills. Eiriemiokhale and Sulyman (2023) emphasise the importance of continuous professional development in AI literacy, cybersecurity, and digital resource management. Training programmes should include workshops on AI-driven cataloguing systems, digital preservation techniques, and virtual collaboration tools (Adigun et al., 2022). These programmes not only improve the technological competencies of librarians but also foster innovation in information service delivery. Furthermore, Baro et al. (2019) highlight that equipping librarians with digital research methodologies enhances their ability to support academic and professional inquiries. Successful capacity-building initiatives require collaboration between educational institutions, governmental agencies, and private organisations to provide comprehensive training modules (Oseji, 2020).

Investment in AI-driven resources enhances library efficiency by automating tasks such as information retrieval, user interaction, and data analysis. AI-powered chatbots, for

example, assist users with real-time queries, reducing workload on human librarians (Mamedova, 2023). The AI-driven recommendation systems personalise user experiences by suggesting relevant reading materials based on previous interactions (Ajani et al., 2022). Moreover, machine learning algorithms facilitate predictive analytics, helping libraries optimise resource allocation and inventory management (Tella et al., 2022). However, ethical concerns surrounding AI applications in libraries, such as data privacy and algorithmic bias, must be addressed through policy frameworks and ethical AI training for librarians (Eiriemiokhale & Sulyman, 2023). Investing in AI infrastructure also requires substantial funding, which can be sourced through strategic partnerships and governmental support (Adigun et al. 2022).

Collaborating with technology firms is essential for ensuring that libraries remain equipped with the latest advancements in digital tools. Nwobu et al. (2024) highlight that partnerships with AI developers, software companies, and cloud service providers can enhance library functions through customised technological solutions. For instance, integrating blockchain technology for digital rights management ensures secure access to copyrighted materials (Ajani & Oladokun, 2024). Public-private partnerships facilitate funding for library digitisation projects and ensure continuous access to state-of-the-art learning technologies (Ajani & Enakire, 2024). Additionally, engaging with EdTech companies enables libraries to provide virtual reality learning experiences and gamified educational resources (Tella et al., 2022). However, these partnerships must be guided by mutually beneficial agreements that prioritise educational accessibility and ethical considerations (Eiriemiokhale & Sulyman, 2023). Establishing legal frameworks and intellectual property guidelines ensures that libraries maintain autonomy while leveraging technological advancements (Adigun et al. 2022).

Digital transformation in libraries is a strategic shift towards incorporating advanced technologies to enhance information accessibility, storage, and dissemination. According to Ajani and Oladokun (2024), libraries can adopt cloud computing, artificial intelligence (AI), and big data analytics to facilitate efficient knowledge management. Digital transformation enables automated cataloguing systems, AI-powered search engines, and virtual reference services that improve user engagement and research capabilities (Nwobu, et al., 2024). The implementation of smart libraries with real-time digital lending services ensures inclusivity and adaptability to modern educational needs (Ajani & Enakire, 2024). However, digital transformation requires substantial investment in IT

infrastructure, staff training, and policy reforms to address data security and digital ethics (Tella et al., 2022).

Adopting the Fifth Industrial Revolution in school libraries results in heightened student engagement, enhanced accessibility to learning materials, and improved overall effectiveness of library operations (Adigun et al., 2024). Through AI, VR, cloud computing, and other emerging technologies, libraries can transform into interactive, efficient, and inclusive learning environments. However, achieving these outcomes requires strategic investment in digital infrastructure, librarian training, and policy frameworks to sustain technological integration. School libraries can remain pivotal in fostering academic excellence and lifelong learning in the digital age by embracing these innovations.

One of the core outcomes of adopting the 5IR in school libraries is the improved accessibility of learning materials. Digital transformation enables cloud-based repositories, ensuring students can access resources from anywhere at any time (Eiriemiokhale & Sulyman, 2023). AI-driven cataloguing systems facilitate quick searches, allowing students to retrieve relevant materials effortlessly (Baro et al., 2019). Additionally, adaptive technologies, such as text-to-speech software and AI-powered translation tools, make information more accessible to students with disabilities and those from diverse linguistic backgrounds (Oseji, 2020). Open-access educational platforms integrated into school libraries ensure that financial constraints do not limit students' access to critical learning resources (Mamedova, 2023). Furthermore, mobile applications and digital lending services extend library functions beyond physical spaces, allowing students to utilise learning materials flexibly and efficiently (Ajani & Enakire, 2024).

The adoption of 5IR technologies enhances the overall effectiveness of school libraries by automating administrative processes, optimizing resource management, and expanding service delivery. AI-powered data analytics help librarians track user behaviour and resource utilisation, enabling data-driven decision-making to improve library operations (Ajani et al., 2024). Automated cataloguing and book recommendation systems improve efficiency, reducing the time students spend searching for information (Nwobu et al., 2024). Robotics and IoT applications in libraries further streamline inventory management, ensuring materials are well-organised and accessible (Adigun et al., 2022). Additionally, AI-driven plagiarism detection and citation tools enhance academic integrity, supporting students in producing high-quality research outputs (Tella et al., 2022). The combination of these

innovations fosters a smarter, more responsive library system that aligns with modern educational demands, ensuring continuous improvement in service delivery and student learning outcomes (Eiriemiokhale & Sulyman, 2023).

The Fifth Industrial Revolution (5IR) significantly enhances student engagement in school libraries by integrating advanced technologies such as artificial intelligence (AI), virtual reality (VR), and gamified learning environments. (Ajani and Oladokun, 2024) highlight that AI-driven personalised learning experiences cater to students' individual preferences, increasing motivation and participation.

Virtual reality tools provide immersive educational experiences, making learning more interactive and enjoyable (Nwobu, et al., 2024). Chatbots and AI-powered assistants also improve student interactions with library resources, ensuring immediate responses to inquiries and facilitating seamless research processes (Ajani & Enakire, 2024). Moreover, digital collaboration tools enable students to engage in group studies remotely, enhancing teamwork and knowledge sharing (Tella et al., 2022). By fostering a technology-driven learning environment, school libraries become dynamic hubs that promote active student participation and deeper comprehension of academic materials (Adigun et al. 2022).

Methodology

The research adopted a descriptive survey method. The population of the study consists of 10 school librarians selected across 10 Private secondary schools in Ozuoba, Obio-Akpo Local Government Secondary Schools, Rivers State. Data were collected using structured questionnaires and were analysed using descriptive statistics. A rating scale of 4,3,2,1, with a range of 2.50, was used to determine if the mean score indicates agree or disagree. Mean scores above 2.50 indicate "High Extent" while mean scores below 2.50 indicate "Low Extent"

Table 1: Extent of Implementation of Capacity-building programmes for Librarians by School Libraries

S/N	ITEM STATEMENTS	VHE	HE	LE	VLE	N	M	DE
1	Continuous professional development in emerging technologies.	6	4	0	0	10	3.6	High Extent
2	Hands-on experience with AI-driven tools for library	5	5	0	0	10	3.5	High Extent

	organisations							
3	Development of technical skills for managing smart library environments.	5	5	0	0	10	3.5	High Extent
4	Training on digital literacy and AI applications in library services.	4	6	0	0	10	3.4	High Extent
5	Librarians' exposure to best practices in global digital library systems	5	4	1	0	10	3.4	High Extent
6	Workshops on information management.	4	6	0	0	10	3.4	High Extent
7	Online certification programmes in digital library management.	3	5	1	1	10	3.0	High Extent

Table 1 presents the extent to which capacity-building programmes for librarians can empower school libraries to thrive in the Fifth Industrial Revolution (5IR) in Rivers State. The findings indicate that all items received mean scores above the 2.50 threshold, signifying a high extent of implementation. The highest mean score (3.6) was recorded for continuous professional development in emerging technologies, highlighting the importance of ongoing training in adapting to digital advancements. Other significant areas, such as hands-on experience with continuous professional development in emerging technologies (3.5), and librarians' exposure to best practices in digital library systems (3.4), also showed a strong emphasis on skill enhancement. The lowest mean score (3.0) was for online certification programmes, suggesting that while these programmes are available, their accessibility or effectiveness may need improvement.

Table 2: Investments in Artificial Intelligence-Driven Technology Infrastructure

S/N	ITEM STATEMENTS	VHE	HE	LE	VLE	N	M	DE
1	Adoption of smart energy solutions for library	9	1	0	0	10	3.9	High Extent

	sustainability.							
2	Installation of high-speed internet and Wi-Fi access.	8	2	0	0	10	3.8	High Extent
3	Establishment of virtual and hybrid learning spaces.	7	3	0	0	10	3.7	High Extent
4	Procurement of e-learning devices and multimedia tools.	5	5	0	0	10	3.5	High Extent
5	Implementation of cybersecurity measures for data protection.	4	6	0	0	10	3.4	High Extent
6	Development of digital repositories for academic resources.	3	4	1	2	10	2.8	High Extent
7	Integration of Internet of Things (IoT) in library management.	1	2	3	4	10	2.0	Low Extent

Table 2 examines the extent to which investments in ICT infrastructure can empower school libraries to thrive in 5IR. The highest mean score (3.9) was recorded for the adoption of smart energy solutions, indicating strong support for sustainability in library management. Other notable investments include high-speed internet access (3.8), virtual and hybrid learning spaces (3.7), and procurement of e-learning devices (3.5), reflecting substantial ICT integration. However, the integration of the Internet of Things (IoT) in library management received a mean score of 2.0, indicating a low extent.

Discussion of Findings

The results suggest that capacity-building programmes play a critical role in preparing librarians for the evolving technological landscape. According to Eiriemiokhale and Sulyman (2023), continuous professional development is essential in ensuring librarians remain adept at handling digital resources. The high mean scores across various training initiatives indicate that these programmes are widely implemented and effective in improving librarians'

competencies. However, the relatively lower score for online certification programmes suggests a need for increased accessibility and engagement in digital learning platforms, as noted by Adegbore (2018) and Adigun et al. (2022). This finding was further corroborated by Baro et. al. (2019) who reported that enhancing hands-on experiences with AI-driven tools and expanding continuous professional development initiatives can further empower librarians to manage digital resources effectively.

The findings emphasise the importance of ICT infrastructure investments in modernising school libraries. High-speed internet, hybrid learning spaces, and smart energy solutions significantly contribute to the efficiency and sustainability of digital library services (Ajani & Oladokun, 2024). However, the low mean score for IoT integration highlights a major gap that must be addressed. Schools should prioritise IoT adoption through government funding and private sector collaborations to enhance automation and resource management in libraries (Ajani et al., 2024). Additionally, improving the development of digital repositories will ensure better access to academic resources, as highlighted by Ajani and Enakire (2024). Strengthening cybersecurity frameworks is essential in safeguarding digital assets and user data from potential threats (Tella et al., 2022). Addressing these gaps, school libraries can achieve a seamless transition into the 5IR era.

Conclusion

The study concludes that capacity-building programmes and ICT investments play a pivotal role in modernising school libraries to thrive in the 5IR. While substantial progress has been made, gaps in IoT adoption and certification accessibility suggest the need for targeted interventions. Addressing these challenges, school libraries can become fully equipped knowledge hubs capable of supporting the digital transformation of education in Rivers State.

Recommendations

1. Policymakers should allocate resources for IoT infrastructure in libraries, so as to ensure seamless digital operations and resource management.
2. Training and workshops should be expanded to cover emerging trends, this will enable school librarians to remain proficient in digital library management.

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Rethinking Student Attitudes Toward Social Networking Tools in Collaborative Learning: A Conceptual Framework for Faith-Based Private Universities in Ogun State, Nigeria

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Abstract

As digital technologies continue to reshape higher education, social networking tools have gained increasing attention as facilitators of collaborative learning. In faith-based private universities, particularly in Ogun State, Nigeria, this trend raises critical questions about the intersection of technological adoption, student attitudes, and Christian ethical values. This conceptual study rethinks how students perceive and utilize platforms such as WhatsApp, Google Meet, and Telegram for academic collaboration, proposing a framework informed by the Technology Acceptance Model (TAM) and Christian moral philosophy. The paper synthesizes existing literature, educational theories, and value-based educational goals to examine both the educational benefits, such as increased engagement, peer interaction, and real-time knowledge exchange—and the associated risks, including distraction, academic dishonesty, and erosion of spiritual discipline. The proposed framework encourages institutions to evaluate the ethical integration of digital tools within a faith-grounded learning context. Implications are drawn for policy development, research advancement, and academic practice, advocating for the design of digital literacy programmes that align with institutional values and students' moral development. This study fills a critical gap by offering a structured approach to harmonize digital innovation with the spiritual mandates of faith-based higher education. It also lays a foundation for future empirical research and strategic planning across similar educational contexts.

Keywords: *Collaborative Learning, Social Networking Tools, Faith-Based Education, Technology Acceptance Model, Digital Ethics*

Introduction

In the rapidly evolving landscape of digital education, social networking tools, such as WhatsApp, Microsoft Teams, Telegram, and Google Meet, are reshaping how students

collaborate and communicate in academic settings. These platforms enhance engagement and real-time knowledge sharing, making learning more interactive and student-centered (Alabdulkareem & Alharbi, 2022). However, attitudes toward these tools are influenced by a range of factors, including students' digital literacy, institutional culture, and personal values. In faith-based private universities, especially within Nigeria, this issue becomes more nuanced. These institutions are not only committed to academic excellence but also to shaping students' spiritual and ethical development. As such, the integration of social networking tools must align with Christian values like integrity, community, and purposeful communication (Ukwoma et al., 2023). Yet, the growing influence of digital culture often clashes with traditional Christian ideals, raising questions about appropriate use, distraction, and the potential erosion of face-to-face fellowship (Onyema et al., 2020).

Despite increasing reliance on these tools for group projects, virtual classes, and peer support, limited conceptual models exist that reflect both technological opportunities and Christian moral considerations. This creates a gap in how faith-based institutions interpret student attitudes and prepare ethical guidelines for collaborative digital learning. Therefore, this study proposes a conceptual framework tailored to faith-based universities in Ogun State, Nigeria, that integrates both educational technology insights and Christian ethical principles.

Research Problem and Rationale

Despite the growing popularity of social networking tools in education, there remains limited understanding of how students in faith-based private universities truly feel about using them for collaborative learning. While these platforms support teamwork and information sharing, they can also pose distractions, privacy concerns, or even conflict with institutional values rooted in Christian ethics. Existing models often generalize student attitudes without considering the unique moral, cultural, and spiritual contexts of Christian higher education. This oversight makes it difficult for educators and policymakers in such settings to create balanced, faith-sensitive strategies for technology integration. Therefore, there is a need to rethink and reframe student attitudes toward social networking tools, not only from a functional perspective but through a value-based lens. This study aims to address that gap by proposing a conceptual framework that reflects both the collaborative benefits of these tools and the ethical expectations of Christian learning environments.

Objective and Scope

The main objective of this study is to propose a conceptual framework that helps faith-based private universities better understand and respond to students' attitudes toward the use of social networking tools in collaborative learning. In particular, it seeks to explore how values rooted in Christian education can shape and guide students' digital behaviours, especially when using tools like WhatsApp, Telegram, and Google Workspace for group assignments, discussions, and peer engagement. Rather than evaluating the effectiveness of these tools alone, the study focuses on *how* students perceive and *why* they engage with them, what influences their willingness, hesitation, or misuse in the context of collaborative academic work. It pays attention to both the positive potential (such as increased participation and accessibility) and the moral or practical concerns (such as distractions, academic dishonesty, or erosion of spiritual community).

The scope of this study is deliberately limited to faith-based private universities in Ogun State, Nigeria, where Christian values are embedded in institutional culture and learning practices. It adopts a conceptual approach, rather than empirical data collection, to synthesize existing literature and propose a framework that reflects both educational and faith-based dimensions. By narrowing the context, this paper hopes to offer faith-driven academic institutions a clearer path for aligning their technological strategies with their spiritual mission, ensuring that collaborative learning is not just effective, but also ethically and morally grounded.

Conceptual Clarifications

Social Networking Tools: Social networking tools refer to digital platforms that enable users to create, share, and interact socially in real time. In academic settings, tools like WhatsApp, Telegram, Microsoft Teams, and Google Meet are increasingly used to support learning by enabling group communication and file sharing. These platforms encourage engagement beyond the classroom and help students collaborate more flexibly (Manca, 2020). However, their informal nature can sometimes blur boundaries between social and academic spaces (Ali-Hassan et al., 2015), raising questions about their appropriate use in structured educational environments.

Attitudes: Attitudes are an individual's psychological tendencies expressed by evaluating particular entities with some degree of favor or disfavor. In educational technology, a student's attitude toward a tool often determines whether they adopt or reject it (Dwivedi et al., 2023). These attitudes are

influenced by factors such as past experiences, perceived usefulness, peer influence, and institutional policies. In faith-based institutions, attitudes may also be shaped by spiritual values or community norms, making them more complex and context-driven (Bhuasiri et al., 2012).

Collaborative Learning: Collaborative learning is a process where students actively work together to achieve shared academic goals. It encourages communication, peer teaching, critical thinking, and teamwork. With the integration of digital tools, collaborative learning has expanded beyond physical classrooms into virtual spaces, enabling richer engagement and inclusive participation (Dooly & Sadler, 2020). However, its success relies heavily on mutual accountability, clear communication, and respectful interaction, elements that can be hindered by poor digital etiquette or unequal participation (De Hei et al., 2016).

Theoretical Framework

Theory of Planned behaviour (TPB): The Theory of Planned behaviour (TPB), developed by Icek Ajzen in 1985, builds on the Theory of Reasoned Action. It suggests that behaviour is guided by intentions, which are influenced by attitudes, subjective norms, and perceived behavioural control (Ajzen, 1991). This theory is especially relevant for understanding how students decide whether or not to use social networking tools for collaborative learning. Their personal beliefs about the usefulness of such tools, peer influence, and their confidence in managing digital tasks all shape these intentions. The TPB is significant for this study because it helps analyze how students in faith-based universities may align or conflict with communal norms rooted in Christian ethics, especially regarding responsible online behaviour and teamwork. Understanding these behavioural predictors can help institutions design better support systems and digital literacy programmes tailored to student values and contexts.

Technology Acceptance Model (TAM): The Technology Acceptance Model (TAM), introduced by Davis (1986), focuses on how perceived usefulness and perceived ease of use affect a user's willingness to adopt a technology. TAM is particularly useful in educational research because it helps evaluate how students interact with digital platforms like WhatsApp, Google Workspace, and others. If students believe that these tools make collaboration easier and more efficient, they are more likely to adopt them (Davis, 1989). The TAM is relevant to this study as it offers a structured way to assess how faith-based university students perceive the academic value of social networking tools. It also highlights how technical

barriers or lack of digital training may affect adoption, especially in institutions where traditional teaching styles still dominate. Understanding this helps administrators introduce social learning tools more effectively, aligning technology use with institutional values and student readiness.

Unified Theory of Acceptance and Use of Technology (UTAUT): Developed by Venkatesh et al. (2003), the Unified Theory of Acceptance and Use of Technology (UTAUT) combines elements from eight different models, including TAM and TPB. It identifies four key constructs influencing technology use: performance expectancy, effort expectancy, social influence, and facilitating conditions. UTAUT is particularly valuable when examining group contexts, like collaborative learning, where peer and institutional support influence usage patterns (Venkatesh et al., 2003). In this study, UTAUT provides a broader framework for evaluating how students in Christian institutions adopt social networking tools, especially when influenced by both technological convenience and community standards. It acknowledges that spiritual values and ethical concerns may also shape students' expectations about technology, thereby expanding how adoption is understood in moral and communal contexts.

Relevance of Christian Ethics in Faith-Based Education

Christian ethics serve as the moral compass of faith-based education, guiding students not only toward academic excellence but also toward integrity, discipline, humility, and service. Scholars agree that Christian ethics provide a foundation for value-driven education, especially in private religious institutions where spiritual formation is central to the mission. For instance, Nwagwu and Uka (2022) affirm that integrating ethical teachings into the academic structure fosters students' character development, helping them navigate academic life with responsibility and self-control. They argue that ethical instruction rooted in Scripture promotes a more holistic form of learning where moral accountability is prioritized alongside intellectual achievement.

Similarly, Adesina and Ajiboye (2021) stress that Christian ethics shape institutional culture, encouraging honest scholarship and fostering a communal environment built on trust and shared purpose. They highlight that moral education can curb rising trends in academic misconduct, social irresponsibility, and peer pressure within universities. However, some scholars present more critical views. Ezeokoli and Okorie (2023) caution that rigid ethical enforcement in some Christian institutions can discourage student autonomy and creativity. They suggest that overly conservative approaches may alienate

tech-savvy learners, especially when navigating digital spaces like social networking platforms.

Despite these valuable insights, few studies have contextualized Christian ethics within the digital behaviours of students, particularly in their use of social networking tools for collaborative learning. This is the gap this study seeks to fill: by examining how Christian values intersect with students' digital habits and attitudes, especially within faith-based universities in Ogun State, the study offers a tailored conceptual framework that reflects both the spiritual and technological realities of modern academic life.

Overview of Relevant Theories

1. Technology Acceptance Model (TAM): The Technology Acceptance Model (TAM), developed by Davis (1989), posits that users' acceptance of technology is primarily influenced by two factors: perceived usefulness (PU) and perceived ease of use (PEOU). Numerous studies have validated TAM's relevance in higher education. For example, recent research confirms that students' belief that social networking tools are helpful and easy to use directly shapes their willingness to integrate them into learning activities (Chao, 2022). However, critics argue that TAM oversimplifies the social and cultural dimensions of technology use. In faith-based settings, for instance, moral values, peer influence, and institutional norms may significantly affect acceptance, factors not fully addressed by the original TAM model (Ahmed & Opoku, 2023). The TAM provides a foundational understanding of usability and perceived benefit but lacks moral, spiritual, and contextual sensitivity. This study aims to extend this theory by embedding Christian ethical dimensions into the framework of technology acceptance in collaborative learning.

2. Theory of Planned behaviour (TPB): Ajzen's (1991) Theory of Planned behaviour (TPB) asserts that behavioural intention is driven by attitude, subjective norms, and perceived behavioural control. In educational technology research, TPB has been used to examine students' intentions to adopt digital tools. It is particularly useful in capturing the social pressures and individual volition behind technology use (Zhou et al., 2021). Supporters of TPB praise its ability to incorporate non-technical influences like peer perception and institutional expectations. However, critics argue that TPB doesn't explicitly consider faith-based norms, spiritual accountability, or the ethical frameworks that shape behaviour in Christian universities (Ukwoma et al., 2023). The model also assumes rational decision-making, which may not fully apply in environments where religious values influence non-linear

attitudes. While TPB adds social and control dimensions missing in TAM, it still overlooks the religious and ethical aspects unique to Christian learning contexts. This study seeks to reframe TPB assumptions within a values-based academic environment.

3. Unified Theory of Acceptance and Use of Technology (UTAUT): The Unified Theory of Acceptance and Use of Technology (UTAUT), proposed by Venkatesh et al. (2003), combines elements from multiple models, including TAM and TPB. It focuses on four core determinants: performance expectancy, effort expectancy, social influence, and facilitating conditions. UTAUT is widely applied in higher education to study technology adoption (Alabdulkareem & Alharbi, 2022). The strength of UTAUT lies in its integrative nature, it accounts for individual, social, and technical aspects. Yet, studies have shown that it lacks contextual flexibility, particularly in culturally or religiously distinct environments. Some scholars argue that UTAUT treats users as generic actors, not as value-driven learners (Olowu & Adediran, 2023). The UTAUT is comprehensive but doesn't factor in ethical, religious, or spiritual motivations that influence student behaviour in faith-based settings. This study introduces a conceptual framework that bridges this gap by integrating biblical values into the acceptance and use of social networking tools.

Literature Review

Empirical Insights on Technology and Learning Attitude: Recent research shows that students' attitudes toward technology significantly influence their willingness to adopt social networking tools for collaborative learning. According to Al-Marouf and Al-Emran (2020), students who perceive social media platforms as useful and easy to use are more likely to engage meaningfully in collaborative learning activities. Their study, grounded in the Technology Acceptance Model (TAM), found a strong correlation between positive attitudes and increased academic use of tools like WhatsApp and Google Docs. Corroborating this, Ayotola and Ige (2022) argue that social networking tools enhance group learning by fostering peer interaction, especially in environments where students already use these platforms socially. They emphasize that when academic use aligns with students' everyday digital habits, learning becomes more natural and participatory.

However, not all findings point in the same direction. For example, Kamaludeen and Mohammed (2023) highlight a growing concern that over-reliance on digital tools may reduce students' critical thinking and in-person collaboration skills.

Their study warns that positive attitude does not always translate to quality engagement, students might like the tools but misuse them for non-academic distractions. Similarly, Onuka and Ojo (2021) report that in some Nigerian private universities, students view social networking platforms as disruptive to their focus during learning. These contrasting findings reveal a critical gap: while several studies highlight general student attitudes and tool effectiveness, few focus specifically on the value-laden environments of faith-based institutions, where attitudes are shaped by both digital familiarity and spiritual expectations. This study responds to that gap by proposing a conceptual framework that integrates Christian ethical values with technology attitudes, offering a more context-specific understanding for private faith-driven universities in Nigeria.

Digital Collaboration in Faith-Based Institutions: Digital collaboration has gained traction across all levels of education, including faith-based institutions. Scholars such as Alabdulkareem and Alharbi (2022) agree that tools like Microsoft Teams and Google Meet support interactive learning, improve communication, and foster academic teamwork. In Christian universities, this is seen as a way to enhance student engagement while promoting community values through technology (Ukwoma et al., 2023). However, not all scholars share this enthusiasm. According to Ajibade and Adebayo (2021), the widespread use of social networking platforms like WhatsApp and Telegram in Christian campuses may weaken discipline, blur boundaries between formal and informal spaces, and sometimes encourage academic shortcuts. These authors argue that digital platforms may conflict with traditional Christian values that emphasize modesty, reflection, and face-to-face fellowship. The balance between innovation and religious identity remains delicate.

Moreover, most studies on digital collaboration tend to focus on secular institutions or general private universities, with minimal attention to the unique moral and administrative context of Christian higher education (Onyema et al., 2020). What is missing from these discussions is a conceptual framework that specifically interprets students' attitudes toward digital collaboration through a faith-based lens. Existing research rarely accounts for the moral filters through which students in Christian universities evaluate and use these technologies. This study addresses that gap by proposing a framework that integrates Christian values with the realities of modern digital learning.

Identified Conceptual Gaps

Lack of Faith-Sensitive Models for Digital Collaboration:

While much research has explored students' use of social networking tools for collaborative learning, few frameworks address the unique moral and spiritual dynamics present in faith-based academic environments. Most conceptual models focus on technological affordances, usability, and engagement patterns but often neglect ethical concerns and religious-cultural values that shape students' behaviour (Alabdulkareem & Alharbi, 2022). In Christian universities where spiritual development is a key part of education, the absence of a model that accounts for both digital fluency and faith-based expectations leaves a gap in understanding how students negotiate technology use with moral responsibility.

This gap is significant because students in such institutions are not just digital natives, they are also spiritual learners navigating platforms filled with both academic potential and moral ambiguity. Without a conceptual framework that merges these two realities, institutional policies risk being either overly restrictive or blindly adaptive. This study intends to bridge this gap by developing a faith-sensitive conceptual framework that guides the ethical use of social networking tools in collaborative learning.

Inadequate Understanding of Attitudinal Influences in Faith-Based Settings:

Despite the surge in technology-enhanced learning, few studies investigate *why* students in faith-based universities form particular attitudes toward social networking tools. While existing literature often links attitudes to factors like digital literacy, peer influence, and perceived usefulness (Al-Fraihat et al., 2020), these frameworks are largely drawn from secular or public institutions. In faith-driven environments, attitudes are also shaped by internalized spiritual beliefs, community expectations, and religious teachings, which are often overlooked in mainstream models.

This oversight limits the applicability of current theories like the Technology Acceptance Model (TAM) or Unified Theory of Acceptance and Use of Technology (UTAUT) within religiously affiliated institutions. As a result, decision-makers may adopt digital strategies that fail to resonate with students lived realities, potentially leading to disengagement or misuse. By identifying and incorporating spiritual and ethical dimensions of attitude formation, this study aims to offer a more holistic and context-appropriate conceptual lens.

The Proposed Framework

Theoretical Integration with Christian Values: The integration of educational theories with Christian values provides a balanced perspective for understanding students' attitudes toward the use of social networking tools in collaborative learning, particularly in faith-based institutions. Technology Acceptance Models (TAM), Unified Theory of Acceptance and Use of Technology (UTAUT), and Social Constructivism have often been used to explain how users adopt digital tools. These theories emphasize perceived usefulness, ease of use, social influence, and facilitating conditions (Venkatesh et al., 2022). However, in Christian private universities, students' engagement with digital platforms is also filtered through moral and ethical lenses shaped by faith. Concepts like self-control (Galatians 5:22–23), accountability (Romans 14:12), and purposeful communication (Ephesians 4:29) become vital in determining appropriate use. Christian education aims not only at academic development but at spiritual formation, encouraging learners to use tools that align with Biblical values (Afolayan & Makinde, 2023).

For example, while social constructivism emphasizes collaborative knowledge-building, a Christian interpretation also underscores building community rooted in love, respect, and truth (John 13:34–35). This enriches learning beyond technical outcomes, giving students a sense of moral responsibility in how they interact online. This theoretical blend ensures that social networking tools are not just seen as academic aids but also as instruments of discipleship, ethical growth, and purposeful engagement in the digital space, areas often overlooked in secular frameworks.

Components of the Conceptual Model

Perceived Usefulness captures how students evaluate the practical benefits of social networking tools for learning tasks, such as information sharing and teamwork efficiency (Alabdulkareem & Alharbi, 2022). If students view these tools as effective for academic work, their willingness to use them increases.

Spiritual Alignment introduces a unique faith-based dimension. In Christian institutions, students' choices are often shaped by spiritual values. Tools seen as morally neutral or supportive of godly behaviour are more readily accepted, while others may raise ethical or spiritual concerns (Ukwoma et al., 2023).

Collaborative Readiness refers to students' confidence and willingness to engage with peers through digital means. This includes digital literacy, openness to group work, and comfort

using tech platforms for academic collaboration (Liu et al., 2023).

Institutional Influence reflects the impact of university policies, culture, and encouragement. Where leadership promotes safe, ethical, and guided use of social networking tools, students often mirror that disposition. These components together offer a faith-conscious, context-sensitive understanding of how Christian students approach digital collaboration. This model fills a gap left by secular theories by embedding Christian ethics within a tech-adoption framework.

Educational and Ethical Implications

The use of social networking tools in academic environments offers undeniable educational benefits. These platforms encourage collaborative learning, boost engagement, and support knowledge sharing beyond the classroom (Alabdulkareem & Alharbi, 2022). For students in faith-based universities, such tools can enhance teamwork and critical thinking when guided by ethical and purposeful use. However, the educational potential of these tools also depends on how well students are trained to use them responsibly. Ethically, the integration of social media in learning environments raises questions about discipline, digital integrity, and appropriate content sharing. In Christian-based institutions, where moral and spiritual values are central, the stakes are even higher. Social networking tools can expose students to distractions, academic dishonesty, or online behaviour that contradicts institutional values (Ukwoma, Ozioko, & Mbagwu, 2023). Without clear guidelines grounded in both pedagogical and Christian ethics, students may misuse these platforms, diminishing their educational value.

Moreover, the line between formal academic collaboration and informal social interaction can become blurred, potentially affecting students' focus and behaviour. Institutions must therefore balance technological innovation with intentional policies that promote accountability, respect, and digital discipleship (Ayanda & Salisu, 2021). This study emphasises the need for a conceptual framework that guides both educators and students in making ethically sound, educationally effective use of social networking tools, ensuring they align with the faith-based mission of their institutions.

Conclusion

This study has highlighted the growing significance of social networking tools in collaborative learning among students in faith-based private universities in Ogun State, Nigeria. It has gone beyond the conventional discourse by proposing a conceptual framework that thoughtfully blends educational

technology with the ethical and spiritual values characteristic of Christian higher institutions. This contribution is particularly relevant as more universities explore digital solutions while maintaining their faith-based identity. By framing student attitudes within both technological and moral dimensions, the study equips educators and administrators with a deeper understanding of how to manage and guide the use of platforms like WhatsApp, Telegram, and Google Meet for meaningful academic collaboration. Importantly, it offers practical insights for the development of acceptable-use policies and classroom strategies that emphasize digital responsibility, ethical online behaviour, and faith-driven engagement.

Furthermore, the framework provides a springboard for future empirical research into how such tools influence learning outcomes, community formation, and moral development in religious academic settings. It opens up new pathways for dialogue between technology and theology, suggesting that the two can not only coexist but enrich each other when thoughtfully balanced. In essence, this study contributes a unique, values-based lens for interpreting digital learning in Christian institutions, affirming that faith, technology, and education need not be in conflict, but can thrive together when guided by intentional principles.

Implications for Policy, Research, and Practice

The findings and framework proposed in this study have far-reaching implications for education policymakers, researchers, and practitioners in faith-based private universities. For policy, there is an urgent need to develop clear guidelines on the ethical and purposeful use of social networking tools for learning. These policies should reflect both digital best practices and the faith-driven values of the institution. They must go beyond simply regulating usage to actively shaping a healthy digital culture among students and staff. For research, this study opens new directions for understanding how faith-based perspectives influence technology adoption in higher education. Scholars can further explore how spiritual values intersect with digital behaviour and what pedagogical models work best in moral-rich academic environments. Longitudinal and comparative studies may also be needed to assess the impact of such frameworks over time or across regions.

In practice, educators and administrators must reimagine how social networking tools are integrated into teaching and learning. This includes training faculty to design collaborative learning experiences that maximize digital tools without compromising spiritual integrity. Student support systems should be adapted to help learners use these platforms in ways

that enhance their academic performance while maintaining discipline and moral consciousness. Overall, this study calls for a balanced approach, one that doesn't just embrace innovation for its own sake but aligns digital advancement with institutional identity and Christian values.

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Ethical, Privacy and Regulatory Challenges of AI in Education and ODL

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Abstract

The integration of Artificial Intelligence (AI) into education and Open and Distance Learning (ODL) has led to notable improvements in personalised learning, accessibility, and administrative processes. Despite these advancements, significant ethical, privacy, and regulatory challenges emerge that require thorough academic investigation. This paper presents a narrative review of current literature to identify key issues such as algorithmic bias, which has the potential to reinforce existing inequalities, the lack of transparency in AI decision-making that complicates accountability, and the extensive collection, storage, and use of sensitive learner data raising privacy concerns. The study also evaluates the effectiveness of existing regulatory frameworks, revealing their limitations in addressing the rapid evolution of AI technologies and protecting learner rights. Interdisciplinary perspectives are synthesised to highlight the importance of developing AI systems that are transparent, fair, and accountable, supported by strong data governance and adaptable policies. The findings underscore the necessity of addressing these interconnected challenges to safeguard learners' privacy and autonomy while promoting trust and equity in AI-enhanced educational settings. The research concludes with recommendations for comprehensive ethical guidelines and regulatory mechanisms that balance technological innovation with fundamental rights, ensuring responsible and inclusive deployment of AI in education and ODL.

Keywords: *Artificial Intelligence, Open and Distance Learning, Ethics, Privacy, Algorithmic Bias, Regulatory Frameworks.*

Introduction

Artificial Intelligence (AI) has become a transformative force in education worldwide, reshaping how teaching, learning, and administration are conducted. In the context of Open and Distance Learning (ODL), AI technologies offer promising opportunities to personalise learning experiences, enhance

accessibility, and improve educational outcomes (Sanusi et al., 2024). Nigeria, like many African countries, is witnessing rapid digital transformation in its education sector, supported by national strategies such as the Nigeria National Artificial Intelligence Strategy (NAIS, 2024). Despite these advances, the integration of AI into education raises critical ethical, privacy, and regulatory concerns that require urgent scholarly examination. Ethical challenges include algorithmic bias, which risks reinforcing existing social inequalities, and issues of transparency and accountability in AI-driven decision-making processes (Garba et al., 2024; Umar, 2024). Privacy concerns focus on the extensive collection and management of sensitive learner data, which may be vulnerable to misuse or unauthorised access (Ajirotutu et al., 2024).

The rapid adoption of AI in education and Open and Distance Learning in Nigeria presents a paradox of opportunity and challenge. Although AI technologies promise enhanced personalisation, efficiency, and access, their deployment raises pressing ethical questions about fairness, bias, and accountability (Garba et al., 2024). The AI systems frequently operate with limited transparency, making it difficult for educators and learners to understand or contest automated decisions. Privacy concerns emerge from the extensive collection and processing of learner data, which may be exposed to security breaches or unethical use (Ajirotutu et al., 2024). These challenges are compounded by inadequate regulatory frameworks that struggle to keep pace with AI's rapid evolution, leaving gaps in governance and protection. In Nigeria, where educational inequalities and infrastructural disparities persist, these issues risk deepening existing divides rather than alleviating them (Sadiq et al., 2024). Despite growing awareness, there remains a lack of comprehensive research that synthesises ethical, privacy, and regulatory challenges in AI-enabled education within the Nigerian and African context. This study addresses this gap by conducting a narrative review that critically examines these dimensions to inform policy and practice.

The significance of this study lies in its potential to contribute to the responsible integration of AI in education and ODL, particularly within Nigeria and similar African contexts. While AI offers powerful tools for enhancing educational quality and equity, unaddressed ethical and privacy risks can undermine these benefits and exacerbate existing disparities (Sadiq, Bello & Tukur, 2024). Nigerian education stakeholders, including policymakers, educators, and learners, require evidence-based guidance to navigate these challenges effectively. Moreover, the study addresses a critical gap in the literature by integrating

ethical, privacy, and regulatory dimensions, which are often treated separately. As Nigeria embarks on ambitious digital education reforms, this research offers timely insights to ensure that AI technologies serve human educational goals and promote inclusive, equitable learning environments (Sanusi et al., 2024).

Objectives of the Study

The specific objectives of this study are to:

1. identify and analyse privacy concerns associated with learner data collection, storage, and use in AI-driven educational systems.
2. evaluate existing regulatory frameworks and policies governing AI in education, highlighting their strengths and limitations in addressing emerging challenges.
3. synthesise interdisciplinary perspectives on the intersection of ethics, privacy, and regulation in AI-enhanced education.
4. propose evidence-based recommendations for ethical guidelines and regulatory strategies that promote responsible and equitable AI integration in education and ODL.

Research Questions

The study is guided by the following research questions:

1. What are the predominant ethical challenges associated with the use of AI in education and Open and Distance Learning in Nigeria and Africa?
2. How do privacy concerns manifest in the collection and management of learner data within AI-enabled educational systems?
3. To what extent do current regulatory frameworks in Nigeria and similar African contexts address the ethical and privacy challenges posed by AI in education?
4. How do interdisciplinary perspectives inform a holistic understanding of the ethical, privacy, and regulatory issues in AI-driven education?
5. What practical recommendations can be developed to guide policymakers, educators, and technologists in ensuring ethical and equitable AI deployment in education and ODL?

Conceptual and Theoretical Foundations

Artificial Intelligence (AI) refers to computer systems designed to perform tasks that typically require human intelligence, such as recognizing patterns, making decisions, and adapting to new information. In education, AI encompasses technologies that support teaching and learning processes, including adaptive learning platforms, intelligent tutoring systems, and automated assessment tools (Sanusi et al., 2024). Open and Distance

Learning (ODL) describes educational approaches that allow learners to access instruction remotely, often relying on digital technologies to overcome geographical and temporal barriers (Ajirotutu et al., 2024). Ethics in this context concerns the principles guiding the responsible and fair use of AI, including issues of justice, transparency, and respect for human dignity (Garba et al., 2024). Privacy relates to the protection of personal data collected during AI-driven educational activities, emphasising the learner's right to control information about themselves and to be safeguarded against misuse. Regulatory frameworks refer to the formal policies, laws, and guidelines that govern the development, deployment, and oversight of AI technologies in education, ensuring accountability and protection of stakeholders (Sadiq et al., 2024).

Ethical analysis of AI in education draws on foundational theories such as justice and autonomy. The theory of justice, particularly distributive justice, highlights the importance of fairness in AI algorithms to prevent reinforcing existing inequalities in educational access and outcomes (Rawls, 1971; Garba et al., 2024). Autonomy theory emphasises the learner's right to make informed choices and maintain control over their educational journey, which AI systems must respect to avoid undue manipulation or coercion (Beauchamp & Childress, 2019; Umar, 2024). Privacy principles are grounded in concepts such as informed consent, data minimization, and confidentiality, which require that learners understand what data is collected and how it is used, with safeguards against unauthorised access (Ajirotutu et al., 2024; FMIST, 2024).

Regulatory approaches include risk-based frameworks that assess AI's potential harms and benefits, advocating for adaptive governance capable of evolving alongside technological innovation (Sadiq et al., 2024). Such models encourage stakeholder participation, transparency, and accountability mechanisms to ensure ethical compliance (Sanusi et al., 2024). This conceptual and theoretical foundation provides a lens through which the study examines AI's ethical, privacy, and regulatory challenges in education and ODL. It integrates recent African and Nigerian scholarship to ground the analysis in relevant socio-cultural and policy contexts, reflecting the realities of AI adoption in these regions.

Research Methodology

This study employs a narrative review methodology to explore the ethical, privacy, and regulatory challenges of Artificial Intelligence in education and Open and Distance Learning (ODL). The choice of a narrative review is grounded in its flexibility and capacity to capture the complexity inherent in

interdisciplinary topics such as AI in education. Unlike systematic reviews that focus on narrowly defined questions and quantitative synthesis, narrative reviews allow for a broader, interpretive examination of diverse literature, including theoretical discussions, empirical studies, and policy analyses (Green, 2006; Baumeister & Leary, 1997). This approach is particularly suitable for emerging fields where research is scattered across disciplines and where critical reflection on conceptual and contextual nuances is essential (Baumeister & Leary, 1997; Sanusi et al., 2024). The narrative review facilitates a comprehensive understanding of how ethical principles, privacy concerns, and regulatory frameworks interact and influence AI adoption in educational settings. It also enables the identification of gaps and tensions in the literature, offering insights that can guide future research and policy formulation (Sanusi et al., 2024; Garba et al., 2024).

Literature Search and Selection

The literature search focused on academic sources published between 2018 and 2025 to ensure the inclusion of recent developments and contemporary perspectives. Key electronic databases such as Scopus, Web of Science, Google Scholar, African Journals Online (AJOL), and Nigerian institutional repositories were systematically searched. The search employed a combination of keywords including “Artificial Intelligence,” “AI,” “education,” “Open and Distance Learning,” “ethics,” “privacy,” “data protection,” “regulation,” “policy,” “Nigeria,” and “Africa.” Inclusion criteria required that sources be peer-reviewed articles, conference papers, policy reports, or authoritative book chapters that address AI’s ethical, privacy, or regulatory dimensions in education or ODL. Special attention was given to literature authored by African and Nigerian scholars to capture context-specific insights and challenges (Sanusi et al., 2024). Literature which focused purely on technical AI development without educational or ethical implications were excluded from the study. The initial search yielded over 150 sources, which were screened for relevance and quality, resulting in a final selection of 40 literature which were included for detailed analysis.

The selected literature was subjected to thematic analysis to identify recurring patterns, themes, and gaps related to ethics, privacy, and regulation in AI-enabled education and ODL. Themes were developed inductively, allowing the literature to guide the identification of critical issues and their interrelations. The analysis also considered disciplinary perspectives, contrasting technological, educational, legal, and sociocultural viewpoints to build a nuanced understanding of the challenges. Particular emphasis was placed on synthesizing African and

Nigerian contributions to highlight local realities and policy contexts. The thematic framework facilitated the organization of findings into coherent sections, supporting a critical discussion that integrates theory and practice. This approach ensures that the review not only summarizes existing knowledge but also critically interrogates it, paving the way for informed recommendations.

Presentation, Interpretation and Findings

This thematic review rigorously synthesises existing literature aligned with the study's objectives and research questions. It critically examines ethical challenges, privacy concerns, and regulatory issues surrounding Artificial Intelligence (AI) in education and Open and Distance Learning (ODL), with particular focus on Nigerian and African contexts.

The AI's application in education and ODL presents profound ethical dilemmas, especially concerning algorithmic bias, fairness, transparency, and accountability. Algorithmic bias emerges when AI systems, often trained on incomplete or non-representative datasets, produce discriminatory outcomes that disadvantage marginalized learner groups. Findings from synthesised literature revealed that highlight that AI tools developed without adequate contextual data risk perpetuating existing educational inequalities, particularly among learners from diverse linguistic, socio-economic, and regional backgrounds (Awarri, 2025; Garba et al., 2024). This bias may manifest in automated grading or adaptive learning systems, potentially skewing opportunities and reinforcing systemic exclusion. Also, fairness remains a critical principle, demanding that AI systems accommodate learner diversity and promote equitable access to educational resources (OECD, 2023). However, achieving fairness is complicated by the opaque nature of many AI algorithms. The "black box" problem limits stakeholders' understanding of how AI decisions are made, raising concerns about transparency. Educators and learners often lack insight into the criteria or data influencing AI outputs, which undermines trust and hinders meaningful challenge or redress (Olojede & Olakulehin, 2024).

The synthesised literature also revealed accountability issues which arise when responsibility for AI-driven decisions is unclear. Nigerian researchers argue that without clear ethical frameworks and institutional oversight, the diffusion of responsibility can lead to unaddressed harms and diminished educational quality (Garba et al., 2024; Umar, 2024). The absence of robust accountability mechanisms risks eroding confidence in AI-enhanced education, potentially limiting its adoption and benefits. Moreover, the extensive data collection

inherent in AI-powered educational systems raises significant privacy challenges. Learner data often includes personal identifiers, behavioural patterns, and academic performance metrics, which require stringent protection (Ajirotutu et al., 2024).

Informed consent, which is a foundational privacy principle, is frequently compromised in Nigerian contexts due to limited awareness among learners and guardians about data use and rights. Security vulnerabilities expose sensitive data to risks such as breaches, unauthorised access, or secondary exploitation. These risks are exacerbated by infrastructural weaknesses common in many African educational institutions, including inadequate cybersecurity measures (Sanusi et al., 2024). The implications for learner autonomy are profound; pervasive surveillance and data monitoring can inhibit free engagement with learning materials, fostering a climate of mistrust and anxiety (Ajirotutu et al., 2024).

Findings from the synthesised literature also revealed that regulatory frameworks remain insufficiently developed to address the unique challenges posed by AI in education, because existing laws often lack specificity regarding AI's ethical and privacy implications, creating gaps in governance and enforcement (Sadiq et al., 2024). The Nigerian National Artificial Intelligence Strategy acknowledges these challenges and emphasises principles such as fairness, transparency, accountability, and privacy in AI development and deployment (FMIST, 2024). However, scholars stress the need for adaptive governance models that can evolve with technological advances and incorporate multi-stakeholder input (Sanusi et al., 2024). Such models should balance innovation with protection of learner rights, ensuring that AI serves educational objectives without exacerbating inequalities or infringing on privacy (Olojede & Olakulehin, 2024).

Synthesis and Critical Insights

The literature reveals that ethical, privacy, and regulatory challenges in AI-enabled education are deeply interconnected. Algorithmic bias and lack of transparency amplify privacy risks and complicate regulatory oversight. Privacy violations undermine learner autonomy and trust, which are essential for effective educational engagement. Weak regulatory frameworks fail to provide the necessary safeguards or accountability mechanisms, allowing ethical and privacy breaches to persist. Studies from Africa and Nigeria contribute valuable context-specific insights, emphasising infrastructural constraints, socio-economic disparities, and cultural factors that shape AI's impact in education (Sanusi et al., 2024; Ajirotutu et al., 2024).

These factors necessitate tailored approaches to ethical governance and policy development that differ from global models. The integration of Artificial Intelligence (AI) in education and Open and Distance Learning (ODL) presents a complex landscape where ethical, privacy, and regulatory challenges are deeply intertwined. These challenges do not exist in isolation; rather, they influence and reinforce one another, creating a multifaceted environment that demands careful navigation by all stakeholders involved.

Moreover, the ethical concerns such as algorithmic bias and lack of transparency directly impact privacy and regulatory issues. For instance, when AI systems operate without clear transparency, it becomes difficult to detect or correct biases that may unfairly disadvantage certain learner groups, particularly those from marginalised communities (Awarri, 2025; Garba et al., 2024). This opacity also complicates accountability, making it challenging to hold developers or institutions responsible for adverse outcomes. Privacy concerns emerge as AI systems collect vast amounts of sensitive learner data to function effectively. Without robust ethical safeguards, this data collection can lead to violations of learners' rights, especially when consent mechanisms are weak or poorly understood (Ajirrotutu et al., 2024; FMIST, 2024). Regulatory frameworks must therefore address not only data protection but also the ethical deployment of AI technologies. However, current policies in Nigeria and similar contexts often lag behind technological advancements, leaving gaps that exacerbate ethical and privacy risks (Sadiq et al., 2024; Nwotite, 2025). This interdependence means that weaknesses in one area, such as regulation, can amplify vulnerabilities in ethics and privacy, underscoring the need for integrated approaches to governance.

Educators, learners, policymakers, and technology developers each hold distinct yet interconnected responsibilities in addressing these challenges. Educators must develop digital literacy and ethical awareness to critically engage with AI tools, ensuring they complement rather than replace human judgment (Sanusi et al., 2024). Learners require clear information and protections to exercise autonomy over their data and learning experiences, fostering trust in AI-enhanced education (Ajirrotutu et al., 2024). Policymakers face the urgent task of crafting adaptive, context-sensitive regulations that balance innovation with protection of fundamental rights. This includes strengthening enforcement mechanisms and promoting stakeholder participation in policy development (FMIST, 2024; Nwotite, 2025). Technology developers bear the responsibility of designing AI systems that prioritise fairness, transparency, and privacy from inception, incorporating ethical principles

throughout the development lifecycle (Garba et al., 2024). Collaboration among these groups is essential to create an ecosystem where AI supports equitable and ethical education, particularly in resource-constrained African settings.

Conclusion

The integration of Artificial Intelligence (AI) into education and Open and Distance Learning (ODL) holds remarkable promise for transforming learning experiences and administrative processes across Nigeria. Recent studies demonstrate that AI applications in Nigerian education have the potential to significantly enhance personalised learning, improve student engagement, and streamline administrative tasks. For example, AI-driven tutoring systems and adaptive learning platforms have shown promising results in improving literacy and digital skills among students in pilot programme.

These technologies enable real-time feedback and tailored instruction, which are particularly valuable in addressing the challenges of overcrowded classrooms and limited teaching resources prevalent in many Nigerian schools. However, the literature also reveals persistent barriers that hinder the widespread and effective integration of AI. Infrastructural deficits such as unreliable internet connectivity and inadequate technological resources remain major obstacles, especially in rural and underserved areas. Additionally, limited funding and resistance to technological change among educators and policymakers slow down adoption efforts (Adeboye, 2024). Ethical concerns, including algorithmic bias and lack of transparency, raise questions about fairness and accountability in AI-driven educational decisions, while privacy issues related to learner data collection and security further complicate the landscape, highlighting the need for robust data protection mechanisms.

The existing regulatory frameworks in Nigeria are still evolving and currently lack the comprehensiveness and enforcement capacity necessary to address these multifaceted challenges. Without adaptive governance and clear policies, the risks of misuse and inequitable AI deployment may increase, undermining trust and limiting the technology's transformative potential. The evidence underscores an urgent need for coordinated efforts to establish ethical governance and regulatory reforms that can guide AI integration in education and ODL. Policymakers must prioritize the development of comprehensive, context-sensitive policies that safeguard learner rights, promote transparency, and ensure accountability. These policies should be flexible enough to evolve alongside rapid

technological advancements and inclusive of stakeholder voices, including educators, learners, and technology developers.

Recommendations

The following recommendations are made:

1. The Federal Ministry of Education, in collaboration with the National Information Technology Development Agency (NITDA) and educational institutions, should establish comprehensive ethical guidelines for AI use in education.
2. Policymakers, led by the Federal Ministry of Communications, Innovations and Digital Economy (FMCIDE) and supported by NITDA, should finalise and operationalise Nigeria's National AI Strategy with a focus on education. This strategy should include clear data privacy protections, enforceable consent protocols, and security standards tailored to Nigeria's infrastructural realities.
3. The government should facilitate platforms for continuous engagement among policymakers, educators, learners, technology developers, parents, and civil society organizations.
4. The Federal Government, with support from private sector partners and international donors, should prioritise investments in digital infrastructure, especially in rural and conflict-affected regions. This includes expanding reliable internet access, providing affordable devices, and establishing digital resource centers.

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Leisure Reading and Reading Interest Among Secondary School Students in Oyo State, Nigeria: Predictors, Patterns, and Implications for Literacy Development

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Abstract

This study investigated leisure reading (LR) and reading interest among private secondary school students in Oyo State, Nigeria, focusing on predictors, patterns, and implications for literacy development. Using a concurrent mixed-methods design (QUAN+qual), data were collected from 1,315 SSII students via questionnaires and focus group discussions with 32 students. Findings revealed a high level of leisure reading, driven by positive attitudes, frequent engagement (particularly with fiction genres), and a preference for digital formats over print. Students spent an average of 30 minutes to 2 hours per session on LR, primarily accessing materials online for academic, entertainment, and exploratory purposes. Reading interest was strongly correlated with LR ($r = 0.466$, $p < 0.05$), with motivations including boredom relief, pleasure, knowledge acquisition, and therapeutic benefits. The study highlights the shift toward digital reading among Nigerian adolescents, contrasting with earlier trends which favoured print. Recommendations include leveraging students' preference for online platforms to sustain reading interest and integrating LR supportive strategies into educational frameworks. The results challenge prior studies suggesting declining reading, emphasising the role of accessible, engaging materials in fostering literacy.

Keywords: *Leisure reading, Reading interest, Digital reading, Secondary school students*

Introduction

Leisure reading (LR) serves as more than just a means of entertainment; it is a gateway to various benefits that enrich lives in numerous ways, which include enhanced creative and critical thinking, comprehension, vocabulary expansion, analytical and lifelong learning. Khreisat and Mugableh (2020) say leisure reading encompasses a diverse range of texts and topics, available in print or digital formats. And is driven solely by the reader's preferences regarding when, where, and what to read, without any external assessment required, only self-

ascribed evaluations. This implies that a secondary school student may choose to read up on any topic of choice, either in a book, magazine, or electronic device at his or her disposal, and may do so anywhere and at any time. Afterward, unlike when reading for academic objectives, the learner does not have to worry about taking a test or examination after the text-reading session.

Leisure reading can be measured using several indicators that include reading attitude, time spent reading, frequency of reading as well as time spent reading. Reading attitude is a readiness to respond to or a mental disposition towards reading (Getie, 2020). Baba and Affendi (2020) opine that based on reading habits, students generally had a good attitude towards reading for leisure. The authors believe this positive attitude was influenced by their teachers and parents. Ashcroft (2017) conducted a study comparing the attitudes toward reading between two groups of 60 year 3 students from a purposefully chosen English school and findings also indicated favourable attitudes toward general reading.

Tunde-Awe (2014), on the other hand, discovered negative attitudes among senior secondary school II students in Kwara State, Nigeria. This could be because the respondents in the study were drawn from public secondary schools rather than the private secondary schools. Students that attend private schools typically have exceptional records and accomplishments in both academic and extracurricular pursuits. The objective of these private schools is to position themselves as superior to others. As a result, leisure reading is one of the many activities available to students who attend such institutions. This is not always the case in public schools. Similarly, McKenna, Conradi, Lawrence, Jang, and Meyer (2012) conducted a study on reading attitudes among middle school students in the United States and found a notable rise in negative attitudes towards reading. This could result in decline of leisure reading.

The frequency of reading is another indicator of the level of leisure reading. Mak and Fancourt (2020) found that approximately 70% of learners participated in reading daily and at least once a week, likely due to the abundance of books available at home and the influence of their parents. Sotiloye and Bodunde (2018), also discovered that the majority of students also read daily and weekly while investigating the reading frequency of students at the Federal University of Agriculture, Abeokuta (FUNAAB), Nigeria. Contrarily, Munawir and Ramli (2021) found frequency in reading to be low among 70.5% of the sampled students while examining the correlation between students' reading habit and vocabulary

mastery. Perhaps, the outcome could be different when students read genres they found interesting.

In respect of genre of preference, Adigun (2023) discovered that fiction materials were ranked highest among all the materials read by sampled respondents. This was also the case with Munawir and Ramli (2021), where fiction materials were shown to be the most popular reading materials among the students sampled. Reading fictional materials would influence the amount of time spent reading. Omoba (2020) investigated pleasure reading among 765 learners attending university-owned senior secondary schools in South Western Nigeria. A large proportion of the students reported spending between 30 minutes and 1 hour each week on reading for pleasure. The university-owned SSII students primarily read adventures, short stories, and comics.

Leisure reading materials could be accessed through different media and according to Loan (2017), 71% of senior secondary school students in India, choose to read print over digital forms (5.33%). But a significant number of students gravitated towards using both print and digital forms (23%) for reading. In general, 68% of the 75 male students who participated in the study preferred digital forms of reading just as 75% of the 75 female students too. Contrarily, Twenge, Martin and Spitzberg (2018) in the study examining the U.S. Adolescents' media use and reading in print especially. The study used data that surveyed 50,000 students in three different grades of education (8, 10 and 12) from a period of 1976 to 2016. It was found that reading print media declined over the years. Only 16% of the sampled students read books or magazines daily, compared to 48% in the 1970s.

Another discovery made was that the deterioration got more severe after the 1990s. According to the report, today's teenagers devote a greater amount of time online and less time to conventional media than previous generations. As of 2010, a 12th grade pupil engaged with three digital media during leisure time, investing about quarter of a day, everyday, while a 10th grader spent 5 hours and an eighth grader spent 4 hours on the same number of digital media activities. This is a 200% increase in online browsing time by the 12th grade pupil, a 75% increase for the 10th grader, and a 68% increase for the eighth grader. However, the researchers were shocked by the sharp fall in reading in general. This is because it is so easy to download a magazine or book of choice on an electronic device to read. The need to physically seek has been eliminated.

The implication of all this is that the students of today, as well as secondary school students in Oyo State, Nigeria have less experience with lengthy reading especially in print form and this may result in difficulty in reading assigned textbooks and other materials for assignments and preparation for examinations. It also indicates shorter attention span as is evidenced in how they switch from different tasks and pages as they use the internet. This also suggests that the method of teaching should be modified bearing in mind the peculiarities of today's students.

A logical explanation for this could be the fact that they are digital natives and as such may not be able to survive in a world without digital technology. Hupfeld, Sellen, O'Hara and Rodden (2013) as cited in Kampen Kristensen (2019) found that users of different forms of technology for LR used them because of the benefits which include economic reasons as e-books are assumed to be cheaper than print; save of storage space as well as ease of not having to carry many books about.

Apart from the print materials, technology has made it very easy for students to read a variety of other non-print reading materials. These materials could be accessed via smart phones with internet connection and this is easy to come by in Nigeria and specifically Oyo State. The implication is that students may be reading materials other than story books via their smart phones or via the internet.

Studies conducted in Nigeria by Babalola (2020), who sampled 200 junior secondary students from 10 public schools using the multi stage sampling procedure in Ekiti State reported that most of Nigerian students are not inclined to read for leisure. They primarily concentrate on studying for examinations. By calculating the amount of time and reading volume, the study aimed to gauge the reading habits of the sampled students. Seventy-nine percent of students said that the only time they focus on reading is when they have exams or assignments. Another 74.5% agreed that they would rather play than indulge in leisure reading. The amount of time they spend reading also reflects how poorly they performed, with 44.5% of students rarely or never reading a book for leisure.

Ogbonna and Eze (2015) corroborate the existence of little or lack of leisure reading among secondary students. The study investigated school library reading programmes and the influence they had on secondary school students' leisure reading in Imo state, Nigeria. The population was restricted to state and a few unity secondary schools who had librarians available full time in the school libraries. Twenty nine (29)

teacher librarians from 27 state and 2 unity secondary schools as well as 1000 students were purposively sampled to provide data through the questionnaire and interview. Though it was found that school reading programmes have a positive effect on leisure reading, however, students were not reading as much as they should as a result of the heavy academic workload they are subjected to at school. So much that they are exhausted and only manage to eat, complete school assignments and sleep once they get home. The teacher librarians are also confronted with so much work load preventing them from creating, planning and implementing different reading programmes that will impact the students of the schools positively and invariably ignite their passion and interest in reading for leisure.

According to a correlational study conducted by Reski (2018) among 30 students at UNCP (Universitas Cokroaminoto Palopo), data was collected using both a questionnaire and a test. The findings indicated that reading interest was low. The majority of students had little interest in reading, as evidenced by reading assignments that consisted of several simple passages. The students preferred to answer the passage straight away without necessarily reading the content of the passage. The evidence of this study is suspected to be a likely scenario among secondary schools students in Oyo State, Nigeria.

However, Dewi, Hasanah, and Wahyudi (2020) discovered a completely different result. A creative reading comprehension group investigated, showed a high level of reading interest. This finding demonstrates that the more students read, the easier it is for them to comprehend the meaning of what they read, both explicitly and implicitly. The study looked at 38 students to see if there was a link between their reading interest and their reading comprehension. From April to May 2019, quantitative data were collected using a questionnaire and a multichoice reading comprehension test to test this hypothesis. Similarly, Astriani, Ginanjar, and Aisiyiah (2022) investigated the reading interest of senior high school students during the pandemic Covid-19 based on emotional factor, self-motivation factor, and social factor using qualitative descriptive research. It was found that the reading interest of senior high school students during the pandemic was considered good from motivational factor, emotional factor, and social factor.

This is evidenced in the study of Anyaegbu, Aghauche and Nnamani (2016) which investigated poor reading habits and the effect it had on academic performance of junior secondary school students in Enugu South LGA of Enugu State, Nigeria. The study found that majority of the students were simply not interested in LR. They read only because they had no choice

and this only occurred while preparing for school examinations or when they had graded assignments due for submission. The study further reports that despite the attempt of individuals with whom they shared relationships (parents, teachers, peers and friends) to encourage them to read, lure and entice as much as they could, the secondary school students did not read beyond for academic purpose. They did not read newspapers, magazines, comics nor novels.

Objectives of the Study

The main objective of this study was to investigate the extent to which reading interest determines leisure reading among secondary school students in Oyo State, Nigeria, while the specific objective was to identify the level of reading interest in leisure reading among private secondary school students in Oyo State, Nigeria.

Research Questions

1. What is the level of leisure reading among private secondary school students in Oyo State, Nigeria?
2. What is the level of reading interest in leisure reading among private secondary
3. school students in Oyo state, Nigeria?

Hypothesis

There is no significant relationship between reading interest and leisure reading among private secondary school students in Oyo state, Nigeria.

Research Methodology

The concurrent mixed methods (QUAN+qual) design was used. Questionnaire and focus group discussion (FGD) guide are the research tools that were utilised to gather data. Quantitative data was collected from a total of 1,315 SS II students. This was achieved by adopting the multi-stage sampling procedure. First, four (Ibadan city, Ibarapa, Oyo State and Ogbomosho) out of the eight educational zones in Oyo State were randomly selected. Second, the probability proportionate to size (PPS) sampling technique was used to choose 10 (Ibadan North, Ibadan North West, Ibadan South West, Ibarapa Central, Ibarapa North, Afijio, Oyo State East, Ogbomosho North, Ogbomosho South, Ogo - Oluwa) of the 17 local government areas (LGA) in the selected educational zones. The third stage used the proportionate to size sampling technique to select 20.0% of the total number of schools in each selected local government area, which gave a total of 46 private secondary schools. Finally, all SS II students were enumerated.

Qualitative data was collected from 32 SSII students (Eight SSII Students, four boys and four girls, from 4 private secondary schools). First, purposive sampling of four out of the eight educational zones was done. The zones selected were the same as those in the quantitative sample. Second, from each selected educational zone, one LGA was randomly picked (Ogo - Oluwa, Oyo East, Ibarapa Central, and Ibadan North West). The third stage used the simple random sampling technique to select one private secondary school from each LGA. The final stage had the purposive sampling technique deployed to choose eight SSII students.

Data Analysis and Discussion of Findings

Research Question One: What is the level of leisure reading among private secondary school students in Oyo State, Nigeria? This research question aimed to ascertain the degree of leisure reading among private secondary school students in Oyo State, Nigeria. The indicators utilised are reading attitude, reading frequency, genre of preference and time spent reading. Table 1 below presents data on the reading attitude of the respondents towards leisure reading.

Table 1: Students' Attitude towards Leisure Reading among Private Secondary School Students in Oyo State, Nigeria

S/N	ITEMS	SA	A	D	SD	$\bar{X}$	S.D
1	I feel good reading stories and news online from social media and other apps.	318 38.2%	439 52.7%	72 8.6%	4 0.5%	3.29	0.84
2	I enjoy reading for leisure at home.	320 38.4%	415 49.8%	68 8.2%	30 3.6%	3.23	1.33
3	I like texting/messaging/chatting online with friends in my free time.	399 47.9%	275 33.0%	86 10.3%	73 8.8%	3.20	0.95
4	I like receiving books/novels/magazines/com	334 40.1%	314 37.7%	120 14.4%	65 7.8%	3.10	0.93

	ics etc. as gifts.						
5	I enjoy reading for pleasure in my spare time while attending school.	190 22.8%	436 52.3%	157 18.9%	50 6.0%	2.92	0.81
6	I enjoy spending my weekends reading for fun.	213 25.6%	379 45.5%	173 20.8%	68 8.1%	2.88	0.88
7	I like going to the bookshop to buy novels, magazines, comics etc. to read.	267 32.0%	275 33.0%	169 20.3%	122 14.7%	2.82	1.04
8	I prefer reading for leisure instead of watching TV.	183 22.0%	334 40.1%	215 25.8%	101 12.1%	2.72	0.94
9	I would rather read for leisure during my break time at school.	148 17.8%	285 34.2%	295 35.4%	105 12.6%	2.57	0.92
10	I feel the library is not a suitable place to read for fun.	197 23.6%	252 30.3%	197 23.6%	187 22.4%	2.55	1.08
Weighted mean = 3.24							
Criterion mean = 2.50							

The results indicate a high level of leisure reading (LR) among secondary school students, with a positive attitude (weighted mean = 3.24, benchmark = 2.50). Most students (90.9%) enjoyed reading online, particularly from social media and blogs (mean = 3.29), while only 9.1% disliked it. In contrast, 53.9% agreed that libraries were unsuitable for LR (mean = 2.55). A majority (88.2%) preferred reading at home, and 71% enjoyed weekend LR. Additionally, 80.9% engaged in online chatting, reflecting a preference for digital platforms over traditional library settings.

Table 2: Reading Frequency of Students in Private Secondary School in Oyo State, Nigeria

Reading Frequency								
S/N	Reading Materials	Daily	Weekly	Monthly	Yearly	Never	$\bar{X}$	S.D
1	Fiction	315 37.8%	249 29.9%	133 16.0%	45 5.4%	91 10.9%	3.78	1.30
2	Short story	450 54.0%	212 25.5%	94 11.3%	37 4.4%	40 4.8%	4.19	1.10
3	Adventure	312 37.5%	238 28.6%	156 18.7%	66 7.9%	61 7.3%	3.81	1.23
4	Fantasy	276 33.1%	221 26.5%	162 19.5%	60 7.2%	114 13.7%	3.58	1.37
5	Comics	249 29.9%	231 27.7%	174 20.9%	65 7.0%	114 13.7%	3.52	1.35
6	Science fiction	274 32.9%	212 25.5%	137 16.5%	50 6.00%	160 19.1%	3.47	1.48
7	Mystery	224 26.9%	225 27.0%	158 19.0%	92 11.0%	134 16.1%	3.38	1.40
8	Poems	240 28.8%	196 23.5%	157 18.9%	85 10.2%	155 18.6%	3.34	1.46
9	Romance	224 26.9%	153 18.4%	138 16.6%	70 8.4%	248 29.7%	3.04	1.59
10	Non fiction	211 25.3%	292 35.0%	170 20.4%	53 6.3%	107 13.0%	3.54	1.29
11	Biography	213 25.6%	214 25.7%	165 19.8%	101 12.1%	140 16.8%	3.31	1.41
12	Autobiography	185 22.2%	192 23.1%	190 22.8%	113 13.6%	153 18.3%	3.17	2.97
13	Electr	200	188	145	76	224	3.08	1.53

	onic textbo oks	24.0 %	22.6%	17.4%	9.1%	26.9 %		
14	Other s, please specif y	221 26.5 %	152 18.3%	132 15.9%	117 14.0 %	211 25.3 %	3.07	1.55
15	News papers	178 21.4 %	163 19.6%	141 16.9%	103 12.4 %	248 29.7 %	2.90	1.54
Weighted mean = 3.41								
Criterion mean = 3.00								

Results indicate high reading frequency (weighted mean = 3.41, benchmark = 3.00), with fiction (mean = 3.78) preferred over non-fiction (mean = 3.54). Daily fiction readers comprised 37.8%, weekly 29.9%, and monthly 16.0%, while infrequent fiction readers (yearly/never) were 16.3%; lower than non-fiction's 19.3%. Short stories dominated daily fiction reading (54.0%), likely due to time efficiency, whereas romance was least preferred (26.9% daily, mean = 3.04). In non-fiction, biographies ranked highest (mean = 3.31), while newspapers scored lowest (mean = 2.90), with 42% rarely or never reading them. Table 1.3 further details material preferences and access media.

Table 3: Genre of Preference of Students in Private Secondary School in Oyo State, Nigeria

S/ N	ITEMS	MP	P	LP	NP	$\bar{X}$	S.D
1	Fiction novels, magazines, chats.	406 48.7%	287 34.5 %	84 10.1%	56 6.7 %	3.25	0.89
2	Non-Fiction textbooks, dictionary...	221 26.5%	365 43.8 %	171 20.5%	76 9.2 %	2.88	0.91
Which of the following categories of non-fiction do you prefer?							
3	Past questions and answers	419 50.3%	281 33.7 %	84 10.1%	49 5.9 %	3.28	0.87
4	Textbooks	358 43.0%	322 38.7 %	111 13.3%	42 5.0 %	3.20	0.85
5	Historical books	287 34.4%	259 31.1 %	186 22.3%	102 12.2 %	2.88	1.02
6	Dictionary/Encyclopedia	212 25.5%	374 44.9 %	174 20.9%	73 8.7 %	2.87	0.89
7	Biographies	219 26.3%	304 36.5 %	194 23.2%	117 14.0 %	2.75	1.00

8	Autobiographies	211 25.3%	284 34.1 %	211 25.3%	127 15.3 %	2.70	1.01
9	Electronic textbooks and worksheets	218 26.2%	258 31.0 %	176 21.1%	181 21.7 %	2.62	1.10
Which of the following categories of fiction books do you prefer?							
10	Adventure	399 48.0%	284 34.9 %	98 11.8%	52 6.3 %	3.24	0.89
11	Series	389 46.6%	271 32.5 %	122 14.6%	52 6.3 %	3.20	0.91
12	Fantasies	354 42.5%	286 34.3 %	124 14.9%	69 8.3 %	3.11	0.95
13	Comics	359 43.1%	271 32.5 %	121 14.5%	82 9.8 %	3.09	0.98
14	Historical fictions	290 34.8%	269 32.3 %	168 20.2%	106 12.7 %	2.89	1.02
15	Folklore	265 31.8%	269 32.3 %	177 21.3%	122 14.6 %	2.81	1.04
16	Romance	305 36.6%	189 22.7 %	127 15.3%	212 25.4 %	2.70	1.21
17	Poetry	234 28.1%	252 30.3 %	180 21.6%	167 20.0 %	2.66	1.06
Which medium do you prefer to access your reading materials?							
18	Online/Internet social media, blogs, text, e-mail, apps, etc.	515 61.8%	209 25.1 %	68 8.2%	41 4.9 %	3.44	0.84
19	Print/paper copy	332 39.9%	288 34.6 %	123 14.7%	90 10.8 %	3.03	0.99
S/ N	ITEMS	MP	P	LP	NP	$\bar{X}$	S.D
What kind of information do you read about?							
20	Information about my academics and assignment	555 66.6%	207 24.9 %	46 5.5%	25 3.0 %	3.55	0.74
21	Information about songs and lyrics	438 52.6%	229 27.5 %	103 12.4%	63 7.5 %	3.25	0.94
22	Information about celebrities	368 44.2%	243 29.2 %	124 14.9%	98 11.7 %	3.06	1.03

23	Information about drugs	264 31.7%	263 31.6 %	183 22.0%	123 14.7 %	2.80	1.05
24	Information about relationships	212 25.5%	218 26.2 %	205 24.6%	198 23.7 %	2.53	1.11
25	Information about sex and health	181 21.7%	265 31.8 %	173 20.7%	215 25.8 %	2.49	1.10

Students preferred fiction (mean=3.25) over non-fiction (mean=2.88), with 83.1% favouring fiction versus 70.4% for non-fiction. Among non-fiction, past questions (mean=3.29, 83.9%) were most preferred, likely due to exam preparation needs, while electronic textbooks scored lowest (mean=2.62, 42.7%). In fiction, adventure books ranked highest (mean=3.24, 81.9%), followed by series (mean=3.20), with poetry being least preferred (mean=2.66, 41.9%). Most students accessed materials digitally (mean=3.44, 86.9%) rather than print (74.7%). Academic content was most read (mean=3.56, 91.5%), while sex/health topics were least sought (mean=2.49, 46.5%). Table 1.4 details time spent on leisure reading.

Table 4: Time Spent Reading for Leisure by Private Secondary School Students in Oyo State, Nigeria

S/N	TIME	Frequency	%
1	Less than 30 mins	105	12.6
2	Between 30 mins -1 hour 59 mins	359	43.1
3	Between 2 hours – 3 hours	252	30.3
4	More than 3 hours	117	14.0

Results show students most frequently engage in leisure reading (LR) for 30 minutes to 1 hour 59 minutes. Overall, LR level among secondary school students in Oyo State, Nigeria is high due to positive attitudes, frequent engagement (particularly with online fiction materials), and this typical time investment per session.

Thematic analysis of focus group discussions revealed four key benefits of leisure reading (LR): moral development (enhancing ethical/cultural understanding), academic development (both school-related and broader knowledge acquisition), and socio-personal benefits. Students reported reading ahead of class and improving English skills, with one noting LR helps "with reading for academics and improves our English conversation." Others emphasised LR's role in exploring beyond formal education, as one student stated: "to gain new things...not taught in class." These findings highlight LR's dual role in supporting academic success and fostering independent, curiosity-driven learning.

The analysis highlighted LR's socio-personal benefits, fostering personal growth and creative fulfillment. As a student from Olivet Baptist Academy noted, LR provided "fulfilled imagination," demonstrating its enrichment beyond academics. Combined with moral and academic benefits (enhanced ethics and classroom performance), LR emerged as a holistic developmental tool, sparking curiosity and well-being.

Discussions revealed divided format preferences. Some students favored print due to accessibility ("because in print no internet is needed" - Al-Kawthar Science College student), personal comfort, and easier comprehension. Others preferred digital for its advantages, a student from Olivet Baptist Academy noted electronic formats allowed looking up words instantly while reading. Key factors included affordability, mobility, and the ability to access supplementary materials through links.

Students highlighted key advantages of digital reading: linkability ("you can easily access the dictionary on your phone" - Olivet Baptist student) and access to supplementary information (Al-Kawthar Science student noted finding "more information about the same thing"). Affordability and mobility were major factors, with an Olayemi Highview student emphasising: "you can read on it anywhere." Print preferences stemmed from availability and ease of use. Some students used both formats contextually, "In print form at school...at home, I read on my phone" (Olayemi Highview). Format choices ultimately depended on accessibility, convenience, and reading purposes.

Research Question Two: What is the level of reading interest in leisure reading among private secondary school students in Oyo State, Nigeria?

The aim of this question is to identify the level of reading interest private secondary school students possess in LR. Table 5 below displays data on reading interests of secondary school students.

Table 5: Reading Interest of Private Secondary School Students in Oyo State, Nigeria in Leisure Reading

S/N	Items	SA	A	D	SD	$\bar{X}$	S.D
1	I get really excited about materials novels, magazines, chats I have read.	367 44.1 %	359 43.1 %	66 7.9 %	41 4.9%	3.27	0.83

2	I love to read for fun.	354 42.5 %	328 39.3 %	110 13.2 %	41 5.0%	3.19	0.85
3	I don't feel fulfilled until I have read a material novel, magazine, chats of choice for fun in a day.	303 36.4 %	305 36.6 %	155 18.6 %	70 8.4%	3.01	0.94
4	I like to visit bookshops to get books and magazines to read for leisure.	259 31.1 %	273 32.8 %	176 21.1 %	125 15.0 %	2.80	1.04
5	I enjoy going to the school library to read for fun in my leisure time.	210 25.2 %	291 34.9 %	202 24.3 %	130 15.6 %	2.70	1.01
Weighted mean = 3.00							
Criterion mean = 2.50							

Results showed strong leisure reading interest (mean=3.00 vs. 2.50 benchmark), with highest excitement for reading materials (novels, magazines, chats) that had been read (mean=3.27, 87.1% agreement). Library reading scored lowest (mean=2.70, 60%). Students cited multiple motivations: escaping boredom ("kill a boring environment" - Kastad Royal Academy), pleasure, and learning. As one student noted, LR transforms mundane moments into stimulating experiences, highlighting its dual role in entertainment and intellectual engagement.

Students cited multiple motivations for leisure reading (LR): pure pleasure ("just because it is interesting" - Kastad Royal Academy), knowledge-seeking ("to learn some things about the world" - Olayomi Highview student), and therapeutic relief ("to ease past memories" - Kastad Royal Academy). While library reading scored lower (mean=2.70), LR served as both entertainment and self-improvement, offering intellectual stimulation ("discover more about specific things") and emotional solace. These findings demonstrate LR's multifaceted value in students' personal and academic development.

Testing of Hypothesis

Hypothesis: There is no significant relationship between reading interest and leisure reading among private secondary school students in Oyo State, Nigeria

Table 6: Correlation Table of Reading Interest and Leisure Reading among Private Secondary School Students in Oyo State, Nigeria

	N	Mean	r	p	Remark
Leisure Reading	833	29.31	0.466	0.000	Significant
Reading Interest	833	14.96			

The table presented results confirmed the relationship between reading interest and leisure reading is positive, moderate and significant ($r = 0.466$; $p < 0.05$). The significant p-value is 0.000 which is lower than the 0.05 level of significance. Consequently, the null hypothesis that there is no significant relationship between reading interest and leisure reading among private secondary school students in Oyo State, Nigeria is rejected. This implies increasing the reading interest will increase the leisure reading of private secondary school students.

Discussions

Level of Leisure Reading among Private secondary school students in Oyo State, Nigeria

The quantitative data from this study show that secondary school students in Oyo State, Nigeria have a positive attitude towards leisure reading. The findings are consistent with the findings of Baba and Affendi (2020) which revealed that students had a positive attitude towards LR. The reason as found in the later study could be as a result of the influence of the student's teachers and parents. In the current study, a good proportion of the parents of the secondary school students are educated with Masters' degrees and Ph. Ds as their highest qualifications. This could mean that the parents have influenced their children, encouraging them to continually develop their intellect and interest in LR.

Similarly, Ashcroft (2017) found a strong positive attitude towards reading in general were revealed. The attitude towards home and school reading among year 3 students in an English school was examined. A probable reason why the aforementioned studies had respondents with positive attitude towards LR could be the presence of individuals, parents, teachers or even peers who introduced or encouraged leisure reading. Tunde-Awe (2014), on the other hand, discovered negative attitudes among senior secondary school II students in Kwara State, Nigeria. This could be because the respondents in the study were drawn from public secondary schools rather than the private secondary school students used in the current study. Private schools are noted for producing students with outstanding records and achievements in both academic and non-academic fields. The aim of such private schools is to establish themselves as high-quality institutions when compared to other private and even public schools. As a result,

students who attend such schools have access to a variety of activities, including leisure reading.

The findings of this study also refuted those of McKenna, Conradi, Lawrence, Jang and Meyer (2012). The study investigated reading attitudes among middle school students in the United States and established there was a general increase in negative attitudes towards reading. The negative attitude was found to be more pronounced in academic reading rather than in LR. This could mean that students did not like reading for school work, assignments and examinations but would rather read for leisure as is the case in this study. It could also be that the aversion for academic reading also lead to the decline in attitude towards LR. Because students do not like reading for academic purpose, they invariably spend a longer time completing academic work, leaving a short period of time for leisure.

The results of this research showed that reading frequency was high with students reading fiction daily and weekly. This reinforces the results that were obtained by Mak and Fancourt (2020) who discovered that about 70% of of the learners engaged in reading daily and at least once a week which was most likely as a result of the large number of books present in the home as well as the influence of the parents. Sotiloye and Bodunde (2018), also discovered that the majority of students also read daily and weekly while investigating the reading frequency of students at the Federal University of Agriculture, Abeokuta (FUNAAB), Nigeria. The current study's findings, on the other hand, differ from those of Munawir and Ramli (2021) where frequency in reading was found to be low among 70.5% of the sampled students while examining the correlation between students' reading habit and vocabulary mastery. Fiction materials were shown to be the most popular reading materials among the present research's subjects. This aligns with the research results of Adigun (2023), who discovered that fiction materials were ranked highest among all the materials read by sampled respondents.

The majority of students in this study chose to access their reading materials via the Internet. This was evident in both quantitative and qualitative data collected. This supports the findings of Twenge, Martin, and Spitzberg (2018), who discovered that reading from print media decreased dramatically among American adolescents between 1976 and 2016. However, according to Loan (2017), 71% of students in India still prefer to read in print. This could be because students in Nigeria and the United States of America could easily access electronic devices compared to their Indian counterparts.

Data from focus group discussions with secondary students in Oyo State, Nigeria, collected during this study, revealed reasons for their preference for electronic reading materials over print, including affordability, ease of access, mobility (such as not having to carry books around), personal preference, comfort and convenience, and the ability to quickly link other related materials in one place. Similarly, Hupfeld, Sellen, O'Hara, and Rodden (2013) as cited in Kampen Kristensen (2019) discovered several matching reasons for the choice of digital reading materials (e-books) which was assumed to be less expensive than print, and the convenience of not having to carry many books.

Students in this study searched for information about academics and assignments the most, followed by information about songs and lyrics, celebrities, drugs (medicines), relationships, and sex and health in that order. These were echoed in responses given as expected benefits of LR during focus group discussions. They were divided into four sub-themes: moral development, academic development (based on school work), academic development (outside of school work), and socio-personal benefits.

These responses confirm that one way secondary school students in Oyo State, Nigeria, seek needed information is through LR. And the online space allows for such evaluations to be done discreetly and privately. As a result, it is critical for parents, teachers, and other individuals charged with the welfare of these students to make open and trusted channels available. This will enable students to freely use and receive guided and appropriate recommendations of what materials to read and where to find them in their spare time, particularly those addressing sensitive and critical topics such as information about drugs (medicines), information about relationships, and information about sex and health. It is clear that secondary students in Oyo State, Nigeria, spend between 30 minutes and 1 hour 59 minutes reading for leisure. This was in contrast to the findings of Omoba (2020), who found that students read for 30 minutes to an hour per week.

In summary, this study's high level of LR runs counter to Babalola's (2020) findings, which suggested that most Nigerian students only read for academic purposes and do not engage in LR at all. Similarly, Ogbonna and Eze (2015) asserted that there is little or no LR among secondary students. The heavy academic workload that students were subjected to was blamed for the outcome. Apart from being based in Nigeria, all of the studies that contradict the high level of LR observed in this

study have one factor in common, which could explain why they all produce the same results. They were all unable to accommodate the emergence of online reading.

Level of Reading Interest in Leisure Reading among Private school students in Oyo State, Nigeria

Secondary school students in Oyo State, Nigeria, had a high level of reading interest. This supports the findings of Dewi, Hasanah, and Wahyudi (2020), who discovered a high level of reading interest among the students sampled. This similarity in outcome was most likely caused by the students' increased participation in LR. The more they read, the greater their chances of comprehension and enjoyment. Also, Astriani, Ginanjar, and Aisyiyah (2022) determined that the reading interest of senior high school students during the pandemic was good. Other studies, however, contradict the current study's findings. Anyaegbu, Aghauche, and Nnamani (2016), on the other hand, discovered that many students were uninterested in LR. They read only because they were required to and for academic purposes.

Similarly, Reski (2018), there was a low level of reading interest. It was visible even in the academic performance of students who simply wanted to provide answers without reading the content of the passages provided. The low level of reading interest could have resulted from a focus on academics, which caused students to dread the amount of work that needed to be done. Work that they would rather avoid in favour of doing something more interesting. Furthermore, a lack of access to and availability of reading materials of choice may kill any interest the students had in LR. The reasons for their interest in LR were revealed by participants in focus groups. Some of them read for pure enjoyment and leisure, while others read to kill boredom. One participant cited the therapeutic nature of LR as a motivating factor for engaging in it. 'To ease past memories,' said the participant. Several students stated that reading for leisure allowed them to learn, gain knowledge, and explore.

Conclusion and Recommendation

Leisure reading plays a significant role in the quality of life and education of secondary school students. This study investigated how reading interest affects leisure reading among private secondary school students in Oyo State, Nigeria. The study has shown that high reading interest could enhance the leisure reading of students. To sustain the interest of students in leisure reading, efforts must be made to increase the students' reading interest. There is need for secondary school students to sustain the high level of LR and reading interest, using more of their

preferred media (online/internet) to meet their information and entertainment needs.

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Impact of Library Publishing on Academic Communities and Scholarship: A Review

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Abstract

Academic and public libraries now emerge as active participants in the publishing landscape, challenging traditional publisher roles and models. This development reflects a collective desire to democratise access to information, foster scholarly innovation, and enhance the visibility of diverse research outputs. Conventional publishing frameworks often impose financial, accessibility, and intellectual barriers, limiting the equitable dissemination of scholarly work. However, libraries face increasing pressure to address these constraints and respond to the evolving needs of researchers, students, and the broader community. This study aims to examine innovative models of library-led publishing, evaluate their influence on scholarly communication, and identify effective strategies that maximise reach and inclusivity in knowledge dissemination. A narrative review approach surveys published literature, institutional reports, and documented case studies on library publishing initiatives. This method enables a synthesis of theoretical developments and practical outcomes across a range of institutional contexts. Library publishing activities, including open access journals, institutional repositories, and student-led publications, foster greater transparency, affordability, and author control over intellectual output. New models prioritise flexible dissemination, support digital scholarship, and cultivate collaborations across disciplines. Libraries leverage technical infrastructure and expertise to enhance metadata quality, long-term preservation, and research discoverability. Challenges persist around sustainability, copyright management, and alignment with academic incentive structures. Library-led publishing advances a more open, nimble, and collaborative model of scholarly communication, though sustainable resourcing and institutional recognition remain essential. Stakeholders should foster cross-institutional alliances, advocate for robust funding models, and develop targeted training to build publishing capacity within libraries. Ongoing assessment and iterative improvements will ensure library publishing continues shaping an equitable future for scholarship.

Keywords: *Library publishing, Scholarly communication, Open access, Digital scholarship, Knowledge dissemination*

Introduction

The role of academic and public libraries in scholarly publishing has undergone profound transformation in recent years, reflecting broader changes within the global information landscape. Traditionally, libraries have served primarily as custodians and gatekeepers of knowledge, maintaining physical collections and supporting researcher access within the confines of institutional boundaries. However, the rapid advancement of digital technologies and the rising demand for more accessible, transparent, and efficient forms of scholarly communication have compelled libraries to redefine their functions. Increasingly, they act as active facilitators and producers within the scholarly ecosystem rather than merely as passive repositories. In Nigeria and other parts of Africa, this evolution embodies a critical response to enduring challenges related to information access, resource constraints, and inequities in knowledge dissemination. According to Adeyeye and Oladokun (2022), Nigerian academic libraries have begun to incorporate digital infrastructures and even artificial intelligence tools to enhance research support, demonstrating a shift towards innovation despite ongoing infrastructural and capacity challenges. The National Library of Nigeria has spearheaded efforts to develop multidisciplinary digital platforms aiming to democratise access to academic and public information resources (National Library of Nigeria, 2021). These changes signal a growing recognition among African libraries that active engagement in scholarly publishing is indispensable for fostering inclusive knowledge creation and ensuring equitable participation in global scholarship.

Within this evolving context, the traditional models of scholarly publishing continue to pose significant barriers that undermine equity and knowledge sharing, especially for scholars and institutions situated in developing regions. The conventional academic publishing system typically operates under subscription-based frameworks controlled by commercial publishers that wield considerable power over access, pricing, and copyright governance. For many African researchers, this model translates into financial and systemic exclusion. Okoro and Okoro (2020) highlight how prohibitive costs related to journal subscriptions and publication fees create an uneven playing field, restricting opportunities for scholars to access or disseminate research freely.

Moreover, entrenched copyright transfer requirements often strip authors of the autonomy to reuse or share their own work openly, curbing the dissemination potential of their scholarship (Chisenga, 2019). Further compounding these challenges are

lengthy and opaque peer review processes that delay the availability of new knowledge, potentially impeding responsiveness in critical fields. African scholarship, in particular, faces marginalisation due to editorial biases, language barriers, and underrepresentation in prominent international indexes (Adomi & Onyenania, 2019). Chisenga's (2019) analysis reveals that less than two percent of journals listed in major open access directories originate from the African continent, underscoring systemic exclusion. Nigerian scholars echo these observations, noting that despite libraries' pivotal role in supporting research, infrastructural deficits and limited digital literacy constrain full engagement in emerging scholarly communication paradigms (Adeyeye & Oladokun, 2022).

In light of these persistent inequities, there is an urgent need to investigate alternative publishing models that foreground equity, accessibility, and innovation. Library-led publishing initiatives have emerged as a promising avenue, representing a voluntary reorientation from commercial profit motives towards public interest and social justice principles. Such initiatives typically harness open access frameworks, emphasize author rights retention, and adapt publishing workflows to foster transparency and inclusivity. The University of Cape Town's library-led publishing platform offers a pertinent example within the African context (Shunm, 2023). This service promotes open access and supports a broad diversity of scholarly voices, enabling marginalized researchers to achieve wider visibility and impact. Similarly, Nigerian libraries have made concerted efforts to develop e-library infrastructures that facilitate repository services and researcher support, navigating persistent challenges related to funding and digital capacity (National Library of Nigeria, 2021). These initiatives collectively reflect libraries' growing ambition to not only support knowledge consumption but to actively shape scholarly communication ecosystems.

This study therefore seeks to explore how library-led publishing models contribute to dismantling traditional barriers in scholarly communication and advancing continuous innovation and equity within academic knowledge landscapes in Africa, focusing specifically on Nigeria. The investigation centres on how libraries manage to enhance equitable access for readers and authors, reduce financial and systemic constraints, and promote diversity of views and inclusive participation in research dissemination. It also critically examines challenges undermining the scalability and sustainability of such models within local institutional and national contexts. Recent literature and case studies suggest that while library-led publishing holds

transformative potential, addressing persistent issues such as limited funding, capacity gaps, and alignment with academic incentive structures remains essential for long-term success (Adeyeye & Oladokun, 2022; National Library of Nigeria, 2021).

Through a narrative synthesis of empirical studies and institutional reports, this research aims to present a nuanced understanding of how African and Nigerian libraries are reimagining their roles in scholarly publishing. It seeks to demonstrate that embracing library-led approaches is not merely a timely innovation but a necessary step towards rectifying global knowledge inequalities and fostering a more inclusive, collaborative, and sustainable scholarly communication landscape. Therefore, this study highlights the potential to shift publishing practices towards models that prioritise accessibility, community engagement, and knowledge sovereignty. Ultimately, rethinking libraries as active publishers empowered with appropriate resources and policy support can catalyse sustained academic innovation and broaden the reach of underrepresented voices within global scholarship.

Statement of the Problem

The traditional scholarly publishing landscape, long dominated by established commercial entities, presents significant systemic barriers that impede equitable access, affordability, and author control over intellectual property. These entrenched practices have created a complex set of challenges, particularly for academic and public libraries striving to meet the evolving information needs of researchers and diverse communities. The problem is multifaceted, encompassing financial constraints, pervasive accessibility issues, and restrictive intellectual property regimes that collectively hinder the free flow of knowledge and disproportionately affect scholars and institutions in the Global South. Financial barriers represent a primary concern. The exorbitant subscription costs demanded by many commercial journals and databases place an immense strain on library budgets globally, and especially in African nations. Many universities and research institutions struggle to afford essential scholarly resources, leading to information poverty and limiting the research capacity of their academic staff and students (Okoro & Okoro, 2020). This financial strain is compounded by the high fees often associated with open access publication in top-tier journals, which, as a study confirmed, significantly contribute to Nigeria's low contribution to recognised world research literature (Fadare et al., 2020). Consequently, research produced in financially constrained environments often remains less visible on the

global stage, or is published in lower-impact venues, perpetuating a cycle of marginalisation (Kanyika & Kim, 2025).

Compounding financial hurdles are pervasive accessibility barriers. Beyond paywalls, the limited representation of African-authored journals in reputable international databases like Scopus further restricts the discoverability and impact of African scholarship (Kanyika & Kim, 2025). This underrepresentation is partly due to the specific standards set by these databases which many African journals find difficult to meet, regardless of their intrinsic quality. This creates a form of "bibliometric coloniality" where Northern-centric indexing systems inadvertently marginalise knowledge production from the Global South (Heleta, 2025). As a result, scholarly output from Africa, while increasing in volume, struggles to gain international visibility, diminishing its potential influence on global discourse and policy (Fadare et al., 2020). Even within Nigeria, the once "lively academic publishing scene" has largely receded, with many university presses becoming dormant, primarily due to financial constraints and management policies that prioritise commercial viability over scholarly output (Zell, 2024).

Furthermore, the intellectual property framework inherent in traditional publishing models often requires authors to transfer their copyright to publishers. This practice severely limits authors' ability to control the dissemination of their own work, hindering its broad sharing and reuse. This restrictive approach conflicts directly with the principles of open scholarship and perpetuates a system where knowledge becomes a commodity rather than a public good. While there is a growing recognition of the benefits of open access in Nigeria, the actual uptake has been slow due to factors like lack of awareness, inadequate advocacy, and poor infrastructure (Akor, 2016). Libraries, which are tasked with providing access to information, find themselves caught between rising costs, limited access to local scholarship, and the imperative to foster an environment conducive to open scholarship. Ultimately, these financial, accessibility, and intellectual property barriers prevent libraries from fully supporting the evolving needs of their researchers and communities. Researchers require platforms that offer fair publication avenues and maximised visibility, while communities seek free and ready access to research that can address local challenges. The prevailing publishing paradigm undermines these needs, demanding a strategic intervention from libraries to foster more equitable and sustainable scholarly communication ecosystems.

Objectives of the Study

The specific objectives of the study are to:

1. examine how academic libraries develop and manage publishing services that promote open access and reduce dependency on traditional commercial publishers.
2. explore the role of library publishing in enhancing bibliodiversity by supporting diverse, multilingual, and regionally relevant scholarly outputs.
3. analyse how academic libraries integrate publishing initiatives across their organisational structures to embed scholarly communication into their core mission.
4. identify the challenges and opportunities faced by libraries in sustaining publishing programmes, including resource management, infrastructure, capacity building, and institutional support.

Research Questions

The following research questions were provided to guide the study:

1. How do academic libraries develop and manage publishing services that promote open access and reduce dependency on traditional commercial publishers?
2. What role does library publishing play in enhancing bibliodiversity by supporting diverse, multilingual, and regionally relevant scholarly outputs?
3. In what ways do academic libraries integrate publishing initiatives across their organisational structures to embed scholarly communication into their core mission?
4. What challenges and opportunities do libraries face in sustaining publishing programmes, particularly in relation to resource management, infrastructure, capacity building, and institutional support?

Theoretical Background and Context

The transformation of libraries from traditional “stack” models to more dynamic “stream” models of knowledge sharing represents a fundamental shift in how scholarly communication is conceived and practised. Where once libraries served primarily as physical repositories of printed texts, confined to curating, cataloguing, and providing controlled access to static collections, today they increasingly embrace roles centred on the active dissemination and collaborative creation of knowledge. This change parallels the rise of digital scholarship and open access movements, which challenge long-standing publishing paradigms by demanding immediate, barrier-free access to research and enhanced participation of authors and readers in the knowledge cycle.

The traditional “stack” model connotes a place where information resides in relatively fixed, linear collections, mostly accessible within the library’s physical space or through licensed digital databases with limited reach. In contrast, the “stream” concept conjures an image of continuous, fluid knowledge flows, dynamic, unrestricted, and interconnected across global networks. This metaphor captures how digital technologies enable scholarship to be disseminated instantly, freely, and more democratically. The movement from stacks to streams aligns with the broader open access agenda, which seeks to remove paywalls and other barriers that restrict the circulation of research outputs. The open access model foregrounds greater transparency and reuse through policies that allow anyone to read, download, and share scholarly works without financial or legal impediments (Gorman & Rowley, 2015). Such openness redefines the relationship between knowledge producers and consumers, turning scholarship into an interactive, living discourse rather than a commodified, static resource.

Integral to this shift are conceptual frameworks that revolve around open access, author rights, digital scholarship, and collaborative dissemination. Open access functions on the principle that publicly funded research should be publicly available, fostering faster knowledge discovery and equitable information exchange. It challenges the conventional monopoly of commercial publishers by providing legal mechanisms for unrestricted access, commonly through licences like Creative Commons (RWU Library, 2025). This framework balances rights retention for authors with protections against misuse, enabling broader dissemination without sacrificing scholarly integrity. Author rights have undergone reimagining in this context. Previously, authors typically surrendered copyright control to publishers, limiting their ability to share and reuse their own work. The new model encourages authors to retain key rights, empowering them to disseminate research through institutional repositories, personal websites, and open access platforms. This empowers scholars, particularly from underrepresented regions, to circumvent exclusionary publication channels and to engage with diverse audiences (QUT, 2021). The enhanced rights framework also supports innovation in scholarly communication forms, including preprints, data sets, and multimedia outputs.

Digital scholarship interweaves technology, research, and communication practices, expanding the boundaries of academic work beyond the traditional article or monograph. It involves the use of digital tools and platforms not only to produce knowledge but also to share and collaborate with peers

and communities globally. Library publishing facilitates digital scholarship by providing infrastructure and expertise, reinforcing libraries as hubs of innovation within the academic ecosystem (Edwards, 2019). Digital scholarship challenges the fixed, one-way transmission of knowledge, highlighting instead its participatory and iterative nature.

Collaborative dissemination reflects a cultural and technical shift where knowledge creation is no longer isolated but social and networked. This model values collective authoring, peer engagement, and community validation. Library-led publishing models embody this ethos by developing open platforms that encourage inclusivity and dialogue. Unlike traditional publishers that may prioritise commercial interests, library publishers often focus on bibliodiversity, supporting a range of languages, disciplines, and regional knowledge systems that foster a richer, more pluralistic scholarly environment (Aina, 2023). The movement towards streams necessitates a re-examination of scholarly infrastructure, including policies, funding, and recognition systems. Libraries must negotiate complex demands such as sustaining open platforms, training scholars in new publishing forms, and securing legitimacy and prestige in academic reward structures. Despite these challenges, the shift heralds a more agile, equitable, and transparent future for scholarship. The transition from stacks to streams encapsulates a profound recasting of libraries' mission and function, grounded in conceptual frameworks that prioritise open access, author empowerment, innovative scholarship, and collaborative dissemination. This evolution promises not just a change in format but a paradigm shift toward a more inclusive, participatory, and just scholarly communication ecosystem.

Methodology

The methodology chosen for this study is a narrative review of published literature, institutional reports, and case studies focusing on library publishing. This approach has been selected for its strength in synthesising diverse theoretical frameworks alongside practical, contextual insights across various settings. Unlike systematic reviews, which follow rigid protocols primarily to answer narrowly defined questions, narrative reviews provide the flexibility needed to explore emergent and complex topics such as library publishing, a field that is rapidly evolving and multifaceted in nature.

Library publishing as a scholarly communication approach blends conceptual innovation with varied institutional practices, often shaped by cultural, technological, and economic factors. A narrative review aptly captures this complexity by enabling the integration of key themes, trends, and debates across studies,

giving space both to theoretical development and to case-based practical realities (Green, Johnson, & Adams, 2006). Moreover, this approach allows for comparative reflection across different global contexts, incorporating perspectives from Africa and Nigeria, where library publishing is gaining momentum but operates within unique infrastructural and resource challenges (Aina, 2023). One central reason for adopting a narrative review lies in its ability to provide a comprehensive, critical, and interpretive overview. It moves beyond mere summary of findings to critically examine underlying assumptions, highlight contradictions, and identify unresolved questions and research gaps (Snyder, 2019). This is crucial in a field like library publishing where definitions, models, and roles are still fluid and contested. For instance, African institutional reports detail how resource limitations involve nuanced challenges distinctly different from those faced in western contexts, thereby necessitating a flexible review method that can accommodate such diversity (Aina, 2023; National Library of Nigeria, 2021).

Through the narrative approach, key theoretical constructs around open access, author rights, digital scholarship, and collaborative dissemination can be juxtaposed with empirical insights from case studies. Published institutional reports and documented experiences illustrate how library publishers in Nigeria and elsewhere navigate infrastructural deficits, funding insecurities, and policy constraints while striving to democratise knowledge and diversify publishing outlets (Okoro & Okoro, 2020; Edwards, 2019). These studies reveal the interplay between abstract ideals of equity and inclusion and the pragmatic realities of implementation. The narrative methodology thus bridges these dimensions, fostering analytic depth while situating findings within lived contexts.

At a procedural level, the narrative review process involves a purposive and iterative search of academic databases, institutional repositories, and grey literature to identify relevant sources governed by thematic relevance rather than strict inclusion-exclusion criteria (Baumeister & Leary, 1997). This enables the researcher to remain responsive to emerging themes and to incorporate a breadth of voices, including regional studies and policy documents sometimes overlooked in more restrictive reviews. Additionally, the review is organised thematically, exploring first the conceptual frameworks underpinning library publishing, then the operational models reported in diverse contexts, followed by challenges and prospects, offering a coherent structure to the synthesis.

Furthermore, narrative reviews nurture critical reflection through contextualisation and interrogation of literature rather

than mere description. For example, the narrative method can critically assess how the promise of open access confronts infrastructural and economic realities in Nigeria, or how collaborative dissemination requires adaptations for local scholarly cultures (Aina, 2023; Edwards, 2019). Such analytic interrogation highlights tensions, trade-offs, and innovations, enriching understanding of complex phenomena. The narrative review method stands out as a fitting and innovative choice for this study on library publishing. It embraces the complexity of combining theory with practice, affords the flexibility to integrate a wide range of sources, including African and Nigerian scholarship, and supports critical engagement with diverse perspectives. This approach not only synthesises the existing body of knowledge but also illuminates gaps and new directions for research and praxis, positioning the study at the forefront of scholarship on reimagining scholarly communication through library-led initiatives.

Key Innovations in Library Publishing

The landscape of scholarly communication is shifting, with library publishing emerging as a powerful force in reshaping how knowledge is shared, preserved, and accessed. This shift is particularly visible through several key innovations that libraries are championing: open access journals managed directly by libraries, institutional repositories that enhance transparency and guarantee the longevity of research, student-led publications fostering inclusive participation, and the development of technical infrastructures supporting metadata enhancement, preservation, and discoverability. These innovations are not merely incremental changes; they represent profound transformations with the potential to democratise knowledge production and dissemination, especially within African contexts where traditional publishing has often sidelined local voices.

Open Access Journals Management by Libraries

Open access journals managed by libraries stand out as a critical innovation in breaking down barriers posed by conventional publishing. Unlike commercial publishers, library-led open access journals typically operate without charging authors or readers, adhering to the Diamond Open Access model that removes financial obstacles and fosters equity. This approach aligns closely with the needs of many African researchers, who historically face challenges in both accessing global knowledge and achieving visibility for their work. Platforms such as African Journals Online and Open Research Africa exemplify this model, facilitating swift publication and even open peer review processes that enhance transparency and inclusivity. Such initiatives not only empower

local researchers but also contribute to addressing global development challenges through accessible, regionally relevant scholarship. They demonstrate how library publishing can disrupt longstanding power imbalances embedded within scholarly communication.

Institutional Repositories Supporting Transparency and Longevity of Research

Complementing open access journals, institutional repositories have gained prominence as indispensable platforms for ensuring the transparency and longevity of academic research. These repositories function as digital archives, preserving scholarly outputs while making them openly available to diverse audiences. They safeguard research against the ephemeral nature of traditional publishing and highlight the responsibility of academic institutions to steward knowledge beyond commercial interests (Aina, 2023). Nigerian universities have increasingly developed repositories that support this transparency ethos, enabling scholars to self-archive their work and enhance its discoverability. Institutional repositories support the broader open science movement by enabling data sharing, replication, and collaboration, which are cornerstones of rigorous research practices (Okoro & Okoro, 2020). Their growing adoption in Africa signals a commitment to a more open and accountable scholarly culture, offering a platform for indigenous knowledge and fostering community engagement with research outputs.

Student-Led Publications Promoting Inclusive Participation

An equally important innovation resides in the rise of student-led publications, which promote inclusive participation at the grassroots of scholarly communication. These publications serve as vital training grounds for emerging scholars, facilitating early engagement with academic publishing and nurturing diverse voices that might otherwise remain unheard (Okoro & Okoro, 2020). By empowering students to edit, produce, and disseminate journals or magazines, libraries act as incubators for new forms of academic expression that challenge elitist and exclusive norms. This inclusive approach contributes to broadening the scholarly community's demographic and intellectual diversity, vital for fostering innovation and relevance in research. University libraries in Nigeria and South Africa have reported notable successes with student-led initiatives, which have helped democratise the research process and connect scholarship to local contexts (Aina, 2023).

Use of Technical Infrastructure for Metadata Enhancement, Preservation, and Discoverability

Underpinning these innovations is the strategic use of technical infrastructure that enhances metadata quality, preservation, and the discoverability of scholarly outputs. Libraries are investing in advanced digital platforms designed to manage, curate, and disseminate vast volumes of academic content efficiently and sustainably (National Library of Nigeria, 2021). Enhanced metadata not only improves searchability across global databases but also supports interoperability between systems, ensuring research can be easily found and cited worldwide. Digitisation efforts include integrating persistent identifiers such as DOIs, and adopting standards that facilitate the long-term preservation of digital objects, guarding against obsolescence in an ever-changing technological environment (Edwards, 2019). Institutions across Africa are actively building capacities in digital curation, often adopting open-source software tailored to their contexts, which strengthens their scholarly publishing ecosystems while respecting budgetary constraints.

These four areas of innovation, open access journals, institutional repositories, student-led publications, and technical infrastructures, constitute a coherent, progressive framework for advancing scholarly communication through library publishing. They respond effectively to the structural inequities of traditional publishing that have relegated many African scholars and institutions to the margins. Furthermore, they embody a distinctly social justice-oriented publishing model centred on accessibility, inclusion, and sustainability. The University of Cape Town's library publishing service is emblematic of this approach, having published journals and monographs in indigenous languages such as Sesotho, making scholarly materials available to students in their mother tongue and achieving substantial international reach (Raju, Claassen, Madini, Suliaman, & Nowvieskie, 2020). This example illustrates how library publishing not only facilitates visibility but also nurtures cultural preservation and academic empowerment.

However, challenges persist. Sustainable funding remains a critical concern, as many libraries operate under tight budgets and rely on external grants or institutional support that may not be stable in the long run (Aina, 2023). Technical capacity gaps and training needs also pose barriers, particularly in environments where digital literacy remains uneven (National Library of Nigeria, 2021). Moreover, gaining recognition and prestige comparable to established publishing houses is an

ongoing struggle for library-published outputs, affecting author incentives and institutional support (Edwards, 2019). Despite these hurdles, the momentum behind library publishing in Africa is undeniable and reflects a growing recognition that equitable scholarly communication requires new models that prioritise access, participation, and preservation over profit. These innovations direct scholarly communication towards a more just and inclusive future, demonstrating how libraries can serve as catalysts for change in academic publishing, empowering local scholars and communities in profound and lasting ways.

Analysis, Interpretation, Presentation and Discussion

Research Question 1: How do academic libraries develop and manage publishing services that promote open access and reduce dependency on traditional commercial publishers?

Academic libraries in Africa, including Nigeria, have increasingly taken proactive roles in shaping scholarly publishing through open access initiatives. This transformation emerges largely as a response to the restrictive, costly nature of traditional commercial publishing models, which constrain knowledge dissemination and reinforce inequities in global research visibility (INASP, 2025). Libraries have developed and managed publishing services aligned with the Diamond Open Access (DOA) model, where neither authors nor readers incur fees. Such models, exemplified by platforms like African Journals Online and Open Research Africa, enable affordable and equitable access to local research outputs (INASP, 2025).

The DOA model is gaining traction as a sustainable alternative that detaches academic publishing from commercial profit motives. African libraries often provide hosting infrastructure, editorial support, and training, enabling researchers to publish openly without financial barriers (Raju & Maharaj, 2025). The University of Cape Town's African Platform for Open Scholarship (APOS) serves as a flagship example, offering a continent-wide, library-driven publishing system that empowers individual African institutions to maintain ownership and control of their scholarly outputs while ensuring global discoverability (Raju & Maharaj, 2025). This decentralisation addresses "bibliometric colonialism", the dominance of Northern-centric publishing that marginalises African scholarship (Raju & Maharaj, 2025). However, development of such services requires libraries to balance technical capacity building, infrastructural investment, and policy advocacy. Nigerian academic libraries have struggled with insufficient funding and the absence of robust institutional open access policies, limiting the scale of library-led publishing initiatives (MDPI Blog, 2025; Okoro & Okoro, 2020). Despite these

challenges, the increasing strategic focus on open access publishing signals a sustained effort to reduce dependency on commercial publishers and promote knowledge sovereignty.

Research Question 2: What role does library publishing play in enhancing bibliodiversity by supporting diverse, multilingual, and regionally relevant scholarly outputs?

Library publishing plays a pivotal role in promoting bibliodiversity by fostering a more inclusive, multilingual, and locally contextualised scholarly landscape. The dominance of Western languages and thematic priorities within commercial publishing has historically suppressed the visibility of African languages and regionally relevant research topics (Edwards, 2019). Library-led initiatives are counteracting these trends by actively supporting journals and monographs in indigenous languages and publications addressing African socio-economic and cultural realities (Raju et al., 2020). For instance, APOS welcomes publications in multiple African languages, offering institutional branding and author choice, which bolster cultural preservation alongside academic dissemination (Raju & Maharaj, 2025). This flexibility ensures regionally pertinent research receives prominence and that knowledge production reflects who African scholars are and the issues they prioritise, echoing Rumbidzai Chisenga's exhortation for "knowledge that reflects who we are". The process of prioritising bibliodiversity enables the library publishing to expand the epistemic scope of scholarly communication, fostering equity and challenging homogenising tendencies in global academia. Nigerian libraries have begun to champion local journals that amplify indigenous knowledge areas, supporting scholars whose work might otherwise remain invisible in dominant indexes (Okoro & Okoro, 2020). These efforts enrich the global research ecosystem and contribute to epistemic justice by decentralising intellectual authority.

Research Question 3: In what ways do academic libraries integrate publishing initiatives across their organisational structures to embed scholarly communication into their core mission?

Integration of publishing initiatives across academic library organisational structures emerges as an essential strategy for sustainability and institutional impact. In Africa, Nigerian universities included, successful models demonstrate effective cross-departmental collaboration involving acquisition, technical services, research offices, and academic faculties (Aina, 2023; Okoro & Okoro, 2020). By embedding publishing support within their core missions, libraries shift the perception of publishing from a peripheral service to a strategic institutional function aligned with research excellence and

visibility goals. Such integration promotes policy coherence, where open access mandates, copyright management, and digital preservation guidelines are harmonised institution-wide.

The embedding of library publishing within institutional reward systems and research assessments notably motivates faculty engagement, driving the quality and quantity of published outputs (National Library of Nigeria, 2021). Nigerian academic libraries report that advocacy and training efforts across institutional levels increase awareness and buy-in, overcoming cultural resistance to new publishing paradigms (Okoro & Okoro, 2020). However, obstacles persist, including limited leadership support and competing priorities in resource allocation. Achieving a truly integrated publishing function requires continued institutional commitment and capacity development tailored to local contexts, with visible metrics of success to persuade decision-makers of its strategic value (Aina, 2023).

Research Question 4: What challenges and opportunities do libraries face in sustaining publishing programmes, particularly in relation to resource management, infrastructure, capacity building, and institutional support?

Sustainability is a critical concern confronting library publishing programmes across Africa and Nigeria. Financial constraints remain the paramount challenge, reflecting systemic underfunding of libraries and research support infrastructure (EIFL, 2024). While external grants have spurred pilot initiatives, long-term operational funding is frequently unstable or absent, threatening continuity. Infrastructure deficits, including unreliable internet, inadequate software maintenance, and limited hardware, compound difficulties in managing publishing platforms effectively (National Library of Nigeria, 2021).

Capacity building in digital literacy, editorial skills, metadata management, and open access policy implementation is often patchy. The success of initiatives like APOS hinges on comprehensive training for editorial staff and librarians, alongside technical support for institutional administrators (Raju & Maharaj, 2025). Nigerian libraries have evidenced that targeted programmes encouraging knowledge transfer and skills development yield tangible improvements in publishing quality and output. Institutional support beyond libraries is vital. Without endorsement from senior university leadership and alignment with national open science policies, publishing programmes risk marginalisation or resource insufficiency. Nonetheless, opportunities abound in collaborative regional consortia, shared infrastructure, and international partnerships,

which can pool expertise and costs to enhance sustainability. Innovating peer review mechanisms and diversifying publication types also generate renewed academic interest and engagement (Edwards, 2019). Ultimately, while substantial challenges remain, the expansion of socially just, institutionally grounded library publishing initiatives demonstrates clear promise in transforming African scholarly communication for greater equity, visibility, and impact.

Impact and Benefits

The landscape of scholarly publishing is undergoing a crucial transformation, driven largely by the quest for greater transparency, affordability, and inclusivity. This shift is particularly significant across African nations such as Nigeria, where the traditional models have historically restricted access and entrenched inequalities. The impact and benefits of new approaches, particularly those led or supported by academic libraries, resonate deeply within this context. They extend beyond mere access to content, touching on author empowerment and the stimulation of cross-disciplinary collaboration and digital scholarship, all factors vital in fostering a richer, more equitable academic ecosystem.

One of the most visible and pressing impacts of these innovations is the increase in transparency and affordability in scholarly publishing. Traditional commercial publishers have long dominated the academic landscape with subscription-based models that impose hefty financial barriers on institutions and individual readers alike. For many African scholars, these subscription fees place core academic resources out of reach, crippling research capacity and limiting global participation (Ondari-Okemwa, 2024). Open access initiatives, often supported or managed by libraries, dismantle these barriers by enabling free and immediate access to research outputs. Platforms championing Diamond Open Access exemplify models where neither readers nor authors pay, ensuring affordability and wider dissemination (Raju & Maharaj, 2025). These models affirm that knowledge is a public good rather than a commercial commodity. Transparency is further enhanced through open peer review processes and the publication of research data, which libraries increasingly facilitate. Such practices foster trust in research findings and enable replication, thereby supporting scientific rigour and societal impact. Despite funding challenges highlighted in Nigeria and across Africa, these library-led initiatives signify a decisive step towards making scholarly communication more equitable and accountable.

Equally transformative is the empowerment of authors, particularly scholars in Africa, who now gain greater control over their intellectual output. Under traditional models, authors often relinquish copyright and editorial control to publishers, limiting their ability to disseminate and reuse their own work. Library publishing challenges this by fostering ownership rights and offering platforms that prioritise author agency (Raju & Maharaj, 2025). African scholars benefit from this shift, as it allows them to publish in ways that align more closely with their research goals and community priorities. For example, the African Platform for Open Scholarship facilitates scholars in retaining copyright and choosing formats that suit their audiences, thereby restoring power to those producing knowledge rather than intermediaries (Raju & Maharaj, 2025). This empowerment is critical for amplifying indigenous knowledge and regionally relevant research, which conventional publishers often overlook. Moreover, having stronger control encourages innovation by allowing scholars to experiment with diverse forms of dissemination, from preprints and datasets to multimedia and collaborative research blogs. Indeed, this move towards author-centric publishing reflects a global trend, yet it holds special significance within African academia, where historically marginalised voices require platforms that reflect and respect their intellectual sovereignty.

Beyond accessibility and author empowerment, the impact on scholarly collaboration and the growth of digital scholarship is profound. Library-led publishing models serve as hubs that encourage interdisciplinary research and community engagement. Open platforms foster cross-fertilisation of ideas across traditional boundaries, facilitating projects that might not thrive under rigid commercial journal structures focused on narrow disciplinary interests (Edwards, 2019). Digital scholarship, encompassing the use of multimedia, data repositories, and other innovative methods, flourishes within these ecosystems. The rise of institutional repositories and open platforms, initiatives often supported through academic libraries in Nigeria and Africa, enable seamless sharing of diverse outputs, from datasets to software code, catalysing new forms of collaborative research (National Library of Nigeria, 2021). This digital interconnectedness not only accelerates discovery within and across disciplines but also bridges the divide between researchers and communities, enhancing research relevance and uptake in real-world contexts. Given Africa's dynamic demographic and development challenges, such digitally enabled collaboration is particularly impactful, offering agile frameworks for addressing complex social and environmental issues.

Nevertheless, while these benefits are notable, implementation realities reveal ongoing challenges. Funding constraints, infrastructural gaps, and limited technological capacity across many African institutions risk undercutting the sustainability and scalability of these innovations (Ondari-Okemwa, 2024). In Nigeria, for instance, limited stable institutional support and scarce technical expertise hinder effective management of digital platforms and the maintenance of open repositories. Furthermore, systemic incentives in academia continue to privilege publication in high-impact commercial journals, making it difficult to fully shift cultural attitudes towards library-supported open publishing. Despite this, the demonstrated successes of initiatives such as the African Platform for Open Scholarship illustrate the enormous potential of libraries to drive an equitable scholarly publishing future through strategic investment and collaboration (Raju & Maharaj, 2025).

In conclusion, the impact and benefits of evolving library-led publishing practices encompass increased transparency and affordability in scholarly communication, the empowerment of authors through greater intellectual control, and the promotion of interdisciplinary and digitally enriched research collaborations. These advances are foundational for dismantling the entrenched inequalities of scholarly publication, especially within Africa and Nigeria, where access barriers have limited academic participation and knowledge dissemination for decades. Academic libraries not only transform the mechanics of knowledge distribution but also reshape the very nature of scholarly interaction, favouring justice and diversity. This transformation promises a more pluralistic, accessible, and dynamic future that better serves researchers, institutions, and societies globally.

Challenges and Limitations

The ambitions of library publishing, while transformative, are frequently constrained by significant challenges, particularly in the critical areas of sustainability, intellectual property management, and alignment with academic recognition systems. These issues are especially acute in African contexts, including Nigeria, where resource limitations and historical disadvantages amplify the complexity of implementing innovative scholarly communication models. Overcoming these hurdles requires concerted effort, strategic resource allocation, and a fundamental shift in institutional and individual mindsets within academia. A paramount concern revolves around sustainability, particularly regarding funding and resource allocation. Library publishing initiatives, despite their lower cost compared to commercial alternatives, still require

significant financial and human resources to maintain quality and consistency. Many African academic libraries operate within environments characterised by limited financial support and an uneven distribution of funding across institutions and regions (Ondari-Okemwa, 2024). This reliance on external or project-based funding threatens the long-term viability of research practice and publishing, making it difficult to scale operations or invest in necessary technical infrastructure (Ondari-Okemwa, 2024). The absence of consistent budgets impacts everything from staffing, where skill gaps in digital publishing, metadata, and platform management are common, to the ability to cover essential publication costs or incentivise faculty participation. Without stable financial backing, even the most innovative library publishing ventures risk becoming unsustainable, hindering their potential to reshape scholarly communication.

Managing copyright and intellectual property issues presents another complex hurdle. While library publishing often champions author retention of rights, navigating the intricate landscape of copyright law and open licensing can be challenging for both libraries and authors. Many authors, accustomed to traditional publisher agreements, may be unaware of their rights or hesitant to adopt open licenses, fearing implications for their professional advancement or potential misuse of their work. Furthermore, the legal frameworks surrounding digital content, open access, and data sharing can be ambiguous or vary across jurisdictions, requiring libraries to develop robust policies and provide clear guidance. For academic libraries in Africa, where digital literacy and awareness of open access principles are still developing, educating researchers and navigating international copyright complexities add layers of difficulty (EIFL, 2024). Ensuring compliance while promoting openness demands specialised expertise and ongoing legal consultation, often stretching already limited library resources.

Finally, aligning library publishing efforts with academic incentive and recognition systems remains a significant challenge. Academia traditionally rewards publication in established, high-impact journals, often those controlled by large commercial publishers. This reliance on conventional metrics can create a disincentive for scholars to publish with nascent library presses, regardless of their commitment to open access or bibliodiversity. For early career researchers, in particular, choosing to publish in a library-supported journal may be perceived as risky, potentially impacting tenure, promotion, or grant opportunities. This cultural inertia means that even when libraries provide excellent publishing services,

gaining widespread adoption requires a shift in institutional values and a re-evaluation of how scholarly contributions are assessed. Libraries must actively advocate for changes in academic reward systems to recognise and value publications emerging from open, non-commercial pathways. This includes promoting the quality and rigour of library-published works and highlighting their broader societal impact and contribution to knowledge equity. Without a fundamental shift in how scholarship is evaluated, library publishing may struggle to achieve its full potential as a transformative force in the academic landscape. In summary, while library publishing offers a promising alternative to traditional scholarly communication models, its path is fraught with significant challenges. Overcoming funding precarity, managing complex intellectual property landscapes, and recalibrating academic recognition systems are crucial for ensuring the long-term viability and widespread adoption of library-led publishing initiatives, particularly within the unique contexts of African academia.

Conclusion

Library publishing stands as a transformative power shaping a future where scholarly communication becomes more open, responsive, and fair. Across Africa, initiatives such as the University of Cape Town's library publishing model have demonstrated how libraries can break longstanding barriers to knowledge access and representation. By creating continent-wide open access platforms, these efforts challenge the dominance of commercial publishers that have long limited African scholars' visibility and participation on the global stage. This democratization of knowledge fosters vibrant academic exchange and enables research that truly reflects African experiences, concerns, and aspirations to flourish globally, reshaping the discourse and contributing to new knowledge generation (Chisenga, 2019; University of Cape Town Libraries, 2020).

Yet, the promise of library publishing cannot be realised without sustained institutional commitment and carefully planned allocation of resources. Such commitment involves recognising publishing as a core university function deserving dedicated funding, infrastructure, and skilled personnel. Institutions must move from seeing libraries merely as repositories or support units to embracing them as innovation hubs driving scholarly communication reforms. Resource planning demands strategic investments in digital infrastructure capable of supporting open platforms, training programmes to build publishing and data management expertise, and policies that facilitate open access while protecting academic

integrity and intellectual property rights (Gbuushi & Ianna, 2023). Only through such coordinated support can library publishing avoid the pitfalls of precarious, grant-dependent operations and instead build stable, scalable, and impactful systems tailored to their unique institutional and regional needs.

The transformative nature of library publishing also calls for a cultural shift within academic ecosystems. Leadership at universities, funding bodies, and policymakers must prioritise open, equitable dissemination as critical to knowledge advancement and societal progress. This vision aligns with global scholarly communication movements but requires local adaptations reflecting African realities. By investing in library publishing, institutions contribute not just to increased research visibility but also to a more inclusive, agile, and socially just knowledge environment that empowers researchers and communities alike (Trotter et al., 2014).

In summary, library publishing embodies a powerful foundation for reshaping scholarly communication towards openness, agility, and equity. Its impact hinges on sustained institutional support, deliberate resource planning, and collective commitment to a knowledge system centred on justice and inclusion. Embracing this approach promises a future where African scholarship attains rightful prominence and contributes fully to global academic conversations.

Recommendations

Library publishing holds remarkable potential to reshape scholarly communication, especially across African institutions where resource constraints and global inequities have long hindered access and participation. To fully harness this potential, forging cross-institutional partnerships emerges as a powerful strategy. Collaborations enable academic libraries to pool expertise, share technological infrastructure, and reduce costs. For example, cooperative platforms like the African Platform for Open Scholarship (APOS) demonstrate how multiple universities can jointly manage open access publishing systems that reflect local identities yet benefit from shared technical and editorial capacity. Through partnerships, smaller or less-resourced institutions avoid isolation; they gain access to training, governance frameworks, and publishing tools that might otherwise be prohibitive. Moreover, partnerships foster knowledge exchange and sustainability, cultivating communities of practice that drive long-term innovation in scholarly communication.

Achieving durable, scalable library publishing requires stable funding models tailored specifically to the sector's needs.

Reliance solely on fluctuating grants or ad hoc institutional budgets undermines continuity and growth. Experiments with cooperative funding, such as membership models where libraries jointly contribute to infrastructural costs, offer promising paths. Consortia like LYRASIS and Jisc have set examples in the Global North, pooling resources to sustain open access journals while protecting editorial independence. African academic libraries might adopt similar frameworks, enabling multi-institutional support combined with sponsorships or endowments. These approaches reduce the financial burden on individual libraries and foster shared stewardship. Importantly, funding models must consider the full cost spectrum, technology, training, editorial work, and marketing, ensuring libraries can sustainably operate platforms without passing fees onto authors or readers.

Another crucial element lies in developing targeted training programmes that build core publishing and digital scholarship capacities within libraries. Skills gaps around open access principles, metadata standards, editorial workflows, and digital preservation often restrict libraries from delivering high-quality publishing services. Training initiatives tailored to librarians, researchers, and editorial teams ensure not only operational proficiency but also cultural shifts embracing open, collaborative scholarship. The “train-the-trainer” models implemented through APOS serve as a scalable example, equipping African librarians with the expertise to support publishing programmes locally and mentor emerging institutions. Regular training also keeps practitioners updated on evolving digital tools and research dissemination strategies, crucial given the fast-changing technological environment.

Finally, instituting continuous evaluation mechanisms guarantees that library publishing remains responsive and effective. Regular assessment through user feedback, usage metrics, and impact analysis provides data to refine platforms, policies, and services. Evaluations highlight successes and reveal operational challenges, facilitating adaptive management rather than static models prone to stagnation. Ongoing review processes enable libraries to innovate workflows, improve discoverability, and strengthen author support based on evidence rather than assumptions. This culture of continuous improvement fosters resilience and responsiveness, vital for evolving publishing ecosystems in diverse African contexts.

In conclusion, the future of library publishing hinges on collaborative partnerships, sustainable and flexible funding, targeted capacity building, and robust evaluation practices. These interconnected recommendations, grounded in empirical

developments across Africa and Nigeria, form a strategic framework for transforming library publishing from experimental projects into thriving, equitable pillars of scholarly communication.

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**Comparative Analysis of Administrative Strategies for ICT-
Based Electronic Records Management and E-Resource
Integration in Secondary School Libraries
in North West, Nigeria**

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Abstract

This study examines administrative strategies for implementing Information and Communication Technology (ICT)-based electronic records management (ERM) and e-resource integration in public and private secondary school libraries in North West Nigeria. Using a mixed-methods approach, data were gathered through questionnaires administered to 50 library staff (25 from public schools, 25 from private schools) and semi-structured interviews with 10 library administrators (5 from each sector). Results indicate significant disparities in the implementation of electronic records between private schools which demonstrate more formalised ERM policies, superior ICT infrastructure, and greater e-resource adoption, as compared to public schools. Both sectors face challenges, including inadequate funding, limited staff training, and unreliable internet connectivity, though these issues are more pronounced in public schools. Statistical analyses confirmed significant differences in administrative practices for; ERM policies and e-resources integration. The study highlights the need for context-specific policies, enhanced funding, and continuous professional development to improve ICT integration. These findings offer actionable insights for

educational policymakers and library administrators in Nigeria and similar settings.

Keywords: *Electronic Records Management, E-Resources, ICT Integration, Secondary School Libraries, Public and Private Schools, Nigeria*

Introduction

The integration of Information and Communication Technology (ICT) has reshaped educational landscapes globally, particularly in secondary school libraries, which serve as hubs for digital information management. Electronic Records Management (ERM) ensures the systematic handling of digital records to support institutional accountability and operational efficiency (Aina, 2021). Concurrently, e-resource integration, encompassing digital books, journals, and multimedia, enhances access to educational content, fostering improved teaching and learning outcomes (Adebayo & Okeke, 2023). In North West Nigeria, secondary school libraries face distinct challenges in adopting ICT due to differences in administrative strategies between public and private institutions. Public schools often contend with limited funding, inadequate infrastructure, and weak policy frameworks (Usman & Bello, 2022), while private schools benefit from greater resource availability but vary in policy sophistication (Yakubu & Abdullahi, 2023). Administrative factors, such as policy development, leadership commitment, and staff capacity, are critical to successful ICT adoption (Ojo & Muhammad, 2024). However, comparative research on these administrative strategies in the context of North West Nigeria's secondary school libraries remains limited. This study addresses this gap by comparing administrative strategies for ICT-based ERM and e-resource integration in public and private secondary school libraries in North West Nigeria. The research questions are:

1. What are the differences in ERM policies and practices between public and private school libraries?
2. How do ICT infrastructure and e-resource integration levels vary between the two sectors?
3. What administrative challenges hinder effective ICT adoption in these libraries?
4. How can tailored administrative strategies enhance ERM and e-resource integration?

Materials and Methods

A mixed-methods comparative design was employed to explore administrative strategies for ICT-based ERM and e-resource integration. The study population included library staff and administrators from public and private secondary schools across seven states in North West Nigeria (Kano, Jigawa,

Kaduna, Katsina, Sokoto, Kebbi, and Zamfara). Using purposive stratified sampling, 50 library staff (25 public, 25 private) completed a structured questionnaire capturing demographic details, ICT infrastructure, ERM policies, and e-resource integration practices. The questionnaire was pre-tested with 10 library staff outside the study area, achieving a Cronbach's alpha of >0.7 for reliability. Additionally, semi-structured interviews were conducted with 10 library administrators (5 public, 5 private) selected based on their experience in ICT management. Interview questions investigated administrative experiences, challenges, and strategic initiatives. Quantitative data were analysed using SPSS v28. Descriptive statistics (frequencies, percentages) summarised ERM policies, infrastructure, and e-resource adoption. Inferential statistics, including independent t-tests and chi-square tests, compare public and private school data. Qualitative data from interviews were analysed thematically following Braun and Clarke's (2021) six-phase approach, identifying key patterns in administrative practices and challenges.

Results and Findings

ERM Policy Implementation

Only 28% of public school libraries had formal ERM policies, compared to 76% of private school libraries. Public schools predominantly used hybrid or manual systems (72%), while private schools favoured proprietary electronic platforms (76%).

Table 1: ERM Policy Adoption Rates

School Type	Formal ERM Policy (%)
Hybrid/Manual Systems (%)	
Public	28
	72
Private	76
	24
Public Schools	
Formal ERM	28%
Hybrid/Manual	72%
Private Schools	
Formal ERM	76%
Hybrid/Manual	24%
	0% 100%

Figure 1: Comparative ERM Policy Adoption Rates (Text-Based Bar Chart)

ICT Infrastructure Adequacy: Infrastructure Comparison

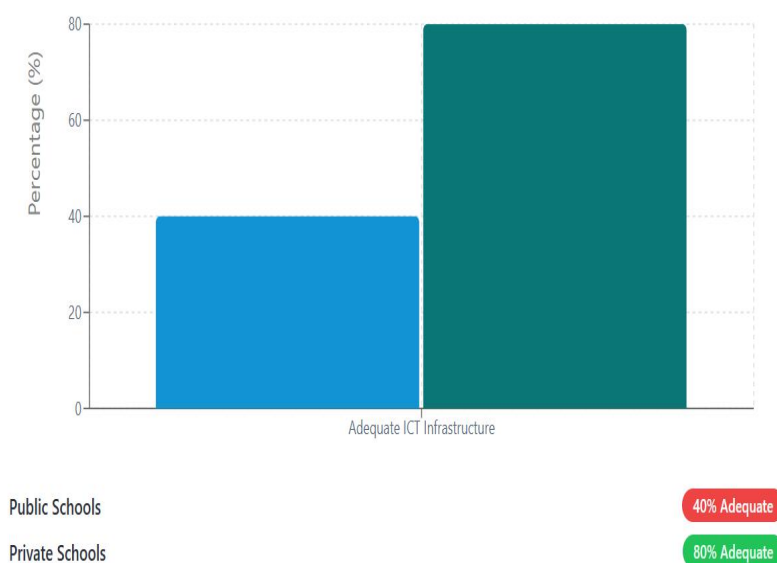


Figure 4: ICT Infrastructure Adequacy: Infrastructure Comparison

E-Resource Integration

Private schools showed greater adoption of subscription-based e-resources (64%) compared to public schools (22%), which relied heavily on free or government-provided resources (78%).

Table 3: E-Resource Access Levels

School Type.	Subscription-Based E-Resources (%)	Free/Open Access Resources (%)
Public	22	78
Private	64	36

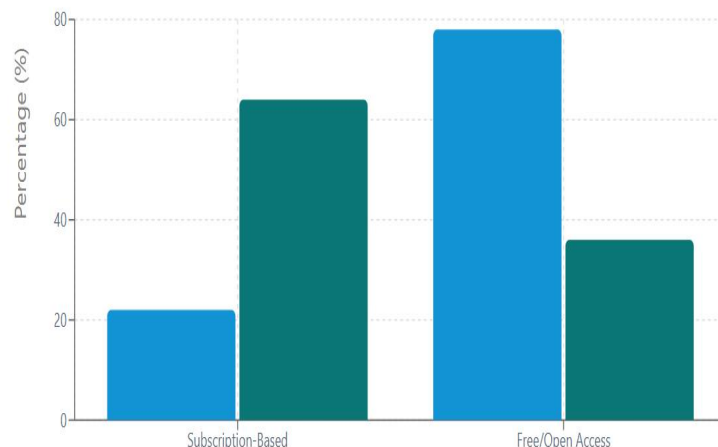


Figure 5: E-Resource Integration Patterns: Resource Access Types

Private schools have 64% of subscription-based resources, while public schools rely on 78% of free/open access resources.

Staff Training and Capacity

Seventy per cent of private school staff reported recent ICT training, compared to 36% in public schools. Both sectors identified training gaps as a barrier to effective ICT adoption.

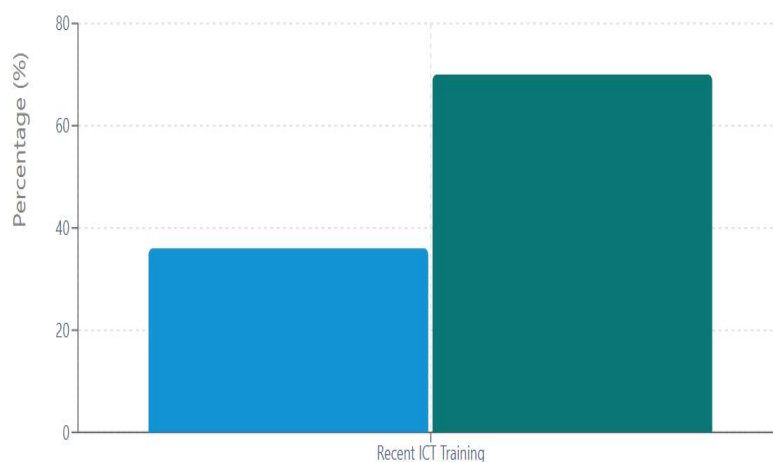


Figure 6: Recent ICT Training Rates

"Periodic ICT workshops help us adapt to new systems." - Private Librarian 2

"Training is rare; we learn through trial and error." - Public Librarian 7

Funding and Budget Allocation

Private schools allocated 15% of their library budgets to ICT, compared to 6% in public schools, contributing to disparities in ERM and e-resource implementation.

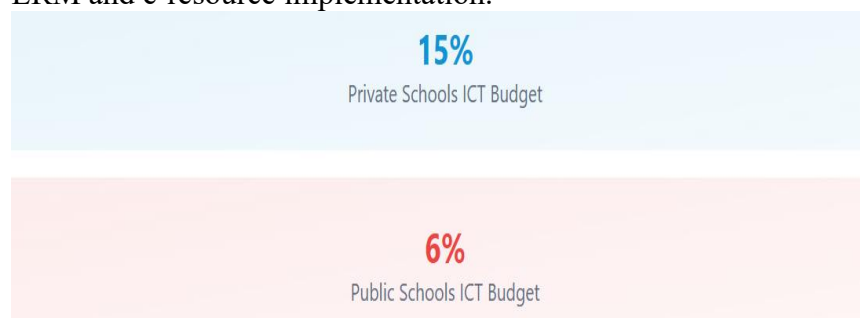


Figure 7: Budget Allocation

Internet Connectivity and Technical Support

Private schools maintained stable internet access (85% uptime) through multiple Internet Service Providers (ISPs), while public schools (50% uptime) relied on single providers, experiencing frequent disruptions.

Private Schools | ██████████ 85%

Public Schools | ██████████ 50%

0%

100%

Figure 7: Internet Connectivity Stability (Text-Based Line Graph)



Figure 8: Average Uptime Percentage

Statistical Analysis

Independent t-tests revealed significant differences in ERM policy adoption ($t(48)=3.87$, $p<0.05$) and e-resource integration ($t(48)=4.12$, $p<0.05$) between public and private schools. Regression analysis indicated that administrative strategy quality explained 62% of the variance in ERM effectiveness ($R^2=0.62$, $p<0.001$), with leadership engagement and funding as key predictors.

Leadership Styles and Policy Enforcement

Private schools adopted proactive, innovation-driven leadership, while public schools followed bureaucratic, compliance-oriented approaches.

Qualitative Insight

Private Administrator 1: “We encourage testing new ICT tools to enhance library services.”

Public Administrator 4: “Policies come from the ministry, limiting our flexibility.”

Discussion

The findings highlight stark contrasts in ICT-based ERM and e-resource integration between public and private secondary school libraries in North West Nigeria. Private schools’ formalised ERM policies align with Yakubu and Abdullahi (2023), who note that proprietary systems enhance competitive advantage in private institutions. Public schools’ reliance on manual or hybrid systems reflects infrastructural and policy gaps, corroborating Usman and Bello (2022). Administrative strategies, particularly leadership engagement and funding, significantly influence ERM effectiveness, explaining 62% of its variance (Nguyen & Daniels, 2021). Private schools’ higher e-resource adoption, driven by stable funding, supports Adebayo and Okeke (2023), while public schools’ dependence

on free resources underscores digital access disparities (Ibrahim et al., 2021). Training deficiencies, more severe in public schools, highlight the need for structured professional development (Suleiman & Tijjani, 2021). Connectivity challenges, particularly in public schools, align with Alhassan and Adamu (2022), emphasising the importance of reliable infrastructure. Leadership styles further differentiate the sectors: private schools' proactive approaches foster innovation, while public schools' bureaucratic models limit adaptability (Umar & Hassan, 2020). Public schools require urgent policy interventions to standardise ERM and secure funding for infrastructure upgrades. Private schools should strengthen data security and align policies with national standards. Both sectors need enhanced training programmes and stakeholder collaborations to sustain ICT initiatives.

Limitations

The study's sample size (50 staff, 10 administrators) limits generalizability, and self-reported data may introduce bias. Future research should include larger samples and longitudinal designs to assess long-term ICT adoption outcomes.

Conclusion

This comparative analysis reveals significant disparities in administrative strategies for ICT-based ERM and e-resource integration between public and private secondary school libraries in North West Nigeria. Private schools outperform public schools in policy formalisation, infrastructure, and e-resource adoption due to proactive leadership and higher funding. However, both sectors face challenges in training, connectivity, and technical support. These findings underscore the need for tailored policies, increased budgetary support, and continuous professional development to enhance ICT integration. The study contributes empirical insights to guide educational policymakers and library administrators in optimising digital library services in Nigeria and similar contexts.

Recommendations

1. Government and school authorities should establish clear ERM policies and allocate adequate budgets for ICT infrastructure, including reliable internet and secure data systems.
2. Institutionalise regular ICT training for librarians and administrators to bridge capacity gaps.
3. Foster collaborations to share resources and expertise, enhancing e-resource access and ERM implementation.

4. Encourage proactive, innovation-driven leadership in both sectors to drive ICT adoption.
5. Monitoring and Evaluation: Implement frameworks to assess policy effectiveness and guide continuous improvements.

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Role of Smart Technologies in Future Ready Education

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Abstract

The advent of smart technologies has revolutionised various sectors, including education, by introducing tools that promote personalised learning, real-time data analytics, and interactive learning experiences. These advancements have the potential to create resilient learning ecosystems that can withstand and adapt to disruptions, such as global pandemics or technological shifts, ensuring continuous and effective education delivery. Despite the promising capabilities of smart technologies, there is a lack of comprehensive understanding regarding their effective integration into educational systems to enhance resilience. Challenges such as digital equity, ethical considerations, and infrastructure limitations could constitute major hindrances to the widespread adoption and efficacy of these technologies in creating adaptable learning environments. Therefore, this study aims at investigating the role of smart technologies in future ready education as well as identify the challenges and opportunities associated with the implementation of smart technologies in education with a view to provide insights into best practices for developing future-ready educational environments. A systematic review methodology will be employed through comprehensive literature search of journals, technical reports, lectures as well as grey literature. The findings from the study will focus on the specific smart technologies that have been utilised to; enhance learning experiences, improve decision-making processes and stakeholder engagement in educational management, and also identification of the potential of smart technologies to support learning. Challenges relating to implementation of smart technologies for resilient and future ready education will also be identified. Challenges such as digital literacy gaps, infrastructure limitations, and ethical concerns regarding data privacy and algorithmic biases will be discussed with a view to establish a framework that will enable successful adoption of smart technologies in education. The study will make recommendations with regards to policy development, professional development, ethical frameworks and infrastructure enhancement for effective implementation of smart technologies for future ready education.

Keywords: *Resilient Learning Ecosystems, Smart Technologies, Future-Ready Education, Artificial Intelligence, Educational Adaptability.*

Introduction

The quick development of smart technology over the last 20 years has drastically changed a number of industries, including manufacturing, education, and healthcare. These developments have changed how industries function and provide value by bringing previously unheard-of levels of efficiency, accuracy, and user engagement. For example, the creation of individualized learning systems in education has been made possible by the integration of smart technologies. By providing individualized information and pacing that improve understanding and retention, these systems adjust to the demands of each individual student. These developments have been especially helpful in accommodating different learning preferences and guaranteeing that each student can reach their greatest potential Rashid and Kausik (2024).

Apart from individualised instruction, the use of real-time analytics has completely changed how teachers evaluate and react to students' progress. Teachers may monitor performance trends, spot learning gaps, and make real-time instructional strategy adjustments by utilising data-driven insights. In addition to improving results, this dynamic method creates a more proactive and responsive learning environment Ndukwe and Daniel (2022). Additionally, traditional classroom settings have been altered by the emergence of interactive experiences driven by technologies like virtual reality and AI-driven platforms. These tools foster teamwork and active engagement by establishing immersive and captivating learning environments. When taken as a whole, these developments demonstrate how smart technology can revolutionize the educational landscape and make it more inventive, inclusive, and efficient Rashid and Kausik (2024).

Adaptive educational frameworks created to endure and flourish in the face of disturbances are known as resilient learning ecosystems, and they guarantee the continuity and caliber of learning experiences. To adapt to shifting conditions, such as societal issues, technological advancements, or worldwide catastrophes, these ecosystems combine adaptable structures, a variety of resources, and cutting-edge technologies. Their importance stems from their capacity to promote sustainability, equity, and inclusivity in education, empowering both teachers and students to successfully negotiate ambiguity. Resilient learning ecosystems have shown crucial in preserving

access to education, meeting a range of learning requirements, and fostering long-term educational resilience in the face of global shocks like the COVID-19 pandemic or problems associated to climate change. These ecosystems enable institutions to develop and adapt by using digital tools, cooperative networks, and progressive regulations, guaranteeing that education endures even during tumultuous times Global Education Monitoring Report Team (2023).

There are now more opportunities to build robust learning ecosystems because to the quick adoption of smart devices in the classroom. The full understanding of how these technologies can be successfully and comprehensively integrated to handle the difficulties of contemporary education is still lacking, though. Despite the revolutionary promise of smart technology, enduring issues including digital fairness, ethical concerns, and infrastructure constraints frequently impede their adoption. Disparities in access to technology are made worse by digital equity challenges, which impact underprivileged communities. The use of these tools is made more difficult by ethical issues like algorithmic bias and data privacy. Furthermore, in many areas, poor infrastructure restricts the sustainability and scalability of technology-driven solutions. The potential of smart technology to create resilient learning ecosystems will not be realized if these issues are not resolved, highlighting the urgent need for creative solutions and inclusive frameworks to close this gap.

In order to guarantee that educational systems can adapt and flourish in the face of global upheavals, this study intends to investigate the transformative effect of smart technologies in creating resilient learning ecosystems. The main goal is to look at how smart technologies like data analytics, artificial intelligence, and immersive learning tools help to improve educational resilience by encouraging adaptability, sustainability, and inclusivity. Furthermore, the study aims to pinpoint the main obstacles to the successful application of these technologies, such as inequalities in digital equality, moral conundrums, and infrastructure constraints, while also identifying ways to get around them. Lastly, by presenting a roadmap for developing learning environments that are prepared for the future, the study seeks to offer practical insights and best practices for incorporating smart technologies into education. The following research questions will direct this investigation: In what ways do smart technologies improve learning ecosystems' resilience? What are the main obstacles and possibilities related to their application? And how can the ethical, sustainable, and fair incorporation of smart technology in education be ensured?

The integration of smart technologies in creating resilient learning ecosystems is thoroughly examined in this paper using a systematic review methodology. The methodology entails a thorough and organized process of locating, assessing, and synthesizing case studies, empirical research, and existing literature about the use of smart technology in education. The goal of the study is to identify patterns, trends, and gaps in the current knowledge of how these technologies improve school resilience by methodically examining peer-reviewed publications, reports, and real-world applications. In order to ensure a comprehensive viewpoint, the assessment will concentrate on important subjects such digital equity, ethical considerations, infrastructure challenges, and creative approaches. This method not only offers a strong basis for locating best practices, but it also reveals practical ideas for getting past implementation obstacles. To make sure the results are both theoretically solid and practically applicable, a critical examination of case studies will be included to the systematic review to show real-world applications and results.

Literature Review

A key component of contemporary education, personalized learning systems use machine learning and artificial intelligence (AI) to customize learning experiences for each learner. In order to provide tailored content and guarantee that every learner advances at their own rate, these systems examine data on student performance, learning preferences, and styles. By filling in certain learning gaps and encouraging a better comprehension of ideas, this method has been demonstrated to enhance academic results Fitria (2021). The potential of individualised learning to increase student engagement is among its most important advantages. These systems increase the relevance and motivation of learning by offering content that corresponds with each learner's interests and skills. Platforms such as Khan Academy and DreamBox, for instance, employ adaptive algorithms to modify task difficulty in real time, ensuring that students are pushed without becoming overburdened. Reduced dropout rates and higher student satisfaction have been associated with this dynamic method Strielkowski, Grebennikova, Lisovskiy, Rakhimova and Vasileva (2024). Teachers are additionally empowered by personalized learning since it gives them useful information about students' performance. Teachers can identify difficult children and carry out focused interventions using the data produced by these systems. In addition to increasing the efficacy of education, this data-driven strategy enables teachers to more effectively manage resources. However, fair access to technology and thorough teacher preparation are necessary for

individualized learning to succeed, and these are still major obstacles in many places Hennessy, D'Angelo, McIntyre, Koomar, Kreimeia, Cao, Brugha and Zubairi (2022).

With the ability to instantly monitor and react to student progress, real-time data analytics has emerged as a crucial tool in education. These systems give a thorough picture of student engagement and accomplishment by gathering and analyzing data on a range of criteria, such as academic performance, attendance, and participation. To track and visualize this data and assist educators in making well-informed decisions, learning management systems (LMS) such as Canvas and Blackboard are commonly utilized (Bradley, 2021). The incorporation of real-time analytics into education has revolutionised conventional teaching techniques. Predictive analytics, for example, can identify students who are at risk of falling behind, enabling teachers to take action before problems get out of hand. Particularly in higher education settings, this proactive approach has been highly successful in raising academic performance and retention rates Hlosta, Herodotou, Papathoma, Gillespie and Bergamin (2020). Real-time data analytics provide significant practical and ethical issues despite their potential. Since the gathering and use of student data must adhere to laws such as the Family Educational Rights and Privacy Act (FERPA), data security and privacy are crucial concerns. Furthermore, these systems' efficacy hinges on the availability of dependable infrastructure as well as educators' capacity to comprehend and act upon the data, underscoring the necessity of continual professional development Altman Wood, O'Brien and Gasser (2018).

The impact of real-time analytics on education has been considerable, notably in boosting decision-making and instructional efficacy. Higher test scores and graduation rates are only two examples of the notable gains in student outcomes reported by schools and institutions that have implemented these technologies. Big Data and analytics are primarily used to support learning, guide teaching, and inform administrative decision-making. It also highlights the importance of student well-being and extends its use to address systemic challenges in higher education Stojanov and Daniel (2024). Additionally, real-time metrics encourage an open and accountable educational culture. These systems foster cooperation between parents, teachers, and students by giving stakeholders access to comprehensive performance data. By encouraging a shared accountability for students' progress, this cooperative method makes the classroom more encouraging and welcoming Aniegwu, Onyesolu, Onyenwe and Ugoh (2022). Nevertheless, real-time analytics' effects vary depending on the situation.

Underprivileged schools frequently lack the resources and infrastructure required to successfully adopt these systems, which exacerbates already-existing disparities. Policies that promote digital fairness and focused investments in training and technology are necessary to address these inequities Adewale, Azeta, Abayomi-Alli and Sambo-Magaji (2024).

Virtual Reality (VR), Augmented Reality (AR), and gamified platforms are examples of interactive learning systems that have completely changed how students interact with course material. Learning becomes more interesting and remembered when these tools are used to create immersive and interactive experiences. VR simulations, for instance, help students bridge the gap between theory and practice by enabling them to conduct virtual science experiments or visit historical locations Flegr, Kuhn and Scheiter (2023). Active learning and critical thinking have been especially well-supported by the usage of interactive tools. These resources help students grasp difficult ideas more deeply by promoting experimentation, exploration, and problem-solving. Gamification significantly boosts student motivation by improving knowledge assimilation, skills, and academic competencies. It enhances cognitive, self-learning, social, and collaborative capabilities essential for educational success Jaramillo-Mediavilla, Basantes-Andrade, Cabezas-González, and Casillas-Martín, (2024). Despite its potential, there are a lot of obstacles in the way of the widespread use of interactive learning resources. Many schools are unable to use VR and AR due to the expensive cost of the equipment and the requirement for specialised training. These tools' efficacy also hinges on how well they match curriculum objectives and how easily teachers can incorporate them into their lessons Alnagrat Ismail and Idrus (2022).

Among the many benefits of interactive learning tools are better learning outcomes and higher student engagement. These resources support a variety of learning styles and promote inclusivity in education by offering experiential, hands-on learning experiences. Tibaijuka (2024) revealed that interactive tools like discussion forums, virtual labs, and multimedia content enhance active learning experiences, thereby boosting engagement compared to traditional passive learning methods. The capacity of interactive tools to stimulate innovation and creativity is another important benefit. By using these resources, students are urged to solve issues, think critically, and communicate their ideas in novel ways. In addition to improving academic achievement, this also gets pupils ready for the needs of the workforce in the twenty-first century, when flexibility and creativity are highly prized Li, Kim and Palkar (2022).

Interactive tools also support educational equity by offering different learning paths. These tools provide tailored solutions that meet the specific needs of children with impairments or those who struggle in conventional educational environments. But guaranteeing fair access to these technologies is still difficult, especially in rural and low-income areas Garcia-Carrion, Molina Roldan and Campos (2018). To sum up, interactive learning resources have the power to revolutionize education by increasing learning's effectiveness, inclusivity, and engagement. But for them to be implemented successfully, obstacles pertaining to accessibility, cost, and training must be removed. Teachers may fully utilize interactive tools and build more resilient and equitable learning ecosystems by making investments in these areas Owoc, Sawicka and Weichbroth (2021).

Resilient Learning Ecosystems

Dynamic educational frameworks known as Resilient Learning Environments (RLEs) are made to endure setbacks and adjust to new difficulties that arise in the classroom. RLEs, which have their roots in the philosophy of educational resilience, combine pedagogy, technology, and institutional policies to establish inclusive and adaptable learning environments Li (2022). To maintain educational continuity, especially during emergencies like pandemics, natural disasters, or technology advancements, these ecosystems make use of digital infrastructures, individualized learning approaches, and collaborative technologies Hodges, Moore, Lockee, Trust and Bond (2020). RLEs emphasize learner autonomy, interactivity, and adaptive instructional strategies, which are conceptually consistent with socio constructivist and connectivist learning theories Downes, (2019). Three essential elements form the basis of RLEs: learner-centered approaches, institutional adaptation, and technology integration. Students can participate in self-paced learning while taking use of real-time feedback mechanisms thanks to smart technologies like artificial intelligence (AI) and the Internet of Things (IoT), which enable individualized learning experiences Seo, Tang, Roll Fels and Yoon (2021).

The importance of RLEs in tackling issues of accessibility and equity has been highlighted by the growing digitization of education. By meeting a range of learning needs, offering assistive technology to students with impairments, and closing the digital divide through policy-driven initiatives, digital learning environments promote inclusion Amjad, Aslam, Tabassum, Sial and Shafqat (2024). To improve resilience and lessen interruptions to learning, governments and educational

institutions around the world are investing in scalable digital solutions Olsson, Viscovi and Samuelsson (2017). Finland is a well-known case study on resilient learning ecosystems, with a national education strategy that prioritizes teacher adaptation and technology-driven learning Niemi (2021). Open educational resources (OERs), AI-assisted tutoring, and cloud-based learning platforms are all used by Finnish schools to give students constant access to high-quality instruction. The efficacy of RLEs in maintaining academic engagement in the face of school closures was proved by the extensive usage of these tools during the COVID-19 epidemic.

Hybrid and blended learning models are revolutionising educational practices by combining in-person and online learning. Technological advancements like AI, adaptive platforms, and VR are transforming hybrid education by offering personalized experiences, automating assessments, and creating interactive simulations. Pedagogical shifts like flipped classrooms and competency-based education are also enhancing these hybrid learning environments. Mulenga and Shilongo (2025). The adoption of AI-powered tutors and adaptive learning platforms has boosted personalized education, guaranteeing that students receive individualized instructional help based on their performance data Joshi (2024). Rong and Estaiteyeh (2024) highlighted the need for Canadian educators to be empowered in the creative, cultural, and civic aspects of digital literacy, despite its holistic integration in professional development programmes. In order to preserve academic continuity, Canadian universities and K–12 institutions have embraced blended learning strategies that include gamification, AI-driven tests, and online collaborative tools. These tactics have been shown to be successful in maintaining involvement and closing learning gaps, especially for underprivileged and rural groups.

Notwithstanding its achievements, a number of obstacles prevent RLEs from being widely used. Because differences in internet access, device availability, and digital literacy levels obstruct effective learning, digital inequality is still a serious problem Sanders and Scanlon (2021). Furthermore, legislative frameworks are required to safeguard children and educators due to worries about data privacy, cyber security, and the moral use of AI in education OECD (2020). Teachers must continue their professional development in order to promote sustainable RLEs. Teachers can be empowered to optimize the advantages of smart technology in resilient learning settings by participating in teacher training programmes that emphasize digital pedagogy, AI integration, and adaptive instructional practices Hennessy (2022). Digital teaching methods have been

greatly enhanced by the implementation of extensive up skilling programmes in nations like South Korea and Germany Teo, Kim and Jiang (2020).

The long-term effects of RLEs on students' cognitive growth, motivation, and retention should be investigated in future studies. To improve digital education models, longitudinal research examining the efficacy of AI-driven adaptive learning systems and their impact on academic outcomes are required Strielkowski (2024). Gaining insight into how developing technologies contribute to the development of robust learning environments can help improve teaching methods for upcoming generations. Resilient learning ecosystems represent a forward-thinking approach to education that leverages smart technologies to ensure adaptability, inclusivity, and sustainability. While challenges such as digital inequity and cyber security risks persist, global case studies highlight the transformative potential of RLEs in shaping the future of education. By integrating AI, cloud computing, and data-driven learning methodologies, educators and policymakers can cultivate resilient, student-centered learning environments that thrive in an ever-evolving digital landscape.

Challenges to Integration

Even with RLEs' successes, a number of obstacles prevent them from being widely adopted. Digital inequality is still a major problem because differences in internet access, device availability, and digital literacy levels make it difficult for students to learn effectively Werfhorst, Kessenich and Geven (2022). Many students, especially those in low-income and rural areas, find it difficult to get high-speed internet or modern digital devices, which widens the educational gap. To close this gap, governments and policymakers must implement equitable digital infrastructure initiatives Sanders (2021). Significant obstacles in RLEs are also presented by ethical issues, notably those pertaining to algorithmic bias and data privacy. Concerns regarding student data security, permission, and data processing openness are brought up by the growing usage of AI-driven learning systems Thelma, Sain, Shogbesan, Phiri, and Akpan, (2024). Due to the possibility of skewed datasets producing unfair evaluations and recommendations, algorithmic bias in educational AI technologies has the potential to worsen already-existing disparities Baker and Hawn (2021). Ethical standards and regulatory frameworks are necessary to guarantee the proper application of AI in education.

Technology preparedness and infrastructure are essential for the smooth integration of RLEs. Numerous educational institutions encounter difficulties because of limited funds for technology

upgrades, unstable power supplies, and inadequate digital infrastructure, especially in developing nations Jhurree (2005). The advantages of RLEs are still unavailable to a significant percentage of students worldwide in the absence of adequate infrastructure. Scaling resilient learning models requires funding for strong digital infrastructures and training programmes for educators Zickafoose, Ilesanmi, Diaz-Manrique, Adeyemi, Walumbe, Strong, Wingenbach, Rodriguez and Dooley (2024).

Theoretical Underpinning

A number of well-established frameworks for educational technology serve as the foundation for the integration of resilient learning ecosystems. The Technological Pedagogical Content Knowledge (TPACK) framework, which highlights the convergence of technology, pedagogy, and subject matter knowledge in productive digital learning settings, is one of the most well-known frameworks Chai, Koh and Tsai (2013). The TPACK paradigm gives teachers a methodical way to incorporate technology into their lessons in a meaningful way while upholding pedagogical integrity.

Puentedura (2012) SAMR (Substitution, Augmentation, Modification, and Redefinition) model is another well-known model. From straightforward digital substitution to life-changing educational opportunities, this concept divides technology integration into four successive phases. Teachers have benefited greatly from the SAMR model's guidance on how to use technology to improve instruction in resilient learning environments. A fundamental viewpoint on RLEs is also offered by Siemens (2005) connectivist learning theory. This theory is especially pertinent in the era of artificial intelligence, cloud-based learning, and collaborative online platforms since it asserts that learning happens through networks and digital interactions. According to connectivism, learning systems must be adaptable and flexible in order to enable students to autonomously traverse and synthesize large amounts of information.

Even while current frameworks offer insightful information about integrating digital learning, there are still a number of holes in previous studies. The paucity of empirical data regarding the long-term effectiveness of AI-driven adaptive learning platforms is one significant gap. Longitudinal study is necessary to evaluate the effects of AI on student engagement, knowledge retention, and critical thinking abilities, despite studies showing its advantages in personalizing education Eltahir and Babiker (2024). The underrepresentation of emerging regions in research on resilient learning ecosystems is

another significant gap. Technologically advanced nations like Finland, Singapore, and Canada are the subject of a large portion of the literature now in publication Kropf (2013). However, further research is still needed to fully understand how RLEs might be modified for use in educational environments with limited resources. In order to provide fair access to resilient learning strategies globally, this gap must be closed.

Furthermore, the function of professional development and teacher training in creating resilient learning ecosystems has not yet been thoroughly investigated in study. Although research recognizes the value of digital literacy for teachers Hennessy et al (2022), there aren't many thorough frameworks for training educators to successfully incorporate AI, IoT, and other cutting-edge technology into their teaching methods. By performing cross-regional investigations, creating evidence-based teacher training curricula, and assessing the moral ramifications of AI-driven learning environments, future research should concentrate on filling these gaps. In an increasingly digital world, researchers and policymakers can improve resilient learning ecosystems to better meet a range of educational requirements by tackling these issues.

Research Methodology

The systematic review methodology was selected in order to offer an organized and thorough synthesis of the body of research on resilient learning ecosystems. By methodically finding, assessing, and combining pertinent studies, this approach guarantees rigor in data gathering, analysis, and interpretation Moher Liberati Tetzlaff Altman and PRISMA Group (2009). To improve transparency and reproducibility in systematic reviews, the work complies with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) standards Page, McKenzie, Bossuyt, Boutron (2021) PRISMA ensures a solid and trustworthy synthesis of study findings by facilitating a clear methodological framework for data extraction, inclusion criteria, and literature selection. This work contributes to a solid body of knowledge for educators and policymakers by critically analyzing the theoretical models, real-world applications, and difficulties of resilient learning ecosystems through the use of a systematic review methodology.

The systematic review utilized academic databases like IEEE Xplore, ERIC, Scopus, and Web of Science, along with technical reports and white papers from reputable organizations, to explore educational technology and digital learning environments. The search strategy used keywords and Boolean

operators to search for studies on resilient learning ecosystems, digital education infrastructure, AI in education, and adaptive learning platforms, focusing on recent empirical research and methodological rigour. This systematic review analyzed studies on smart technologies' role in building educational resilience, including AI-driven platforms, cloud-based systems, and adaptive learning technologies. It prioritized studies with empirical evidence on resilient learning ecosystems' effectiveness in diverse settings. Studies that were opinion-based, lacked empirical validation, or just addressed general educational technologies without emphasizing resilience were excluded based on certain criteria. Additionally, studies released prior to 2010 were not included unless they offered fundamental theoretical understandings pertinent to current debates about resilient learning environments. By following these guidelines, the review made sure that the analysis of smart technologies' contributions to resilient learning environments was thorough and targeted.

Presentation of Results and Findings

Overview of Utilised Smart Technologies

The systematic review emphasizes the significant role of smart technologies in transforming educational ecosystems, with key technologies identified which are considered essential to include:

Artificial Intelligence (AI): To customize learning experiences, AI-powered platforms, such as adaptive learning systems, are widely utilized. Each learner advances at their own pace thanks to these systems' customization of material and pacing based on analysis of student data. Additionally, AI facilitates real-time analytics, which let teachers keep an eye on students' progress and take preventive measures.

Immersion technologies like virtual reality (VR) and augmented reality (AR) which are used to make dynamic and captivating learning environments. For example, VR simulations help students bridge the gap between theory and practice by enabling them to explore historical locations or conduct virtual science experiments.

Internet of Things (IoT): IoT gadgets make it easier to connect and share data in classroom settings. Through the integration of many smart devices, they facilitate tailored learning experiences and offer real-time feedback mechanisms.

Adaptive learning systems: To ensure that students are pushed without being overwhelmed, platforms such as DreamBox and Khan Academy employ adaptive algorithms to adjust task complexity in real-time. It has been demonstrated that these approaches enhance academic performance and student involvement.

The integration of these technologies enhances learning experiences by creating personalized, immersive, and data-driven educational environments.

Impact on Educational Practices

The integration of smart technologies has significantly transformed educational practices.

Customisation and Better Choice-Making: Artificial intelligence (AI) and adaptive learning technologies have completely transformed personalised education. Teachers may identify at-risk kids, make well-informed judgments, and carry out focused interventions with the use of real-time data analytics. Academic performance and retention rates have increased as a result of the switch from reactive to proactive teaching methods.

Improved Stakeholder Engagement: Teachers, students, and parents work together more when smart technologies are used. Comprehensive performance data is provided by platforms such as learning management systems (LMS), which encourage openness and shared accountability. This cooperative method makes the classroom more encouraging and welcoming.

Identified Challenges

Smart technologies have the potential to revolutionize various industries, but they face numerous challenges that hinder their widespread adoption.

Digital Literacy Gaps: Digital literacy gaps exist between educators and students, with many lacking the skills to integrate advanced technologies, and underserved students struggling with basic digital competencies.

Infrastructure constraints in rural and low-income regions hinder technology-driven solutions' scalability, exacerbating educational inequalities. Ethical concerns, such as data privacy and algorithmic bias, further hinder the ethical integration of AI and data analytics.

Ethical Concerns: The application of AI and data analytics brings up important ethical questions, such as algorithmic bias, data privacy, and processing transparency. Significant obstacles to the moral integration of smart technologies include worries about the improper use of student data and the possibility that biased algorithms would reinforce inequality.

Synthesis of Opportunities and Constraints for Future-Ready Education

The review discusses the potential benefits and challenges of creating future-ready educational ecosystems.

Possibilities: There is a great deal of promise for developing inclusive, robust, and flexible learning environments with smart technologies. They facilitate data-driven decision-making, improve stakeholder engagement, and allow personalized

learning. The revolutionary impact of these technologies in preserving educational continuity during emergencies like the COVID-19 pandemic is illustrated by case studies from nations like Finland, Singapore, and Canada.

Obstacles: To successfully integrate smart technologies, policymakers and educators must invest in digital infrastructure, offer thorough teacher training, and create strong regulatory frameworks to ensure equitable and ethical use of these technologies. They also need to address digital literacy gaps, infrastructure limitations, and ethical concerns. Smart technologies have the potential to revolutionize education, but their full potential requires targeted efforts to overcome challenges and ensure inclusive and sustainable implementation.

Interpretation and Discussion of Findings

The results of this systematic review demonstrate how smart technology can revolutionise the creation of robust learning environments. Virtual simulations, adaptive learning platforms, and AI-driven analytics improve individualized learning experiences, increasing the flexibility and inclusivity of education Haleem, Javaid, Qadri, and Suman, (2022). When these technologies are integrated, learning continuity is guaranteed during disruptions like worldwide pandemics, differentiated instruction is made easier, and student engagement is increased Otto, Bertel, Lyngdorf, et al.(2024). Furthermore, by allowing institutions to utilize open educational resources and cloud-based platforms, resilient learning ecosystems support sustainability Otto and Kerres (2022). While earlier research focused on individual technological interventions, the results indicate that a holistic approach involving AI, data analytics, and digital infrastructure is essential for long-term educational resilience Batubara, MoHa, Nugroho, MS, and Suhardianto (2024). This study builds on previous research by demonstrating how multiple smart technologies interact to enhance adaptability and sustainability in education, but they frequently lack comprehensive models integrating AI, IoT, and immersive learning tools in resilient learning ecosystems (Haleem et al. 2022).

Virtual Reality (VR) platforms, AI-driven tutors, and automated assessments bridge gaps in traditional educational settings by offering students individualized instruction Analyti, Analyti, Pesmatzoglou, Stavrogiannopoulou, Schoina, Travlou and Mitroyanni, (2024). Cloud computing and IoT allow for real-time access to learning materials, which ensures that students and teachers stay connected, regardless of physical location Gairola and Kumar (2022). Predictive analytics assist educators in identifying students who are at risk of falling

behind, allowing for personalized learning plans and targeted interventions Dwivedi, Mahanty, Dwivedi (2024).

Digital inequality is still a major problem in spite of the advantages of smart technologies. Disparities in learning possibilities result from many students' lack of access to the required infrastructure, especially in rural and low-income areas Miah (2024). To guarantee the fair and appropriate integration of AI-driven educational tools, ethical issues including algorithmic bias, data privacy, and cybersecurity threats must also be addressed Mmaduekwe (2024). Overcoming these obstacles requires putting laws into place that support open-access resources, fair internet distribution, and open AI algorithms. The lack of suitable digital infrastructure in many areas is a significant obstacle to the implementation of resilient learning environments. Widespread use of smart technology is hampered by inadequate teacher training, unstable power supplies, and limited funding (Habibu, Abdullah-Al-Mamun and Clement, 2012). In order to promote ethical and sustainable technology integration in education, policymakers must prioritize investments in digital infrastructure, offer training programmes for teachers, and create regulatory frameworks (Ali, Murray, Momin, Dwivedi and Malik, 2024).

Proposed Model for Successful Integration

A multifaceted framework is suggested to guarantee the effective integration of smart technology in resilient learning ecosystems. This model consists of:

Infrastructure Development: To provide universal access, governments and organizations should make investments in digital gadgets, cloud-based learning platforms, and broadband growth.

Training and Support for Teachers: To give teachers the digital skills and flexible teaching methods they need, comprehensive professional development programmes ought to be set up.

Ethical AI Implementation: To avoid algorithmic bias, protect student data, and improve accountability in AI-driven learning systems, transparent policies are essential.

Initiatives for Equitable Access: Priority should be given to programmes that try to close the digital divide, like free internet access and subsidized devices for underserved communities.

Sustainable Policy Development: To encourage ongoing innovation and guarantee inclusivity and security in the adoption of technology, long-term regulatory rules should be put in place.

Implementing this framework can improve the resilience, inclusivity, and adaptability of learning ecosystems, preparing students and educators for the digital age's evolving demands.

Summary and Conclusion

Smart technologies like AI, cloud computing, and immersive learning tools enhance education's adaptability, inclusivity, and sustainability, but challenges like digital inequity and ethical concerns persist. This research offers a comprehensive analysis of smart technologies' potential to enhance educational resilience, offering best practices, policy recommendations, and a framework for addressing implementation challenges. Although this study offers a comprehensive analysis of the integration of smart technology in education, it is constrained by the lack of empirical data from a variety of educational contexts. Future studies should examine the long-term effects of AI-driven learning, cross-regional analyses, and the creation of scalable solutions for communities with limited resources.

Recommendations

The study submitted the following recommendations:

1. To promote digital equity, policymakers should establish nationwide broadband initiatives, distribute digital devices equitably, establish ethical AI policies, and develop transparent data governance frameworks to ensure reliable internet access, protect student data privacy, and ensure educational integrity.
2. Implement comprehensive professional development programmes for educators, administrators, and data-driven decision-makers to maximize smart technologies benefits, including digital literacy, adaptive teaching strategies, AI integration, and ethical considerations.
3. Ethical guidelines for data collection, storage, and usage are crucial for education trust and security. Institutions should adopt privacy-enhancing technologies, audit AI-driven learning tools, and establish regulatory oversight mechanisms.
4. Prioritise digital infrastructure investment for resilient learning ecosystems, including network upgrades, cloud-based systems, IoT-enabled classrooms, and collaboration between governments and private sector entities for long-term sustainability.
5. Future research should examine the long-term effects of AI-driven adaptive learning systems on student outcomes, scalability in low-resource settings, policy effectiveness, interdisciplinary integration of education, psychology, and data science, and ethical implications of AI in education.

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Assessing Artificial Intelligence Readiness and User Analytics Competency among Library Staff in Public Universities in Southwestern Nigeria

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Abstract

The use of Artificial Intelligence (AI) and user analytics in academic libraries is revolutionising service delivery, decision-making, and user engagement at a rapid rate. This study assessed the level of AI readiness and user analytics literacy of library staff in selected public universities in Nigeria. Guided by the Resource-Based View and Innovation Diffusion Theory, the study adopted a qualitative research design with semi-structured interviews of 18 professional principal library staff from six public universities. The findings revealed, limited awareness of AI concepts among staff, though actual readiness to adopt was limited by infrastructural capacity, training gap, and absence of institutional policies. User analytics was greatly underutilised due to low analytical capacity and low exposure to data tools. Nevertheless, there was a strong positive correlation between AI readiness and analytics capacity, implying a mutually reinforcing influence. Interview responses indicated a widespread willingness among employees to embrace AI innovations if supported by strategic investment and leadership commitment. The paper concludes with an emphasis on the significance of AI and data analytics for library services' future and offers concrete suggestions for library management, university policymakers, and LIS curriculum planners. It demands capacity building, infrastructure development, and curriculum changes in order to fill the competency gap and make the libraries ready for digitalisation.

Keywords: *Artificial Intelligence, User Analytics, Library Staff, Readiness, Competency*

Introduction

The rapid growth of artificial intelligence (AI) technologies is reshaping how libraries deliver services, distribute resources, and interact with users. Academic libraries in the international world are increasingly adopting AI-powered tools smart chatbots, recommender systems using machine learning, and predictive analytics to enhance operational efficiency and user experience (Zhou, Wu & Liu, 2022; Asomoah-Hassan, Abdulai & Kwadzo, 2023). However, the implementation of these

technologies is largely up to library workers' readiness and computer skills, particularly in public universities that often have gaps in infrastructure and training.

Artificial intelligence readiness refers to the capacity of an organisation or worker to successfully apply and utilise AI technologies. It involves attributes such as technical ability, leadership at the institutional level, training, and attitude towards innovation (Bughin, Seong, Manyika, Chui & Joshi, 2019; OECD, 2021). Also equally crucial is the capacity of user analytics, which involves the ability of library staff to collect, analyse, and utilise user data in a bid to optimise service delivery. These skills form the cornerstone of data-driven and AI-enabled decision-making in today's libraries (Chakraborty & Mandal, 2020). Nigerian public university libraries have a need to adopt modernisation of their services based on global trends. Though there are some of them lagging behind in technology uptake due to inadequate finances, inadequate training of the staff, and resistance (Aguolu & Aguolu, 2021; Olarongbe, Adebayo & Salako, 2022), the readiness of library staff to adopt AI and their capacity to handle user data analytics is a critical area of concern. Previous studies documented that despite mounting awareness of AI application in libraries, readiness and ability to address it are low among library staff members (Ogunsola & Aregbesola, 2021; Olalere, Fagbola & Adesina, 2023). Therefore, a determination of library staff AI preparedness and user analytics competency is imperative to quantifying technological change capacity in institutions.

Statement of the Problem

Despite the global demand for AI- and big data-driven intelligent library systems, the majority of the public university libraries in developing countries like Nigeria are not ready to implement these innovations. The staff in the libraries typically lack the digital literacy as well as knowledge of the use of AI-based tools and hence do not transition towards AI-capable systems from traditional library functions. Furthermore, user analytics, an integral component of data-driven and individualised library services is not best utilised due to incompetence in the interpretation and management of data among workers. The absence of effective training programmes, poor infrastructure, and unclear institutional AI policies also heightened the incapacities of librarians to deplore AI readily. Unless library staff readiness is well evaluated and their user analytics capabilities identified, institutions risk establishing AI policies that are out of touch with workforce capacity. This disconnect would lead to underachievement, user dissatisfaction, and wasted investments in digital infrastructure. In this regard, there is a very critical need to explore the

artificial intelligence readiness level and user analytics competence among library staff working in public universities.

Research Questions

The following questions guided this research:

1. What is the artificial intelligence readiness level among public university library staff in southwestern Nigeria?
2. To what degree are library personnel working in public universities in southwestern Nigeria proficient in applying user analytics techniques and tools?
3. What are the institutional drivers for AI readiness and competency in user analytics among public university libraries in southwestern Nigeria?
4. What are the perceived challenges to implementing AI and user analytics in the delivery of library services in southwestern Nigeria?
5. Is there any correlation between AI readiness and competency in user analytics among library staff in southwestern Nigeria?

Literature Review

Artificial Intelligence (AI) in university libraries refers to the use of machine-based systems that perform tasks hitherto requiring human intelligence like decision-making, language understanding, and pattern recognition to improve library operations and services. AI-powered tools are increasingly being utilised in areas like cataloguing, reference assistance, information retrieval, and user engagement through chatbots, recommender systems, and smart search engines (Zhou, Wu & Liu, 2022). The implementation of AI in academic libraries is not only revolutionising the nature of service delivery but also redefining the position of librarians as facilitators of intelligent access to information. Asomoah-Hassan, et al. (2023) observe that African research libraries are beginning to explore AI technologies as part of broader digital transformation strategies. However, they stress that most of the implementations remain in the experimental phase due to infrastructural and human capacity limitations. Similarly, Olalere, Fagbola and Adesina (2023) found Nigerian librarians are receptive towards the adoption of AI but there exists an enormous chasm in training, institutional readiness, and strategic planning. Hence, the boost in artificial intelligence (AI) applications within university libraries requires a re-examination of staff readiness, organisational policy, and professional development frameworks to facilitate effective adoption (Ogunsola & Aregbesola, 2021).

User analytics of library practice consists of measuring, interpreting, and applying user behaviour metrics like borrowing patterns, search words, and usage of digital resources for enriched decision-making and adapting library services. As libraries transform into digital and data-driven environments, user analytics is becoming a core part of future service innovation (Chakraborty & Mandal, 2020). Current studies have emphasised the mounting need for librarians to acquire skills in data analysis to solicit user needs and enhance services (Iwhiwhu & Eghwubare, 2022). User analytics not only assists strategic planning but also enables evidence-based service enhancement, such as targeted acquisitions, dynamic space management, and personalised content delivery. Nevertheless, one of the major pitfalls is still the lack of utilisation of analytics tools based on skill gaps within library staff (Olarongbe, Adebayo & Salako, 2022). Librarians in most public institutions have no confidence in the interpretation of data and combining knowledge into service models even though they are surrounded by massive user data generated from digital environments.

Frameworks of competency when it comes to AI and librarianship based on data define the skills, knowledge, and attitudes required by library professionals to be capable of functioning in changing digital environments. Today, core competencies extend beyond broad cataloguing and reference work to include data literacy, AI literacy, digital ethics, and systems thinking (IFLA, 2021). Zhou et al. (2022) highlight that emerging roles such as digital curators, data managers, and AI integration officers in libraries necessitate continuous professional development. Similarly, Ojo and Popoola (2023) enlightened the reality that competency frameworks must also incorporate adaptive competencies such as technological fluency, innovation management, and change readiness. Nigerian public university libraries do not have many formal training frameworks that incorporate these evolving roles (Ezeani & Igwesi, 2020). As a result, institutional requirements and employees' capabilities are misaligned, thus limiting the implementation of AI and analytics technology to their potential. This situation demands competency-based training aligned to international standards such as those developed by the Digital Competence Framework for Educators (DigCompEdu) and the IFLA Guidelines for Continuing Professional Development.

Theoretical Framework

This study draws strength from two complementary theories: Resource-Based View (RBV) and Innovation Diffusion Theory (IDT). The Resource-Based View (RBV) framework contends that internal resources of an organisation such as human capital, capabilities, and knowledge play a central role in achieving a competitive advantage (Barney, 1991). Within the library environment, the presence and ability to apply AI and user analytics by the staff are sources of intangible assets that determine the institution's ability to innovate. As asserted by Bughin, et al. (2019), success in the implementation of AI heavily relies on internal preparedness and digital literacy among staff. Public university library staff, thus, must invest in their staff as key strategic resources. Alternatively, Rogers' (2003) Innovation Diffusion Theory (IDT) explains the spread of new technology and ideas across social systems. The theory is centered on perceived usefulness, ease of use, and social influence to adopt. Applying IDT to scholarly libraries, the adoption of AI and user analytics depends on staff attitudes, training, institutional policy, and peer influence. Olalere, et al. (2023) argue that pioneering AI tools among Nigerian librarians happen because they influence their peers, provided there is adequate administration support. Together, these theories provide a solid framework for understanding both the strategic significance and diffusion process of user analytics and AI technologies in public university libraries.

Research Methodology

The study employed a qualitative case study research to examine artificial intelligence readiness and user analytics capacity skills among library staff in the selected public universities in southwestern Nigeria. The study design enabled in-depth exploration of individual and organisational experience of technological transformation in library services. The population comprised professional librarians from six purposively selected universities with varying ICT levels of development. Eighteen participants were selected for six universities, making three from each institution based on their digital services and library management activities. Purposive sampling technique was employed to reach information-rich respondents with knowledge about AI developments. Data collection employed a semi-structured interview guide with open-ended items for questions on AI knowledge, user analytics competencies, institutional preparedness, as well as envisioned challenges. The tool was vetted by experts to ensure validity and pilot-tested prior to full deployment. Interviews, conducted over four weeks via physical and digital means, were recorded with consent and coded through Braun and Clarke's

thematic analysis method. This included coding the transcripts, identifying trends, and coding themes. The method provided rich detail, whereas verbatim quotes of interviewees ensured authenticity and enhanced understanding of readiness of the staff to embrace AI integration into Nigerian public university libraries.

Presentation of Results and Findings

Demographic Characteristics of Respondents

Eighteen professional librarians (Head of Units) drawn from six universities in southwestern Nigeria, namely: University of Ibadan (UI), Obafemi Awolowo University (OAU), Federal University of Agriculture, Abeokuta (FUNAB), University of Lagos (Unilag), Federal University of Technology, Akure (FUTA) and Federal University, Oye Ekiti State (FUOYE) libraries all in the Southwestern Nigeria took part in the research. There were 10 males and 8 females, all ranging between 40 and 60 years of age. All were holders of Ph.D. degree in Library and Information Science, with professional practice spanning 21 to 33 years. Their domains of work varied from digital services, systems administration, reference and user services, to collection development. This diversity presented a broad and multi-level picture of AI adoption and user analytics expertise realities among university libraries.

AI Readiness Level among Library Staff

Differences in levels of AI readiness among the library staff were reported in the results. Although some of the respondents said they were familiar with AI terms such as chatbots, cataloguing through automation, and recommendation systems, it was observed that there was limited practical application of AI technology in their library practice. Very few participants had received formal training or workshops on AI technologies. Most of the respondents indicated interest in AI but expressed lack of exposure and institutional backing as major barriers to readiness. Staff signaled awareness of the relevance of AI to modern librarianship but were uncertain on how to incorporate such technologies into practice in the absence of policy direction or training.

Interviewee 3 remarked that:

We've heard or read about AI use in libraries elsewhere in the world, but here it's still a dream. We are willing to learn, but there are no workshops or even directions on where to start. - (Interviewee 3, Chief Librarian)

Another respondent added:

I think personally AI can be helpful in acquisition and user services, but we don't have the infrastructure or policy to do that here. - (Interviewee 7, Chief Systems Librarians)

This implied that though the staff perceived the potential usefulness of AI, their readiness is limited by institutional and logistical considerations.

User Analytics Skills and Application in Library Services

Under user analytics, most respondents admitted to having limited skills in collecting, analysing, and utilising user data to improve services. While some libraries used basic statistics such as circulation figures and database usage reports, they were neither regularly analysed nor strategically utilised in improving services. The absence of data literacy, unavailability of user analytics tools, and low rates of training opportunities were ranked by participants as the key challenges. However, some of the participants who had been involved in digital services were found to be moderately skilled in the use of such tools as Google Analytics, library usage dashboards, and electronic resource management systems, although these were often self-taught as opposed to institutionally sanctioned.

One of the participants explained that:

Demographic reports find their way to us via our e-resources, but the truth is we just put them in. We don't process them to see what users really need. (Interviewee 5, Principal Reference Librarians)

A few of the participants who worked in ICT units, nonetheless, showed some understanding of user analytics, mostly obtained by personal effort.

I use Google Analytics for our digital library portal, but I worked that out myself. There was no training from the university. (Interviewee 10, Chief Digital Services Librarians)

Overall, users analytics were not being utilised very well, and most staff members were not trained to use data to make an impact.

Relationship between AI Readiness and User Analytics Competency

There was a very strong relationship between AI readiness and user analytics competency. Those who had higher confidence in handling user analytics were also likely to adopt AI tools into their process. These individuals had a clearer understanding of how user data could power AI-driven services such as personalised recommendations, resource planning, and automated alerts. Those with limited or no analytics experience were also resistant or indifferent to AI adoption. This suggests that the development of user analytics capability can be a precursor to building more integrated AI readiness among library workers, especially in low-resource contexts. A case in point was made by one interviewee:

If you understand user data, you begin to see how AI could make things easier e.g., recommending books based on borrowing patterns.
(Interviewee 2, Chief Systems Librarians)

The reverse was true among those without any analytics capabilities, who were indifferent or intimidated by the concept of AI.

Geez, this computer science is all jargon to me. We're librarians, not software writers.
(Interviewee 12, Chief Cataloguers)

This observation suggests that data literacy increase can be a route towards improving AI readiness adoption in public university libraries.

Institutional Factors Which Influence Readiness and Competency

Some institutional factors were found to influence AI readiness and user analytics competency. These included, the availability

of ICT infrastructure, innovation, administration support, professional development opportunities, and the presence of a digital transformation policy. In universities where the leadership initiated digitalisation initiatives, staff members showed higher levels of employee engagement and experience with AI-based projects. Conversely, universities lacking strategic vision or training programmes experienced lower levels of employee engagement and capability. Respondents also named lack of funding, poor internet connectivity, and lack of interdepartmental collaboration as structural impediments that limited their ability to embrace AI and data-driven practices.

*Even if I want to learn
about AI, there's no time
or institutional support.
We're already
overwhelmed with
routine functions.
(Interviewee 9,
Collection Development
Librarians)*

Staff working in institutions where the management was more proactive demonstrated greater levels of digital engagement.

*Although our university
is attempting to digitalise
services, that forces us to
acquire new knowledge,
even though we're not yet
employing AI in full.
(Interviewee 1,
University Librarians)*

In addition, the fact that there is no well-defined policy on digital transformation was identified as a shortcoming that inhibits readiness and skill improvement.

*There's no official
strategy. Everything we
do is individual effort.
That's why progress is
slow. (Interviewee 13,
Principal Senior
Reference Librarian)*

These suggestions indicate the importance of institutional support, training aid, and strategic planning in facilitating the transition of library services with the help of AI and analytics.

Discussion

The findings of this research indicate that, even as there has been a heightened awareness of Artificial Intelligence within the academic library community, practical readiness and competencies among Nigerian public university library staff remain low. This aligns with the opinion of Igwe and Onah (2022), who indicated that Nigerian librarians are more interested than prepared for the use of AI in library operations. The seeming enthusiasm of staff to learn, as shown in the interviews, corroborated Nnadozie and Chukwu's (2021) finding that staff attitudes towards digital innovation are positive but institutional factors militate against implementation.

Similarly, the low application of user analytics supported earlier work by Adigun, *et al.* (2020), in which they observed that the majority of Nigerian libraries gather users' data but lack the necessary skills or tools to interpret the data. The strong correlation identified in this study between analytics capability and AI readiness aligns with Yoon and Schultz (2017), who argue that data literacy supports the effective integration of AI in libraries. Those who were familiar with usage data were more likely to envision ways in which AI could be leveraged to enhance service delivery. In addition, institutional factors like inadequate infrastructure, training shortages, and lack of policy were found to be major constraints integration of AI in libraries which aligned with the issues raised by Ocholla and Shongwe (2019), who emphasised leadership, policy structures, and capacity development as major problems for technological transition in African libraries.

The research highlights that AI-readiness is not just a matter of individual inclination, but strongly determined by institutional readiness. In the absence of strategic investment in training, infrastructure, and enabling policies, AI adoption will continue to be fragmented and aspirational. Libraries that do not build technological and analytical capacities risk being left behind in the worldwide move towards AI-driven service delivery. This has significant implications for user-centered innovation in academic libraries. AI has the potential to revolutionise cataloguing, user enquiries, recommendation systems, and knowledge discovery but only if there is an enabling environment. As interviewees suggested, even individuals who have an interest in learning about AI are faced with systemic barriers like inadequate infrastructure and overwhelming workloads. The findings also suggest that user analytics is a

feasible starting point for building AI-readiness. Thus, libraries can instill a culture of data-informed decision-making by instilling in staff the baseline competencies in data collection and interpretation. This phased process is supported by Tenopir, *et al.* (2020), who believe that the implementation of digital skill development in phases reinforces long-term innovation success in libraries.

Globally, AI-powered automated metadata generation, chatbots for reference services, and predictive analytics for user behaviour are being increasingly utilised by university libraries in the Global North (Cox, *et al.*, 2021). This is in sharp contrast to the Nigerian context, where AI is still in the conceptualisation phase, held back primarily by infrastructural and institutional constraints. Comparing regions also highlights asymmetries. In South Africa, for instance, Nkosi and Mhlongo (2020) reported that some university libraries started venturing into AI-driven digital repositories and virtual assistants, facilitated by government-supported digital literacy programmes. Ghanaian libraries have also moved forward, with a study by Opoku and Boateng (2022) reporting limited AI adoption due to donor-supported infrastructure development. Such juxtapositions indicate that while there is a shared interest in AI among university libraries in Africa, implementation success, to a great extent, depends on institutional commitment, strategic planning, and ongoing investment. The findings' implications reiterate that Nigerian university libraries must prioritise digital capacity building and policy development to narrow the gap with regional and global counterparts.

Conclusion

The study analysed the readiness of library personnel in the selected Nigerian public universities to adapt to artificial intelligence and their ability in applying user analytics to drive library services. The outcome revealed varying levels of AI awareness and readiness, with some of the librarians showing a good vision and some basic knowledge on the possibilities of AI in transforming library operations. Nonetheless, most respondents indicated limited training sessions and institutional backing, which limited their capacity to effectively deploy AI-based tools. The research confirmed the key role of AI and data analytics in transforming academic libraries and user experience. Though infrastructural and policy loopholes existed, respondents had high hopes for the potential of AI-driven services, particularly when integrated with personnel development, digital infrastructure, and strategic leadership. The synergy between AI readiness and user analytics has also highlighted the significance of coordinated technological and human capital planning. Subsequent research may investigate

cross-institutional cooperation, pilot project formation around AI, as well as the role of open-source AI platforms in capacity development.

Recommendations

Based on the findings of this study, the following recommendations are made.

1. Libraries can conduct periodic workshops and professional development sessions to improve librarians' AI literacy and analytical skills. Libraries will have to adopt AI tools gradually, beginning with simple user analytics programmes and proceeding to complex AI-driven systems. Also, innovation laboratories or working groups could also be set up in libraries to test AI and analytics projects, thereby promoting collaboration and transfer of knowledge.
2. Libraries can provide adequate funding for upgrading digital infrastructure and accord highest priority to having libraries as part of institution-wide digital transformation strategies. They should develop robust institutional policies that facilitate ethical and effective application of AI technologies within academic environments.
3. The LIS course curriculum could be realigned with training modules in artificial intelligence, machine learning, user data analytics, and digital transformation. Experiential learning would dominate through AI application firm or digital library internships, hands-on projects, and simulations.
4. Interdisciplinary courses that wed data science to information management could be introduced to create future-ready librarians.

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**The Use of Google Classroom and Whatsapp for
Online Skincare Training during Covid 19
Pandemics: A Case Study of Ace the Wayout Beauty
School, Ibadan**

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Abstract

The COVID-19 pandemic disrupted traditional learning methods and necessitated a rapid shift to online education. This study examined the use of Google Classroom and WhatsApp for online skincare training at Ace the Wayout Beauty School, Ibadan. Using a quantitative approach and a census sampling method, data were collected from 22 students through a structured questionnaire. The study aimed to assess students usage patterns, challenges encountered, and platform preferences during the pandemic. Findings revealed that WhatsApp was used more frequently than Google Classroom, with 41% of respondents using WhatsApp daily compared to 18% for Google Classroom. Students preferred WhatsApp (55%) over Google Classroom (45%) for its simplicity, low data requirement, and real-time communication. However, several challenges were identified, including poor internet connectivity (55%), high data costs (59%), inadequate electricity supply, and non-conducive learning environments (73%). These obstacles reflect broader infrastructural and socio-economic issues affecting online education in Nigeria. Despite these challenges, both platforms played a significant role in ensuring learning continuity during the pandemic, particularly in vocational training. The study concludes that while WhatsApp offered better accessibility and engagement, Google Classroom supported structured content delivery. Recommendations include adopting a hybrid learning model, improving digital infrastructure, training users on platform navigation, and providing affordable internet access.

Keywords: COVID-19 pandemic, Online learning, Vocational education, WhatsApp, Google Classroom, Skincare training

Introduction

The global spread of the COVID-19 pandemic at the beginning of 2020 created an educational crisis, radically restructuring teaching and learning worldwide. The report by UNESCO (2020) states that the closure of educational institutions impacted more than 1.5 billion learners in more than 190 countries, leading to the urgent need to make the switch to remote and online learning. This crisis shifts which is commonly known as Emergency Remote Teaching and Learning (ERT) required adapting digital technologies and platforms quickly so as to guarantee the continuity of learning at both formal and informal education levels (Bozkurt et al., 2020; Hodges et al., 2020). The well-funded institutions in developed nations were able to rapidly transition to strong online learning models, but the transition was more complicated in the developing countries, where issues related to infrastructure, digital literacy, and low connectivity were more profound (Adedoyin & Soykan, 2020).

Therefore, teachers and students in low-resource settings resorted to readily available and affordable tools like WhatsApp and Google Classroom as a response to teaching and learning during the pandemic (Mpungose, 2020; Trust & Whalen, 2020). Google Classroom is a cloud-based Learning Management System that has been released by Google in 2014, and which incorporates assignment assignments, resource sharing, grading, and communication tools that enable well-organised online learning (Iftakhar, 2016; Al-Marroof & Al-Emran, 2018). Due to its combination with other Google Workspace applications, it is a comfortable tool that educators and learners can use when trying to obtain a virtual classroom experience. On the other hand, the instant messaging app, WhatsApp, which had gained extensive popularity, offered a more relaxed, but dynamic, real-time communication and multimedia sharing, as well as collaborative learning environment. Its wide audience and mobile-first development made WhatsApp a promising tool widely used in scenarios in which learners could not very easily access computer or broadband internet access (Bounnik & Dessen, 2014; Barhoumi, 2015; Iloanya & Okoli, 2022).

The pandemic increased the causes of educational disparities in the African setting, and especially in Nigeria, where most institutions had to resort to taking new approaches to reach out to their students. Since mobile learning can be characterised as education, which is achieved through ~~via~~ portable devices (smartphones and tablets), there is need to address such barriers as infrastructure, cost, and digital divide (Traxler, 2009; Kukulska-Hulme, 2012; Ally & Tsinakos, 2014). Being

traditionally hands-on and experiential, vocational and skill-based training programmes suffered even greater challenge of translating practical material into online context.

Thus, the use of innovative application of tools such as WhatsApp and Google Classroom became very important in maintaining these types of education even during lockdowns. An example is ACE The Wayout Beauty School, a vocational school, located in Ibadan, Nigeria which specialises in the trade of skincare and beauty therapy training. Following the educational turbulence due to the pandemic, the institution initiated the online teaching of its training sessions as early as July 2020 and engaged mostly Google Classroom and WhatsApp as the platforms to reach and communicate with learners. The move was part of a larger change in directions of Nigerian vocational training centers toward blended and mobile learning modalities of training particularly due to lack of funds, patchy internet connectivity, and access to devices (Olasile & Ogundele, 2021).

Statement of the Problem

With the development of the COVID-19 pandemic, as a global health crisis of unprecedented scope, that affected every sector of human endeavours, including education, there was a paradigm shift of adaptation to the so-called This new normal which ensued in reaction to lockdowns and physical distancing measures, came with the widespread use of online learning as an alternative to traditional instructional activities. Online learning also called virtual learning occurred in a virtual network on digital platforms and was critical in ensuring the continuity of learning and secondary circulation of skills. Several digital tools have been used to promote the remote learning in this era, but the Google classroom and WhatsApp are the most used due to their ease of access, convenience and popularity, particularly in a low-capacity setting, such as Nigeria. But regardless of opportunities that these modern worlds bring, there are a number of issues left. Students usually have educational problems occasioned by poor internet connection, expensive data charges, poor digital literacy skills, and poor concentration and engagement in the online atmosphere. The problems are especially acute in the discipline where the practical and skill-based should be more dominant, like skincare and beauty therapy, where theoretical knowledge traditionally is taught in the classroom setting and on-the-job training and real-time feedback play a key role in successful learning assessments.

In Ace the Wayout Beauty School, Ibadan, online learning introduced by the pandemic became synonymous with WhatsApp and Google Classroom providing modules of training on the subject of skincare training. Although this adaptation guaranteed a certain degree of continuity in teaching, there are major questions concerning the effectiveness, usability and the satisfaction of learners with such platforms. In particular, it is important to come to terms with what and how students felt about the implementation of such tools, how far the platforms helped them with their needs and the problems they met in the process of transition.

Objectives

The general objective of this study is to determine the usage of Google Classroom and WhatsApp for online skincare training during Covid-19 Pandemic at Ace the Wayout Beauty School.

The specific objectives are to:

1. examine the usage of Google classroom and Whatsapp in skincare training by students of Ace the Wayout Beauty School, Ibadan
2. ascertain the challenges faced by students of Ace the Wayout Beauty School, Ibadan while using Google classroom and Whatsapp in skincare training.
3. determine the preference of student of Ace the Wayout Beauty School, Ibadan towards Google Classroom and Whatsapp in skincare training

Research Questions

1. What is the extent of usage of Google classroom and Whatsapp in skincare training by students of Ace the Wayout Beauty School, Ibadan?
2. What are the challenges being faced by students of Ace the Wayout Beauty School, Ibadan while using Google classroom and Whatsapp in skincare training?
3. What is the preference of students of Ace the Wayout Beauty School, Ibadan, towards Google Classroom and Whatsapp in skincare training?

Literature Review

Online Learning in the Era of COVID-19

The COVID-19 pandemic had an immense impact on interrupting education systems worldwide, catalysing the transformation and transition towards online learning environments over traditional face-to-face teaching (Bozkurt *et al.*, 2020; Hodges *et al.*, 2020). In response, schools turned to several digital methods of keeping academics going through school closures. This immediate

transition, which can be described as Emergency Remote Teaching (ERT), forced not only teachers but also students into a situation where they have to accommodate new technologies, which may not be accompanied by proper training or even the infrastructure to support such endeavour (Adedoyin & Soykan, 2020). With the move to online education, structural burdens like poor internet connection, expensive data plans, and the lack of available electronic gadgets characterised many developing nations, including Nigeria (Olumide & Oladokun, 2021). Nevertheless, despite these difficulties online learning appeared to be the lifesaver of education continuity and it became the priority element of what became known as the new normal of education.

The Use of Google Classroom in Online Learning

Google Classroom is a free Learning Management System (LMS) launched by Google in 2014 that allows online learning using capabilities of distributing assignments, grading, collaborative learning, and the ability to integrate with other Google apps, such as Docs, Drive, and Meet (Iftakhar, 2016). It became popular in the pandemic because of the ease of use, platform accessibility, and interface. Studies have demonstrated that Google Classroom can adequately increase the delivery of instruction through asynchronous learning and the multi-modal sharing of content (Al-Marouf & Al-Emran, 2018; Suryani *et al.*, 2020). Nevertheless, research shows that its effectiveness may be counteracted by the digital competence and motivation of learners and external conditions, including internet access (Muthuprasad *et al.*, 2021). With regard to vocational learning, Google Classroom has been adopted to deliver theoretical material and engage in discussion forums, but might be less adequate to hands-on, practical education (Okoye & Nwachukwu, 2022).

WhatsApp as a Tool for Mobile Learning

One of the most popular applications related to mobile messaging, namely WhatsApp, recently became a favorite tool used in online distance learning during the pandemic because of its availability, ease of use, and extremely low data usage (Bouhnik & Dshen, 2014; Barhoumi, 2015). It enables the students and teachers to exchange texts, audio-visual materials, illustrations, and reports and to use real-time communication. WhatsApp is identified as a powerful mobile learning platform, especially with less resource-intensive settings in which more advanced platforms are not feasible (Iloanya & Okoli, 2022; Mpungose, 2020).

Research has indicated that WhatsApp has the potential of promoting team-based learning and socializing learners (Ahad & Lim, 2014; Bere, 2013). It has been utilized in vocational education in tutorial sessions, demonstration videos, and peer feedback. Nevertheless, it also has such drawbacks as a message overload, distraction, and the inability to easily support structured assessment (Yeboah & Ewur, 2014).

Blended and Mobile Learning in Vocational Education

Training specifically in such vocations as beauty therapy and skin care are highly dependent on practical work and practical learning. Such a skill-based training will not be easy to transfer online. However, mobile learning strategies such as the WhatsApp and Google classroom have been used to disseminate theory content, as well as making discussions, in the beauty training institutions in Sub-Saharan Africa (Traxler, 2009; Ally & Tsinakos, 2014). Kukulska-Hulme (2012) notes that mobile learning broadens access to learning and inclusive environments and even facilitates flexible, learner-centred styles of learning. Similarly, Olasile and Ogundele (2021) identified that mobile technologies played a prominent role in the sustainability of vocational training in Nigeria (cosmetology and adjacent disciplines) due to demands during the pandemic. There is however concern regarding the effectiveness of online platforms in teaching physical skills, security of the assessment, and engagement of learners.

Challenges and Learner Perception in Online Vocational Training

With the increasing use of digital sites, research indicates that there is a divided opinion by students on online learning. Poor internet connection, low levels of concentration, absence of immediate feedback and digital fatigue are some of the problems that often arise in discussions (Adarkwah, 2021; Trust & Whalen, 2020). In addition, students participating in vocational programmes have testified that they face challenges in regards to emulating the learning experience of in-person demonstrations and practical experience online (Okoye & Nwachukwu, 2022). The attitude of learners towards tools such as Google Classroom and WhatsApp is thus essential in coming up with sound training models online. According to research findings, positive attitudes are related to perceived ease of use, relevance of content, and support of the instructor (Almahasees *et al.*, 2021; Davis, 1989). Therefore, the assessment of learner satisfaction and the

particular incidences of use of these tools in the occupational context educate future practice and policy.

ACE The Wayout Beauty School, Ibadan

The ACE The Wayout Beauty School, based in Ibadan, Nigeria, is a micro-view of how vocational schools of small scale shifted in the face of the crisis caused by the pandemic. In July 2020, the school implemented WhatsApp and Google classroom as the main platforms through which it implements its skincare training modules. This case gives us a unique chance of observing how mobile and virtual learning technologies could be used in real-life localized informal vocational setting. Consequently, the study will fill a knowledge gap in literature as it aims to determine how learners in ACE The Wayout Beauty School felt about the online skincare training process, what goals were addressed using Google Classroom and WhatsApp, and to what degree these tools served as effective teaching and learning methods in times of a crisis.

Research Methodology

This study employed a survey research design using a census sampling technique. The target population consisted of students of Ace the Wayout Beauty School, Ibadan, with a total of twenty-two (22) students participating in the study. Data were gathered through a structured questionnaire designed to address the objectives of the study. The questionnaire was selected for its efficiency in reaching multiple respondents while maintaining privacy and confidentiality. It was divided into two parts: Part A collected demographic information, while Part B focused on the use of Google Classroom and WhatsApp for online skincare training during the COVID-19 pandemic. To ensure the instrument's reliability, the questionnaire was passed through face and content validation by the supervising lecturer and was deemed appropriate for the study. It was administered via Google Forms, and all twenty-two (22) questionnaires distributed were successfully retrieved. The data collected were coded and analysed using frequency tables, bar charts, pie charts, and percentage distributions to present the findings clearly.

Results, Presentation and Interpretation

Demographic Information of the Respondents

Table1: Distribution of student by sex

Sex	No. of student	Percentage (%)
Male	0	0
Female	22	100
Total	22	100

The table above shows that 100% of the respondents were female. This implies that all the respondents were female.

Table2: Distribution of respondents by Age

Age	No. of student	Percentage (%)
18-25 years	4	18.18
26-35 years	11	50
36-55 years	7	31.82
56 and above	-	
Total	22	100

The above table contains distribution of respondents by age. Out of twenty-two (22) respondents, forty (40) respondents were within the age range from 18-25 years with 18.18% response rate while eleven (11) respondents, age ranges from 26 - 35 years with 31.82%. Only seven of the respondents were within the age range of 36 - 55 years. This implies that majority of the students were within the age range of 18 - 35 years.

Table3: Distribution of Respondents by academic qualification

Qualification	Frequency	Percentage (%)
NCE/OND	0	0
B.A/B.Ed/B.Sc.Ed/B.Sc.	14	83.3
PostGraduate (M.Sc/M.Ed)	4	16.7

The table show that most respondents 14 (83.3%) hold a Bachelor's degree, while 4 (16.7%) have a Postgraduate degree, and none hold an NCE/OND qualification, indicating a relatively high level of educational attainment in the sample population.

Analysis of Research Questions

Research Question 1: What is the extent of usage of Google classroom and WhatsApp in skincare training by students of Ace the Wayout Beauty School, Ibadan?

Figure 1: Usage of Google classroom and WhatsApp in teaching skincare related matters

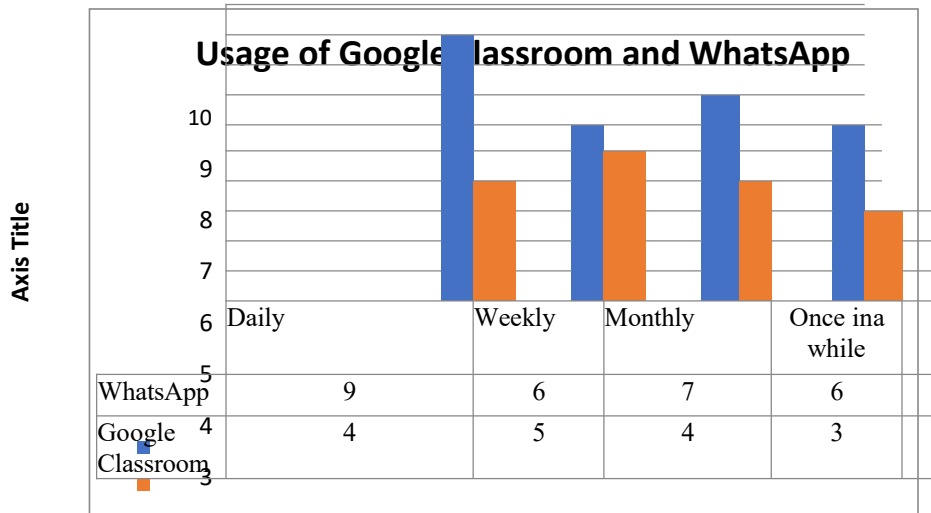


Figure 1 showed the graphical representation of the respondents on the usage of Google Classroom and WhatsApp. This revealed that nine (9) respondents used WhatsApp daily while four (4) of them used Google Classroom daily. On weekly basis, six (6) respondents used WhatsApp while five (5) of the respondents used Google Classroom. According to the monthly usage it was revealed that seven (7) respondents used WhatsApp while four (4) respondents used Google Classroom. Finally, six (6) of the respondent sused WhatsApp once in a while; conversely, three (3)of them used Google Classroom once in a while. The implication to be drawn from this is that the students make use of WhatsApp more that Google Classroom.

Research Question 2: What are the challenges being faced by students of Ace the Wayout Beauty School, Ibadan while using Google classroom and Whatsapp in skincare training?

Figure 2: Challenges students face while using Google classroom and Whatsapp in Skincare training on content delivery at Ace the Wayout Beauty School, Ibadan.

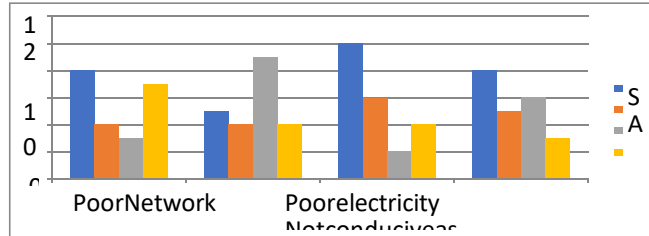


Figure 2 showed the challenges that students face while using Google classroom and Whatsapp in skincare training on content delivery at Ace the Wayout Beauty School, Ibadan. Twelve (12) respondents confirmed that poor network was the challenges facing them, while nine (9) of the respondents revealed that poor electricity supply to charge gadgets was their challenges. Also, sixteen (16) of the respondents are of the opinion that using google classroom and whatsapp in onsite skincare training on content delivery was not conducive and a challenge while high cost and consumption of data was also considered as a challenge by thirteen (13) of the respondents.

Research Question 3: What is the preference of students of Ace the Wayout Beauty School, Ibadan, towards Google Classroom and Whatsapp in skincare training?

Figure 3: Preference of student towards Google Classroom and WhatsApp in skincare training

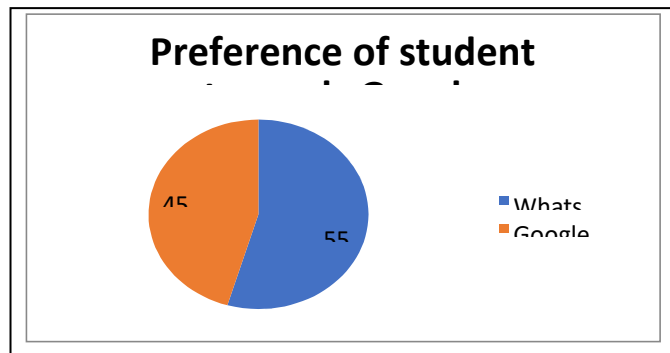


Figure 3 revealed the preference of student towards Google Classroom and WhatsApp in skincare training. It revealed that 45% of the respondents preferred Google Classroom while 55% of them preferred WhatsApp. This means that majority of the respondents preferred WhatsApp to Google Classroom.

Discussion of Findings

With respect to Research Question 1, which sought to examine the usage of Google Classroom and WhatsApp in teaching skincare-related content, the findings revealed that WhatsApp was used more frequently by students compared to Google Classroom. Specifically, nine respondents reported using WhatsApp daily, while only four indicated daily use of Google Classroom. Weekly and monthly usage patterns similarly favored WhatsApp. This usage trend supports earlier studies such as Barhoumi (2015) and Iloanya and Okoli (2022), which assert that WhatsApp's ease of use, real-time communication, and accessibility on low-end devices make it a preferred tool for learners in developing contexts. Furthermore, WhatsApp conversational interface and familiarity among users allow it to foster student engagement and informal interaction, which are vital in practice-oriented fields like skincare training. Nevertheless, some researchers such as Yeboah and Ewur, (2014) have cautioned against over-reliance on WhatsApp, noting its limited capacity for structured content delivery and assessment management compared to more formal learning management systems like Google Classroom.

Addressing Research Question 2, which explored the challenges students encountered while using Google Classroom and WhatsApp, the study revealed several significant barriers. The most commonly reported challenge was non-conduciveness of virtual learning environment for skincare training as reported by majority of the respondents. This is closely followed by poor network connectivity, as reported by 12 respondents. In addition, 13 students identified high data costs as a constraint, while nine respondents also pointed to unreliable electricity for charging devices as a limitation. These findings resonate with those of Adedoyin and Soykan (2020), who documented how infrastructure deficiencies, such as unstable electricity, limited internet access, and high digital costs, compromise the effectiveness of online education in sub-Saharan Africa. Similarly, Olumorin et al. (2021) emphasises that digital illiteracy, device unavailability, and learning distractions at home further limit student participation in virtual learning. In practice-oriented disciplines like skincare therapy, the lack of hands-on experience during remote instruction adds a layer of complexity to these challenges. While some literature suggests that mobile learning can succeed in low-resource environments with proper support (Mtebe & Raisamo, 2014), this study highlights that without systemic infrastructural improvement, such potential remains underutilised.

Concerning Research Question 3, which aimed to determine students platform preference for skincare training, the findings revealed that 55% of respondents preferred WhatsApp, while 45% favored Google Classroom. This preference for WhatsApp likely stems from its lower data requirements, faster messaging capabilities, and ability to support interactive communication through text, audio, and images. Ahad and Lim (2014) reported that students perceive WhatsApp as an effective collaborative learning tool, especially in informal or vocational education where real-time feedback and peer interaction are critical. However, the substantial preference for Google Classroom by nearly half of the participants points to an appreciation for its academic structure, including features such as assignment submission, class organisation, and feedback mechanisms (Al-Marroof et al., 2020). Nonetheless, Google Classrooms dependency on reliable internet and greater digital competence may hinder its effectiveness for learners who lack these prerequisites. These results reflect the broader tension between accessibility and structure in the design and adoption of educational technologies in developing countries.

Conclusion

This study investigated the usage, challenges, and students' preferences regarding the use of Google Classroom and WhatsApp for online skincare training at Ace the Wayout Beauty School, Ibadan, during the COVID-19 pandemic. The findings revealed that WhatsApp was more frequently used and preferred by students due to its ease of access, low data consumption, and user-friendly interface. Google Classroom, though used less frequently, was appreciated for its ability to organise instructional content and maintain structure in learning. The study also uncovered several challenges that hindered the effective use of both platforms. These included poor network connectivity, high cost of internet data, erratic electricity supply, and learning environments that were not conducive to virtual engagement. Despite these obstacles, the platforms played a crucial role in sustaining educational continuity during a time of global crisis. The findings reflect broader issues within the Nigerian educational landscape and emphasise the need for better infrastructure to support digital learning, especially in vocational and skill-based training. The study affirms the relevance and potential of mobile technologies in delivering non-traditional, hands-on education such as skincare training, even in challenging circumstances. However, it also underscores the importance of contextual and infrastructural support to maximise the benefits of such technologies.

Recommendations

1. Institutions like Ace the Wayout Beauty School should consider adopting a hybrid model that blends online platforms with periodic physical interactions. This will help address the limitations of virtual-only learning in skill-based training.
2. Students and instructors should receive targeted training on how to effectively use platforms like Google Classroom. This will enhance engagement, navigation, and maximise the pedagogical benefits of the tools.
3. Government agencies and telecom providers should partner with vocational institutions to provide affordable or subsidized internet packages for students to ease the burden of data consumption.
4. Stakeholders in the education and vocational training sectors should advocate for improved power supply and internet connectivity to enable more effective digital learning.
5. Learning materials shared via online platforms should be adapted to suit the technological and cultural context of learners. WhatsApp, for example, should be explored

further for interactive multimedia delivery in a manner that reflects localized needs.

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School Libraries and Student Information Literacy: A Study of Model Secondary School, FUT Minna, Niger State, Nigeria

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Abstract

This study investigated the role of the school libraries in fostering information literacy skills among students of Model Secondary School, Federal University of Technology (FUT) Minna, Niger State, Nigeria. The study assessed the availability and accessibility of library resources, frequency and purpose of library use, students' self-rated information literacy levels, and the perceived support provided by the library. A descriptive survey design was adopted, and data were collected from 200 students using a structured questionnaire. Findings revealed that textbooks (89.0%) and fiction/storybooks (80.0%) were the most available and accessible resources, while only 17.5% of respondents reported access to internet/ICT facilities. Library usage was moderate; 32.5% of students used the library 2–3 times a week, while 14.0% reported daily use. The primary reasons for library visits were reading for assignments (55.0%) and personal study (45.0%). Students' information literacy levels generally ranges from low to moderate. Only 15.0% rated themselves as very good at identifying information needs, 12.5% in searching for information, and 7.5% in referencing sources properly. In terms of library support, 45.0% of students agreed that staff provided research guidance, while a significant majority (82.5%) reported no digital literacy support. The study concludes that while the library moderately supports academic needs through print resources, it falls short in promoting comprehensive information literacy due to inadequate infrastructure, poor digital access, and limited instructional support. It recommends investing in ICT infrastructure, implementing structured information literacy programmes, and training library personnel to deliver effective user education.

Keywords: School library, Information literacy, Library usage, Digital resources, Secondary education, Nigeria.

Introduction

School libraries play an indispensable role in 21st-century education, serving as foundational pillars for student learning,

literacy development, and academic achievement. Beyond their traditional function as repositories of print materials, they have evolved into dynamic learning environments that cultivate a wide range of competencies, including reading culture, critical thinking, creativity, digital literacy, and independent learning (IFLA, 2015). The school library today is expected to be more than a physical space, but also a pedagogical partner in the teaching and learning process, contributing significantly to intellectual development and the pursuit of lifelong education. In the context of today's digital and information-driven society, the demands on learners have increased exponentially.

Students are now required not only to read and comprehend but also to critically engage with a multitude of information formats, including textual, visual, and digital. This makes information literacy a central competency for academic success. Information literacy refers to the ability to recognise an information need, locate and evaluate relevant resources, and apply information ethically and effectively for decision-making and problem-solving. According to the Association of College and Research Libraries (ACRL, 2016), information literacy is a crucial learning outcome that empowers learners to become independent thinkers and informed citizens. Within the school setting, well-functioning libraries play a vital role in developing these skills through structured programmes, access to diverse resources, and librarian-guided instruction.

However, in Nigeria, the potential of school libraries remains largely underutilised. While education policies, such as the National Policy on Education (FRN, 2013), emphasise the importance of school libraries as essential components of learning institutions, the reality in many schools reflects systemic neglect. Studies have consistently reported challenges such as poor funding, lack of professional librarians, outdated collections, insufficient integration with curriculum delivery, and an overall lack of administrative commitment to library development (Esan, 2022; Adebayo, 2022). These constraints not only limit students' access to meaningful learning resources but also hinder their acquisition of information literacy skills. In many Nigerian secondary schools, especially public ones, the absence of modern library infrastructure, including access to internet facilities, digital databases, and multimedia tools, further exacerbates the gap between students and the 21st-century learning tools they require. Even in institutions where library facilities exist, such as Model Secondary School at the Federal University of Technology (FUT) Minna, the quality of services, availability of resources, and the role of the librarian in fostering information literacy remain not fully explored.

This study therefore aims to assess the role of the school library at Model Secondary School, FUT Minna, in developing students' information literacy skills. It explores how library resources are accessed and utilised, the extent of students' information literacy competencies, and the kind of instructional or support services provided. The study hopes to reveal both the strengths and gaps in library-based information literacy support, offering insights for policy makers, educators, and library professionals seeking to improve library services and integrate them meaningfully into secondary education in Nigeria.

Statement of the Problem

In today's knowledge-driven global economy, students' ability to effectively access, evaluate, and use information is essential for academic and lifelong success. Although school libraries are intended to support the development of these competencies, many Nigerian school libraries remain underutilised or insufficiently equipped to promote meaningful information literacy learning (Olajide & Zinn, 2020). Students often engage with information, both print and digital, without the critical skills needed to assess credibility and relevance, which undermines their academic performance and independent thinking. Despite the presence of library facilities in some schools, there is a persistent gap between resource availability and actual student competency. Studies have shown that the lack of structured information literacy programmes, trained librarians, and integration with teaching practices weakens the library's impact (Ndagi, 2023; Esan, 2022). This challenge persists even in model secondary schools, raising concerns about how effectively libraries are functioning in practice. This study investigates the role of the school library in developing students' information literacy at Model Secondary School, Federal University of Technology (FUT) Minna. It examines the availability and use of library resources, assesses students' literacy skill levels, and evaluates the library's contribution to information-seeking and application. The findings aim to inform strategies for enhancing library-based interventions and shaping education policy and practice in Nigeria.

Research Objectives

The main objective of this study is to examine the contribution of the school library to the development of students' information literacy skills at Model Secondary School, Federal University of Technology (FUT) Minna. The specific objectives are to:

1. identify the types of information resources available in the school library of Model Secondary School, Federal University of Technology (FUT) Minna

2. determine the frequency and pattern of library use among students of Model Secondary School, Federal University of Technology (FUT) Minna
3. assess the level of information literacy possessed by students of Model Secondary School, Federal University of Technology (FUT) Minna
4. explore how the school library supports the development of information literacy skills in Model Secondary School, Federal University of Technology (FUT) Minna

Literature Review

The review was carried out both conceptually and empirically.

Conceptual Clarification

Information literacy is widely recognised as a foundational skill for navigating the modern information landscape. It encompasses the ability to recognise an information need, locate relevant resources, evaluate their credibility, and use information ethically and effectively. The American Library Association (ALA, 2000) defines it as the ability to “recognise when information is needed and to locate, evaluate, and use effectively the needed information.” These skills are essential not only for academic success but also for informed personal and societal decision-making. In educational settings, information literacy supports independent learning, critical thinking, and inquiry-based instruction. Lloyd (2010) emphasizes its role in fostering lifelong learning competencies, while the Association of College and Research Libraries (ACRL, 2016) provides a conceptual framework with key pillars such as "Research as Inquiry," "Authority Is Constructed and Contextual," and "Information Has Value." These can be adapted to secondary education to build students' research habits and evaluative thinking from an early stage.

School libraries play a crucial role in promoting information literacy and academic development. They serve as access points for a variety of resources, both print and digital, and act as instructional partners that support curriculum delivery, reading engagement, and research competence. According to the International Federation of Library Associations and Institutions (IFLA, 2015), the primary function of a school library is to provide information and ideas fundamental to students' successful participation in an information-rich society. In practice, effective school libraries collaborate with teachers, facilitate reading and digital literacy, offer safe learning environments, and support diverse learning needs (Bamigbola & Onifade, 2024). However, in the Nigerian context, many school libraries are constrained by chronic underfunding, poor infrastructure, and a shortage of trained library professionals

(Olajide & Zinn, 2020). These limitations significantly reduce their capacity to contribute meaningfully to students' information literacy development, despite policy recognition of their educational value.

Empirical Review

Empirical evidence from Nigerian secondary schools highlights significant disparities in the availability and quality of information resources across institutions, particularly between public and better-funded private or model schools. Many public school libraries lack up-to-date textbooks, periodicals, and essential ICT tools required for 21st-century learning. This gap in infrastructure limits students' ability to access diverse and current sources of information necessary for academic growth and independent learning (Olajide & Zinn, 2020; Esan, 2022). Library usage among secondary school students in Nigeria is generally low, with most students visiting the library infrequently and primarily for compulsory academic activities such as completing assignments or preparing for examinations. Factors contributing to this low usage include poor awareness of available resources, limited opening hours, weak reading culture, and a lack of user orientation programmes (Georgina, 2024; Muhammad & Abubakar, 2023). These barriers discourage students from viewing the library as a space for exploration, creativity, and independent inquiry.

In terms of information literacy levels, Nigerian students often lack the foundational competencies to identify information needs, formulate effective search strategies, evaluate sources, or cite appropriately. Several studies have pointed out that information literacy instruction is rarely integrated into the school curriculum, and many school librarians or teacher-librarians lack the training needed to deliver such instruction effectively (Ndagi, 2023; Nnadozie, & Jude-Iwuoha, 2024). This skills gap weakens students' capacity to function effectively in academic and digital environments.

Despite these challenges, research suggests that effective library support can positively impact students' information literacy development. Students who receive structured guidance and research instruction from trained librarians tend to perform better in tasks involving critical thinking and independent learning (Lloyd, 2010; Bamigbola & Onifade, 2024). However, in most Nigerian schools, such support mechanisms are either inconsistent or absent, limiting the implementation of comprehensive, integrated information literacy programmes. These empirical trends highlight the need for systemic reforms, including better funding, staff development, and policy implementation, to ensure that school libraries can fulfill their

intended instructional and developmental roles in Nigeria's secondary education system.

Research Methodology

This study used a descriptive survey research design to investigate how the school library at Model Secondary School, Federal University of Technology (FUT) Minna contributes to students' information literacy development. The population included all junior and senior secondary students, from which a stratified random sample was drawn to ensure balanced representation across class levels. Data were collected through a structured questionnaire, an observation checklist, and an interview guide administered to the school librarian. These tools assessed library usage, perceived information literacy skills, resource availability, and the instructional role of the library. Expert review and a pilot test ensured the instruments' validity and reliability, with the questionnaire yielding a Cronbach's Alpha of 0.78. Analysis was conducted using SPSS version 26. Descriptive statistics (frequencies and percentages) summarised the data, while inferential statistics (e.g., chi-square tests) were used to explore relationships between library use and students' information literacy. The level of significance was set at 0.05.

Analysis, Presentation and Interpretation of Results

Demographic Profile of Respondents

Table 1: Demographic Profile of Respondents (n = 200)

Variable	Category	Frequency (f)	Percentage (%)
Gender	Male	105	52.5%
	Female	95	47.5%
Class Level	JSS1–JSS3	110	55.0%
	SSS1–SSS3	90	45.0%
Age Range (in years)	10–13	78	39.0%
	14–16	92	46.0%
	17–19	30	15.0%

Table 1 presents the demographic distribution of 200 students from Model Secondary School, FUT Minna shows a nearly balanced gender composition, with 52.5% male and 47.5% female participants. The majority of respondents were from Junior Secondary School, with slightly higher participation from junior students. The majority of respondents were aged 14-16, with a typical age structure in Nigeria. This diversity enhances the reliability of findings on library usage and information literacy.

Availability and Accessibility of Library Resources

Table 2: Availability and Accessibility of Library Resources

Type of Resource	Available (Yes)	Not Available (No)	Easily Accessible (%)
Textbooks	178 (89.0%)	22 (11.0%)	70.5%
Reference Materials (Dictionaries, etc.)	150 (75.0%)	50 (25.0%)	62.0%
Newspapers/Magazines	90 (45.0%)	110 (55.0%)	40.0%
Internet/ICT Facilities	35 (17.5%)	165 (82.5%)	18.0%
Fiction and Storybooks	160 (80.0%)	40 (20.0%)	65.0%

Table 2 presents the availability and ease of access to different categories of information resources in the school library. The school library's availability and accessibility of information resources were analyzed. Textbooks were the most available, with 89.0% of students confirming their availability. Fiction and storybooks were also widely available, with 65.0% of students stating their accessibility. Reference materials like dictionaries and encyclopedias were present, but 62.0% found them easy to access. Newspapers and magazines were less accessible, with only 45.0% noting their presence and 40.0% indicating accessibility. Internet and ICT facilities were the most scarce, with only 17.5% of students reporting their availability and 18.0% easily accessing them. This highlights a lack of modern digital tools essential for 21st-century information literacy development. The findings suggest a need for targeted investment in digital resources and improved access mechanisms.

Frequency and Purpose of Library Use by Students

Table 3: Frequency and Purpose of Library Use by Students

Frequency of Use	Frequency (f)	Percentage (%)
Daily	28	14.0%
2–3 times a week	65	32.5%
Weekly	50	25.0%
Occasionally	40	20.0%
Rarely/Never	17	8.5%
Purpose of Library Use	Frequency (f)	Percentage (%)
Reading for assignments/homework	110	55.0%
Personal study	90	45.0%
Recreational reading	60	30.0%
Internet use (if available)	20	10.0%

Table 3 presents data on how frequently students use the school library and the purposes for which they utilise the facility. The

study reveals that while the library is moderately used for academic purposes, its full potential, particularly in supporting digital literacy and diverse reading interests, is not being realised. The majority of students (32.5%) use the library 2-3 times a week, while 25.0% use it once a week. However, only 14.0% of students report daily use, and 20.0% use it occasionally. The library is primarily used for reading for assignments or homework, with 45.0% using it for independent study. Recreational reading is reported by 30.0%, while only 10.0% use the library for internet-related activities. The findings suggest a need for improved awareness, integration of library services with classroom activities, and investment in digital resources to enhance the frequency and diversity of library use.

Students' Level of Information Literacy (Self-Rating)

Table 4: Students' Level of Information Literacy (Self-Rating)

Skill Area	Very Good (%)	Good (%)	Fair (%)	Poor (%)
Identifying information needs	30 (15.0%)	60 (30.0%)	75 (37.5%)	35 (17.5%)
Searching for information effectively	25 (12.5%)	58 (29.0%)	80 (40.0%)	37 (18.5%)
Evaluating credibility of sources	20 (10.0%)	50 (25.0%)	90 (45.0%)	40 (20.0%)
Referencing or citing sources properly	15 (7.5%)	40 (20.0%)	70 (35.0%)	75 (37.5%)

Table 4 presents students' self-assessed levels of information literacy across four key skill areas: identifying information needs, searching for information, evaluating sources, and referencing or citing information properly. The study reveals that students have limited information literacy skills, particularly in higher-order competencies like source evaluation and referencing. Only 15.0% of respondents rated themselves as very good in identifying information needs, while the majority fell into the fair and poor categories. This suggests a lack of clarity in defining and articulating information problems. The distribution of students in searching for information is also low, with only 12.5% rating themselves as very good and 29.0% as good. The majority, 58.5%, rated their skills as fair or poor, indicating a noticeable deficiency in search strategies and navigation of information sources. The lowest self-ratings were observed in referencing or citing sources properly, with only 7.5% rated as very good and 20.0% as good. This suggests a need for structured information literacy instruction, possibly integrated into the curriculum and supported by trained library staff.

Perceived Library Support for Information Literacy Skills

Table 5: Perceived Library Support for Information Literacy Skills

Library Service/Support Area	Strongly Agree	Agree	Disagree	Strongly Disagree
Library staff provide guidance on research	30 (15.0%)	60 (30.0%)	70 (35.0%)	40 (20.0%)
Orientation on using library resources	25 (12.5%)	55 (27.5%)	80 (40.0%)	40 (20.0%)
Materials support curriculum needs	35 (17.5%)	75 (37.5%)	60 (30.0%)	30 (15.0%)
ICT support or digital literacy guidance	15 (7.5%)	20 (10.0%)	80 (40.0%)	85 (42.5%)

Table 5 presents students' perceptions of the school library's role in supporting the development of information literacy skills through various services and support mechanisms. The study found that 45.0% of students agreed that library staff provide guidance on research, while 55.0% disagreed. This suggests that students feel inadequately guided, indicating inconsistency or limited librarian-student interaction. Only 40.0% of respondents received orientation on using library resources, which may contribute to low levels of information literacy. However, over half of respondents agreed that library materials align with their academic requirements, suggesting that the library's full potential might be underutilized due to poor awareness or limited instructional support. The most critical concern was the lack of ICT support and digital literacy guidance, with only 17.5% agreeing and 82.5% dissatisfied. This lack of support severely limits students' ability to search for and evaluate online information, a crucial skill in contemporary education. The findings highlight significant gaps in active library-based instruction and support services, requiring policy, staff training, and resource allocation to maximize the educational impact of the school library.

Summary of the Findings

The study investigated the role of the school library in developing students' information literacy skills at Model Secondary School, FUT Minna. Key findings across the research objectives are summarized as follows:

1. The library has a good collection of traditional resources like textbooks and fiction/storybooks, but critical resources like internet/ICT facilities and current newspapers/magazines are either lacking or underutilised. Reference materials are moderately available but not easily accessible to all students.
2. Most students visit the library 2-3 times per week or weekly, with reading for assignments/homework and personal study

being the most common purposes. Recreational reading is practiced by 30.0% of students.

3. Students self-reported low to moderate levels of information literacy, with a minority rated very well in identifying information needs and searching for information.
4. Most students perceived weak library support for developing their information literacy, with only 17.5% acknowledging such support and 82.5% expressing dissatisfaction.
5. The study suggests policy reforms, investment in digital resources, structured user education, and stronger librarian involvement to enhance the library's capacity in nurturing information-literate learners.

Discussion of Findings

The study revealed that although textbooks and fiction/storybooks are widely available and relatively accessible in the school library, significant gaps exist in the provision of up-to-date resources such as newspapers, reference materials, and ICT facilities. This finding is consistent with Adebayo (2022), who reported that many Nigerian school libraries suffer from inadequate funding, outdated collections, and limited access to electronic resources. Muhammad & Abubakar, (2023) further observed that while textbooks often dominate the collection, essential digital tools for 21st-century learning, such as internet access and computer terminals, are typically absent or non-functional in public secondary schools. The limited availability of ICT facilities in this study (17.5%) reflects broader infrastructural deficits that hinder students' ability to acquire digital competencies and access online information. Without adequate and diverse resources, school libraries struggle to fulfill their role in equipping students with the tools needed for effective information engagement (Esan, 2022).

The study found that most students used the library between once and three times a week, primarily for academic-related purposes such as completing assignments (55.0%) and personal study (45.0%). However, daily use was low (14.0%), and about 28.5% of students used the library only occasionally or not at all. These results suggest underutilisation of the library's full potential. According to Georgina (2024), many students perceive the library solely as a study venue rather than as a place for inquiry and exploration, particularly when resources and instructional support are limited. Olajide & Zinn (2020) highlighted similar challenges, attributing irregular library usage to lack of user orientation, insufficient librarian engagement, and an overall poor reading culture among Nigerian secondary school students. Moreover, the limited recreational and internet-based use observed in this study reflects the narrow scope of services currently offered, which

limits the development of independent learning and digital fluency.

Students' self-assessed information literacy levels were generally low to moderate, especially in key areas such as evaluating the credibility of sources and proper referencing. Only 7.5% of students rated themselves as very good in citing sources, while 72.5% rated their skills as fair or poor. This confirms earlier findings by Ndagi, (2023), who reported that Nigerian students often lack systematic instruction in information literacy, including how to critically assess and use information ethically. Similarly, Fabunmi (2020) emphasized that the absence of structured information literacy programmes in secondary schools leads to weak competencies in information search, evaluation, and referencing. The results of this study affirm that without deliberate pedagogical efforts and support from trained librarians, students may be ill-equipped to navigate the increasingly complex information landscape.

The majority of respondents indicated that the school library provides limited support for developing their information literacy skills. Although 55.0% of students agreed that the library provides materials relevant to their curriculum, only 45.0% felt they received any research guidance, and a striking 82.5% reported that they did not receive ICT or digital literacy support. This aligns with the findings of Nnadozie, & Jude-Iwuoha, (2024), who observed that secondary school libraries rarely offer structured user education or research instruction, often due to lack of collaboration between teachers and librarians or absence of qualified staff. Lloyd (2010) emphasized that information literacy is not just a technical skill but a situated practice that requires instructional support and social engagement. In the absence of such support, particularly digital literacy training, students remain passive users of information rather than critical and independent thinkers. The findings underscore the need to reposition school libraries from static resource centers to dynamic learning hubs that actively support the development of lifelong learning skills.

Conclusion

The study at Model Secondary School, FUT Minna, found that while basic print resources are moderately available, the library lacks critical components like ICT facilities, reference materials, and internet access. Students primarily use the library for academic support, but their self-reported information literacy levels are generally low. The library's support for developing these competencies is perceived as inadequate, with limited orientation, insufficient staff guidance, and virtually no ICT or digital literacy training. The findings highlight the need to reposition the school library as a proactive partner in teaching

and learning, addressing infrastructure, instructional support, and user engagement to ensure students become critical thinkers and ethical users of knowledge in an information-saturated world.

Recommendations

1. School management should allocate more funds for updating and expanding library resources, including acquiring current reference materials, newspapers, magazines, and digital resources. Physical arrangement should be improved to make them more user-friendly and accessible to all students. An open-shelf policy can support independent exploration and usage of library materials.
2. Integrating library-based tasks into the school curriculum, assigning classwork and projects that require library resources, and establishing a structured timetable for library visits can normalize usage across different classes. The library should also promote its role beyond academics by supporting recreational reading, literacy clubs, and co-curricular learning.
3. A structured information literacy programme is essential to address low levels of information literacy among students. This programme should be age-appropriate, embedded in both library and classroom instruction, and include practical workshops, reading challenges, and interactive sessions.
4. Librarians should be empowered through professional development to take on instructional roles, collaborate with classroom teachers, and provide regular orientation on library use.
5. Institutional support from school leadership is crucial to ensure the library functions as an active partner in the educational process.

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Usefulness of Institutional Repositories: Perceptions of Students at Federal Polytechnic Offa, Kwara State, Nigeria

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Abstract

This study investigated the perceived usefulness of institutional repositories (IRs) among students in the Department of Library and Information Science at the Federal Polytechnic Offa, Kwara State, Nigeria. Descriptive survey research design was adopted; a total of one hundred and fifty (150) students who were selected using simple random sampling technique constituted the sample for the study. Structured questionnaire was the instrument for data collection, results were presented in tables and data were analyzed using simple frequencies and percentages. The challenges identified in the study included inadequate information technology infrastructure, lack of funds, maintenance issues and concerns about plagiarism among others; but despite these challenges, respondents reported a highly positive perception about institutional repositories (IRs), with a combined total of 114 respondents (94.2%) indicating that they considered institutional repositories either “Useful” or “Very Useful” in the academic environment. Also, the study found that while perception of usefulness of institutional repositories is relatively high, actual usage remains moderate (65 students, 53.7%). The study recommends improved user education, infrastructure upgrades, stronger administrative commitment and formulation of policies to guide the institutionalization of institutional repositories in academic processes.

Keywords: *Academic Libraries, Digital Infrastructure, Digital Literacy, Information and Communication Technology, Institutional Repositories, Perception, Usefulness.*

Introduction

The digital age has revolutionised information management in academic institutions, prompting the need for sustainable platforms that facilitate access, preservation and dissemination of scholarly output. Institutional repositories (IRs) have emerged as essential tools in this regard, offering institutions an avenue to capture, store and share intellectual assets thereby making research more accessible and contributing to the advancement of knowledge, innovation and collaboration within the academic community (Teixeira, 2024). Worldwide,

academic institutions are increasingly adopting institutional repositories as part of their infrastructure to ensure long-term preservation and open access to intellectual assets (Abdu, Farouk and Maisango, 2025; Njoku, Njoku, Chukwu and Ravichandran, 2023). Thus, the intellectual output of institutions, such as theses, dissertations, conference papers, technical reports and other scholarly works, is gathered, preserved and shared through institutional repositories, which function as digital archives; and when fully operational, they: promote open access to a wide range of digital content, foster academic visibility and enhance information retrieval in learning environments (Ezema and Eze, 2024; Zibani, Rajkoomar and Naicker, 2021).

In Nigeria, the relevance of institutional repositories (IRs) is becoming more recognized, mostly in tertiary institutions seeking to enhance visibility and access to their locally produced research; though many of the institutions in the country have adopted institutional repositories, usage and engagement remain suboptimal, particularly among students and faculty (Ezema and Eze, 2024). In the context of Federal Polytechnic Offa, understanding the perception of students about institutional repositories is essential for optimizing their use and benefits. This study, therefore, aims to examine the perceptions of students at the Federal Polytechnic Offa, regarding the usefulness of institutional repositories (IRs) and by exploring factors such as accessibility, relevance and usability, the study contributes to the growing discourse on digital knowledge management and the role of institutional repositories in supporting student-centred learning and research in Nigerian tertiary education, particularly in polytechnics.

Statement of the Problem

Though many universities in Nigeria have since established institutional repository, the same cannot be said of majority of Nigerian polytechnics (Odaro-Ekhaguebor, Osaguona and Nasamu, 2023). Despite the growing importance of institutional repositories in enhancing research visibility and impact, studies like that of Anene, Ozor and Baro (2020) have shown that although many institutions (including polytechnics) in the country, have introduced institutional repositories as part of their digital transformation efforts, regardless of the presence of these repositories, their actual usage and perceived usefulness among students remain significantly low. In addition, numerous studies have reported challenges such as poor information, communication and technology (ICT) infrastructure, low digital literacy level, low awareness levels, inadequate training, lack of or inadequate policies, lack of funds and lack of administrative

support as limiting effective engagement with institutional repositories (Waugh, Lyon, Shelton, Park and Hicks, 2020; Idiedo et al., 2024). Therefore, understanding the perceptions of students at the Federal Polytechnic Offa is vital, as it can inform strategies of the institution for: promoting the use of institutional repositories, enhancing digital literacy and increasing research productivity among students as well as formulating institutional policies that support institutional repositories development and utilization.

Objectives of the Study

The main objective of the study was to examine the perceptions of students at the Federal Polytechnic Offa, regarding the usefulness of institutional repositories. The specific objectives of the study were to:

1. examine the utilization of institutional repositories by students of the Federal Polytechnic Offa;
2. investigate the challenges faced by students of the Federal Polytechnic Offa in using institutional repositories.

Research Questions

Based on the objectives of the study, answers were sought to the following research questions:

1. What are the perceptions of students at the Federal Polytechnic Offa, regarding the usefulness of institutional repositories?
2. Do students of the Federal Polytechnic Offa utilize institutional repositories?
3. What challenges do students of the Federal Polytechnic Offa face in using institutional repositories?

Literature Review

The increasing deployment of institutional repositories (IRs) in higher education institutions globally reflects a shift towards open access, knowledge preservation as well as digital scholarship and institutional repositories serve as digital collections of academic output created by faculty, students as well as researchers, they are designed to store, manage and disseminate scholarly content (Teixeira, 2024; Masawe, Muneja and Msonge, 2023; Adam and Kiran, 2021) and have become essential for promoting institutional prominence, enhancing research impact and supporting academic collaboration in both developed and developing contexts globally (Ndegwa and Kuchma, 2024). Furthermore, Njoku et al., (2023); Adam and Kiran (2021) and Anene et al. (2020) note that repositories play a key role in democratizing access to knowledge, particularly for researchers and scholars who may lack access

to commercial databases, coupled with facilitating the long-term preservation of intellectual assets, making them critical to the academic lifecycle and institutional memory.

In the views of Owoicho and Adekoya, (2021), institutional repositories are useful for academic purposes such as research, writing articles, searching for scholarship opportunities, etcetera, among students. Also, Olubiyo and Olubiyo (2023) posit that institutional repositories serve as a response to high cost of journal subscriptions and the global call for open science, allowing users, especially students and researchers, to access institutional knowledge assets without financial barriers; as observed by Abdu et al.(2025) and Anene et al. (2020), many Nigerian institutions have developed institutional repositories to bridge the digital divide in knowledge access, particularly for students engaged in research projects and final year theses along with faculty members.

Regardless of these advantages, challenges persist in terms of student engagement with institutional repositories, which could be attributed to various factors like lack of orientation, limited information, communication and technology (ICT) infrastructure and inadequate skills (Idiedo, Omigie and Ebhomeye, 2024; Obiozor-Ekeze and Nwafor-Orizu, 2024; Odaro-Ekhaguebor et al., 2023; Waugh et al., 2020) and absence of policy frameworks that promote repository engagement (Posigha and Idjai, 2022). Further, some studies indicate that perceptions of students significantly impact their adoption and utilization of repositories (González-Pérez, Ramírez-Montoya and García-Peñalvo, 2021; Owoicho and Adekoya, 2021). Subiyakto, Rahmi, Kumaladewi, Huda, Hasanati and Haryanto (2021) also highlighted the importance of user-centred design in ensuring repository usability, arguing that students are more likely to engage with repositories that are intuitive, mobile-responsive and embedded within course delivery systems.

One very common barrier is low awareness and limited digital literacy, which often restricts effective use of repositories by students (Esse and Yacob-Haliso, 2023; Hamzat, Ilesanmi and Adekunjo, 2022). Hamzat et al. (2022), in their study at the University of Ibadan, found low awareness of institutional repositories among students, pointing out the need for intensified efforts in awareness campaigns and targeted training to enhance contributions to, knowledge of types and benefits as well as use of institutional repositories. Likewise, the critical role of digital literacy in maximizing the value of digital resources, including content of institutional repositories cannot

be understated; as observed by Agina-Obu and Okwu (2023); Alex-Nmecha and Ejitaga (2023) and Aduba, Obot and Baro (2022), students who possess strong information retrieval skills and an understanding of metadata are better positioned to navigate repository systems effectively. Also, Njoku et al. (2023) stressed the importance of cybersecurity in institutional repositories; it is essential that institutions minimize or completely remove the risk of safety of scholarly heritage and loss or attack of digital records of institutions due to viruses attack or the activities of hackers.

Other studies in Nigeria reflect similar findings, for instance, Abdu, et al. (2025) and Esew and Mayowa-Adebara, (2020) observe that although institutional repositories exist in many Nigerian tertiary institutions (including polytechnics, universities and so on), their impact is undermined by poor promotion, outdated content and weak information and communication technology support. Owoicho and Adekoya (2021) assert that students in Nigerian tertiary institutions often rely on external sources like Google Scholar or Research Gate if they are not aware of the repositories in their institutions or such repositories are either underdeveloped or not user-friendly. Moreover, infrastructural limitations such as unstable power supply, low bandwidth and limited access to computers compound the challenges students face when attempting to utilize institutional repositories (Obiozor-Ekeze and Nwafor-Orizu 2024).

User experience, which includes access and usability, also plays a significant role in shaping perceptions of usefulness of institutional repositories as repositories that are not user-friendly or lack mobile-friendly interfaces and search optimization limit the appeal of such institutional repositories to those students who are accustomed to using smartphones and Google-based searches for their academic work (Owoicho and Adekoya, 2021; Subiyakto et al., 2021). This implies that repositories should be designed with the end-user in mind, incorporating features like keyword search, content previews, multilingual options and citation tools, they become more accessible and valuable for undergraduate and postgraduate students.

Another vital determinant of repository usefulness is the relevance and timeliness of content, an opinion supported by Masawe et al. (2023) who assert that institutional repositories that are updated regularly with staff publications, current theses and departmental reports tend to attract more student engagement while outdated or poorly indexed content often discourages student use. As such, students from polytechnics

like the Federal Polytechnic Offa, are typically involved in project-based and technical research work, and they benefit when the institutional repository includes not just academic theses, but also industrial training reports, design projects as well as technical manuals relevant to their disciplines whereas the absence of such materials may lead them to undervalue the importance of repositories in their academic journey. Moreover, integration with learning management systems (LMS) has been shown to boost repository visibility, especially when instructors refer students to institutional repositories as part of course work or project guidelines (Umar, Ibrahim and Opeyemi, 2024).

Further, while the potential benefits of institutional repositories are widely acknowledged, a number of studies suggest that awareness among students and faculty remains limited; Obiozor-Ekeze and Nwafor-Orizu (2024) found that although institutional repositories existed in several Nigerian universities, student engagement was minimal due to low awareness and inadequate training. Student perception is another critical factor influencing the usefulness of institutional repositories; Odaro-Ekhaguebor et al. (2023) opine that students who perceive institutional repositories as easy to navigate are more likely to use them consistently but if the interface is poorly designed or the repository is not regularly updated, students may perceive it as obsolete or irrelevant to their research needs. It is worthy to state that most studies on institutional repositories focus on universities thus creating a noticeable gap in the literature regarding their use in the polytechnics, especially in sub-Saharan Africa and particularly Nigeria (Odaro-Ekhaguebor et al., 2023). However, polytechnic students, like their university counterparts, engage in significant research activities especially during their final year and industrial training periods, hence their need of a well-structured institutional repository system with current content from the most current and credible source and that supports diverse formats, such as technical diagrams, reports and audio-visual content (Abdu et al., 2025).

Research Methodology

The study employed survey research design with a randomly selected sample of one hundred and fifty (150) students from the Library and Information Science Department of Federal Polytechnic Offa, covering both Ordinary National Diploma (OND) and Higher National Diploma (HND) students at all levels. Data on the perception of institutional repositories and their academic usefulness were gathered using a structured questionnaire with both closed and open-ended questions. Of the 150 copies of questionnaire distributed, only one hundred and twenty-one (121) copies were returned and the analysis and discussion of results were based on these. Descriptive statistics,

specifically, simple frequencies and percentages were used to analyse the data and tables were employed to present responses to key questions.

Findings and Discussion

Table 1: Distribution of Respondents by respondents by gender and level of study

	Frequency	Percentage (%)
Gender:		
Male	66	54.5%
Female	55	54.5%
Total Respondents	121	100%
Level of Study:		
ND I	16	13.2%
ND II	3	2.5%
HND I	67	55.4%
HND II	35	28.9%
Total Respondents	121	100%

Table 1 above presents the demographic distribution of the respondents by gender and level of study. A slightly higher proportion of the respondents were male (54.5%) compared to female (45.5%), indicating a fairly balanced gender representation, which enhances the generalizability of the findings of the study. In terms of academic level, majority of the respondents were from Higher National Diploma year one (HNDI) with 55.4% (that is 67) respondents, followed by those in Higher National Diploma year two (HNDII) with 28.9% (35) while those at the Ordinary National Diploma Levels I and II (NDI and NDII) were 13.2% (16) and 2.5% (3) respectively.

Table 2: Availability of an institutional repository at Federal Polytechnic Offa

Availability of IR at Federal Polytechnic Offa	Frequency	Percentage (%)
Yes	71	58.7
No	13	10.7
I do not know	37	30.6
Total	121	100

Table 2 above reveals that although 58.7% (71) of the respondents indicated awareness that their institution has an institutional repository, a concerning 30.6% (37) were unsure of its existence and 10.7% (13) believed none existed. This finding indicates significant gaps in institutional communication and student orientation, which may impede effective use of the repository and, hence underscores the need for deliberate visibility campaigns, student training and integration of the repository into academic support systems to

avoid underutilization, as also opine by Esse and Yacob-Haliso (2023); Hamzat et al. (2022) and Subiyakto et al. (2021).

Table 3: Frequency of use of institutional repository in the institution

Frequency of use the school's IR	No. of Respondents	Percentage %
Frequently	28	23.1
Very frequently	16	13.2
Moderately	14	11.6
Not at all	63	52.1
Total	121	100

Table 3 above reveals a troubling trend of low usage of the institutional repository among students of Library and Information Science Department of Federal Polytechnic Offa, with 52.1% of respondents reported they never used it, despite earlier evidence of high awareness (as shown in table 2). Only a minority (23.1%) reported frequent use, suggesting that awareness does not translate into sustained engagement. This disconnect points to challenges such as poor integration into academic workflows, outdated content and low usability, which have been identified in the earlier studies of Idiedo et al. (2024), Umar et al. (2020), Abdu et al. (2025) and Masawe et al. (2023).

Table 4: Perception of students about institutional repository usefulness

Options	Number of Respondents	Percentage
Useful	51	42.1
Very Useful	63	52.1
Slightly Useful	3	2.5
No Useful	4	3.3
Total	121	100

Table 4 above demonstrates that students of Library and Information Science Department at Federal Polytechnic Offa hold positive views about institutional repositories (IRs), with a combined 94.2% rating them as either “Useful” or “Very Useful”. This strong perception reflects an appreciation of institutional repositories as vital academic tools for accessing theses, research papers and other scholarly materials and aligns with prior studies by Ezema and Eze (2024) and Ndegwa and Kuchma (2024) which stress the role of institutional repositories in enhancing academic visibility and knowledge sharing. The results also support observations by Odaro-Ekhagbor et al. (2023) and Owoicho and Adekoya (2021), who noted that students value institutional repositories for their easy access to updated content, credible, institutionally backed resources and reinforces the idea that integration into learning platforms and proper promotion of institutional repositories, such as through learning management systems or academic

assignments, can significantly boost engagement as suggested by Umar et al. (2024).

Table 5: Challenges to effective institutional repository adoption

Challenge	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Plagiarism/Theft of deposited information resources	48 (39.7%)	28 (23.1%)	23 (19.1%)	9 (7.4%)	13 (10.7%)
Maintenance issues	55 (45.5%)	30 (24.8%)	19 (15.7%)	6 (5.0%)	11 (9.1%)
Lack of funds	59 (48.8%)	27 (22.3%)	12 (9.9%)	8 (6.6%)	14 (11.6%)
Copyright issues	54 (44.6%)	28 (23.1%)	21 (17.4%)	5 (4.1%)	8 (6.6%)
Lack of agreement between depositors and the institutional repository management	52 (43.0%)	26 (21.5%)	16 (13.2%)	11 (9.1%)	10 (8.3%)
Poor information technology infrastructure	62 (51.2%)	22 (18.2%)	17 (14.1%)	9 (7.4%)	11 (9.1%)
Lack of administrative attention and support	58 (47.9%)	26 (21.5%)	17 (14.1%)	12 (9.9%)	8 (6.6%)

Table 5 above shows that the major barriers to institutional repository adoption as noted by that students of Library and Information Science Department at Federal Polytechnic Offa included poor information technology infrastructure (51.2% strongly agree), lack of funding (48.8%) and weak administrative support (47.9%). These challenges agree with the findings by Obiozor-Ekeze and Nwafor-Orizu (2024) and Odaro-Ekhaguebor et al. (2023) who identified similar issues in Nigerian polytechnics. Other concerns include copyright (44.6%) and data theft (39.7%) and unclear contributor agreements (43.0%). Reflecting fears around intellectual property and system reliability. To improve institutional repository adoption, institutions must invest in infrastructure, clarify policies and strengthen administrative support (Posigha and Idjai, 2022).

Conclusion

This study examined the perceived usefulness of institutional repositories among students at Federal Polytechnic Offa and revealed a positive perception of the academic value of institutional repositories but low actual usage due to infrastructural, educational coupled with institutional challenges. Addressing these barriers through targeted investments, administrative backing and user training is essential to enhance institutional repository adoption. Institutional repositories hold immense potential in improving scholarly communication, preserving academic output, and supporting student research if adequately supported and promoted.

Recommendations

To improve student engagement and maximize the potential of the institutional repository, the institution should implement continuous user education programmes that go beyond basic orientation; these should be embedded in academic coursework to ensure relevance. Also, significant investment is needed in internet infrastructure, power supply and mobile compatibility of the institutional repository. System maintenance must be prioritized and technical support should be available to handle user issues promptly; concerns about plagiarism should be addressed through clear intellectual property policies and technological safeguards like watermarks or controlled access. Additionally, administrative commitment is crucial; the institution should allocate dedicated funding, integrate institutional repository use into academic processes, and actively promote its benefits through various student and staff channels. Finally, usage of the institutional repository should be made a requirement for academic submissions to institutionalize its relevance.

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Skill Development and Competency Building for Library Professionals in the Era of Industry 4.0

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Abstract

The Fourth Industrial Revolution (4IR) has introduced unprecedented technological advancements that are reshaping the roles and competencies required of library and information professionals. This study investigates the development of a robust lifelong learning and upskilling framework designed to equip library personnel with the necessary skills to thrive in the dynamic 4IR environment. Through a comprehensive review of interdisciplinary literature and analysis of current professional development practices, the article identifies critical skill areas including digital literacy, data management, artificial intelligence applications, and user-centered service innovation. The proposed framework integrates cognitive, technical, and socio-emotional learning dimensions to foster adaptability, critical thinking, and collaborative problem-solving among library staff. Emphasis is placed on continuous, reflective, and experiential learning approaches that align with evolving technological trends and user expectations. The study also evaluates challenges such as resource limitations, organisational resistance, and skill obsolescence, proposing strategic interventions to overcome these barriers. This research offers a scalable and inclusive framework that supports sustainable workforce transformation in libraries through the synthesising theoretical models with practical insights. The findings hold significant implications for library administrators, educators, and policymakers aiming to enhance professional competencies and ensure libraries remain vital knowledge hubs in the 4IR era.

Keywords: *Fourth Industrial Revolution, Lifelong Learning, Upskilling, Library and Information Professionals, Digital Literacy, Professional Development Framework.*

Introduction

The Fourth Industrial Revolution (4IR) marks a profound turning point in human history, shaping the way societies live, work, and interact through rapid technological advancements. It represents a convergence of cyber-physical systems, artificial intelligence, big data analytics, robotics, the Internet of Things, and biotechnology in ways that have never been seen before

(World Economic Forum, 2020). This convergence affects not only industries but knowledge professions, including libraries and information services, which stand at the crossroads of preserving, managing, and disseminating knowledge in a digital age. The pace of change driven by 4IR challenges traditional roles and calls for a redefinition of competencies to keep library and information professionals relevant and effective.

In the context of African knowledge systems, the disruptive impact of 4IR has specific dimensions. Nigerian and African scholars emphasise the crucial role of technology adoption and capacity building within knowledge-intensive professions to harness the potential of digital transformation (Adekunle et al., 2021; Nwaosusu & Chukwuedo, 2023). The library sector, historically the custodian of knowledge, faces an existential moment where conventional skills must expand to include digital literacy, data management, and the use of AI-driven tools. As Sarina (2018) highlights, knowledge workers who acquire competencies in managing data and technology become pivotal to organisational success, especially in navigating the complexities of the 4IR era. This transformation is not limited to infrastructure but extends deeply into the intellectual and social capabilities of professionals who must learn to adapt continuously.

Preparing library and information professionals for these technological shifts lies at the heart of sustainable workforce transformation. Scholars identify lifelong learning and strategic upskilling as indispensable strategies to respond to evolving user expectations and technological innovations (Hussin, 2018; Oladele & Akinyemi, 2022). In Nigeria, there is growing recognition that library curricula and professional development programs must evolve to integrate digital competencies aligned with Industry 4.0 innovations. This approach promotes resilience among professionals amid uncertainties triggered by automation and AI, which could otherwise marginalise traditional roles (Usonwanne, 2020). Moreover, digital proficiency enables library personnel to participate actively in knowledge creation, management, and dissemination in a way that addresses local and global information needs (Akinyemi, 2019).

The literature further reveals an urgent need to address structural and institutional challenges that may hinder the capacity of libraries to harness 4IR technologies. Resource limitations, inadequate training frameworks, and resistance to change remain barriers in many African contexts, including Ogun State in Nigeria (Nwaosusu & Chukwuedo, 2023). These

factors can stall the adoption of cutting-edge tools and consequently affect service delivery, user engagement, and the role libraries play in knowledge ecosystems. Hence, understanding not only the technical skill gaps but also organisational dynamics becomes essential for designing effective learning frameworks that empower professionals to manage rapid change effectively.

This study sets out to explore the development of a robust lifelong learning and upskilling framework tailored for library and information professionals operating within the transformative environment created by the 4IR. The focus is on capturing and synthesising interdisciplinary perspectives, particularly insights emerging from Nigerian and broader African scholarship, about the competencies needed, challenges faced, and strategies adopted to thrive in this changing landscape. By examining evolving roles, skill demands, and institutional responses, the study highlights pathways to align workforce capabilities with ongoing technological advancements. The research concentrates on library and information science professionals, recognising their frontline position in mediating access to information and knowledge. It addresses the cognitive, technical, and socio-emotional learning dimensions necessary for adapting to automation, artificial intelligence applications, and data-intensive environments. The study integrates themes related to curriculum reform, professional training, and organisational culture transformation, offering an inclusive framework that promotes continuous, experiential, and reflective learning approaches. Given the cascading impact of the 4IR on various sectors, focusing on libraries provides a strategic lens through which knowledge professions may envision and strategise their future.

In addition, the research considers practical barriers such as funding gaps, institutional inertia, and rapid skill obsolescence, which are recurrent themes in African scholarship (Adekunle et al., 2021; Oladele & Akinyemi, 2022). Addressing these challenges, the study contends, requires not only individual commitment but coordinated policy initiatives and leadership engagement aimed at building resilient knowledge institutions. The outcome aspires to inform stakeholders, including educators, policymakers, and library administrators, laying groundwork for sustainable professional development policies in Nigeria and similar contexts affected by 4IR disruptions.

Libraries have moved through a remarkable journey, adapting to the realities of a digitally connected world. What began as spaces filled with printed books quietly tended by custodians

has transitioned towards vibrant, technology-rich environments. Today's libraries operate as interactive information hubs, embracing digital collections, online databases, and multimedia learning tools designed to reach users wherever they may be. Librarians have expanded their roles, taking on responsibilities as digital literacy educators, curators of diverse content formats, and facilitators of meaningful community engagement. This shift recognises that libraries must meet evolving information needs shaped by the internet, mobile technologies, and open knowledge practices.

At the heart of the Fourth Industrial Revolution (4IR) lies a suite of powerful technologies, such as artificial intelligence, the Internet of Things, big data, automation, and cloud computing that redefine knowledge environments (World Economic Forum, 2020). In libraries, these changes bring both challenges and opportunities. Automation streamlines cataloguing and circulation. Artificial intelligence supports advanced information retrieval, recommendation systems, and predictive analytics. The spread of cloud computing increases the accessibility and scalability of digital library services. Libraries also become instruments for digital inclusion, providing pathways to technological resources and equipping users to engage with complex digital systems. Professionals working in these environments face shifting expectations, needing expertise in technology management along with their traditional skills for information stewardship.

Across Africa and Nigeria, there is consensus in scholarship that lifelong learning holds the key to professional relevance in the digital era. As information landscapes keep changing, librarians need to continually update their knowledge and skills to adapt to new technologies and user behaviours (Oladele & Akinyemi, 2022). Lifelong learning goes beyond formal education to embrace ongoing training, informal peer mentoring, self-directed study, and reflective practice. Such continuous development ensures that library professionals are prepared for hybrid work environments, whether curating electronic resources, designing digital services, or harnessing new platforms to reach broader audiences. This commitment supports both technological adaptability and the socio-emotional skills essential for serving diverse user communities.

The push for ongoing professional growth is reflected in the global development of upskilling frameworks. These frameworks offer structured, flexible pathways for enhancing

competencies and closing skill gaps. International projects like Biblio in Europe have developed models focused on skills assessment, tailored training resources, and the validation of digital expertise, serving as blueprints for innovation and workforce mobility within the library sector. Across Africa, professional associations and educational institutions invest in curriculum renewal, targeted mentoring, and strategic partnerships to foster resilient, competent library practitioners who can lead in digital transformation (Adekunle et al., 2021). Importantly, these frameworks integrate both formal and informal learning opportunities, ensuring professionals can access support regardless of their institutional context or career stage.

This investigation rests on the premise that the Fourth Industrial Revolution, with its vast technological changes, compels library and information professionals to redefine their roles, acquire new skills, and adopt lifelong learning as a core practice. The ability to navigate this transition determines whether libraries remain relevant and vibrant as knowledge hubs in Nigeria and Africa at large. Through a careful analysis of recent literature and contemporary African perspectives, the study seeks to contribute to bridging knowledge gaps and fostering effective human capital development that aligns with this unprecedented era of technological transformation.

Statement of the Problem

The rapid advancement of technology within the Fourth Industrial Revolution has transformed many professions, and library and information science is no exception. Libraries, traditionally seen as repositories of printed materials, now operate in complex digital environments equipped with cutting-edge tools such as artificial intelligence, automation, and vast digital databases. Despite these changes, many library professionals struggle to keep pace with the evolving demands. There exists a significant gap between emerging technological requirements and the current skill sets of many workers in this sector. This gap threatens to undermine the essential role libraries play as knowledge hubs in modern societies. One key challenge lies in the limited preparedness of library personnel to adopt and harness advanced digital technologies effectively. Training and professional development programs often fail to address the fast-changing nature of technology or offer practical, sustainable solutions for continuous learning. Many institutions continue to rely on outdated approaches, which do not equip professionals with vital competencies such as data analytics,

digital curation, or AI-assisted service delivery. This leaves workers vulnerable to skill obsolescence and undermines their ability to meet user expectations in a digital age.

Another pressing issue involves institutional barriers that hinder the adoption of innovative learning frameworks. Resource constraints, resistance to change, and lack of strategic vision slow the integration of upskilling initiatives. Without adequate support and infrastructure, efforts to modernise library services falter, limiting access to information and affecting community engagement. This problem is especially apparent in developing regions, including many parts of Nigeria and Africa, where disparities in technology access and professional development opportunities are pronounced. It becomes clear that addressing these challenges requires developing comprehensive lifelong learning and upskilling frameworks tailored to the specific needs and contexts of library professionals. Such frameworks must focus on continuous skill enhancement and consider cognitive, technical, and social dimensions to sustain workforce resilience. Without this proactive approach, libraries risk losing relevance, and their potential as catalysts for knowledge dissemination and innovation will remain unrealised.

Objectives of the Study

The specific objectives of the study are to:

1. identify the emerging competencies required for library professionals to succeed in the 4IR context
2. examine the strengths and limitations of current professional development models in libraries
3. propose strategies for overcoming institutional and resource barriers to skills development
4. highlight policy and practice implications for sustainable workforce transformation in libraries

Methodology

This study adopts a narrative review, drawing from a wide range of interdisciplinary literature that addresses the intersection of the Fourth Industrial Revolution (4IR), lifelong learning, and the evolving landscape of library workforce development. The purpose is to build a compelling, evidence-based understanding of how libraries and their staff navigate emerging technological challenges and opportunities within the 4IR context. A rigorous and transparent approach underpins the literature search. Relevant academic databases, publisher repositories, and institutional websites were explored using targeted keywords, such as “Fourth Industrial Revolution,” “lifelong learning,” “library workforce development,” “upskilling,” and “Africa” alongside “Nigeria.” The review cast a wide net across disciplines, library and information science,

education, workforce studies, and technology adoption, reflecting the multifaceted nature of 4IR's impact. The search prioritised peer-reviewed articles, conference proceedings, policy papers, and reports published from 2019 onward, ensuring insights are both current and relevant to African and, specifically, Nigerian contexts. Thematic filtering allowed the identification of sources that engaged with one or more core topics: 4IR developments in library environments, lifelong learning strategies, professional identity, and institutional transformation. Literature was then synthesised through iterative reading, annotation, and coding, bringing forward converging themes and highlighting notable divergences or gaps in research.

To deepen the analysis beyond theoretical discourse, the study foregrounds case studies that showcase practical experiences of libraries adapting to 4IR technologies in Africa and Nigeria. These examples illuminate successes, routine challenges, and contextual nuances, offering real-world insight into how libraries can facilitate upskilling and adapt to rapid technological change. Additionally, the review identifies conceptual frameworks for lifelong learning and workforce development, such as continuous professional development models, staff capacity-building initiatives, and curriculum reforms. Policy papers and strategy documents receive special attention, as they provide scalable models, national blueprints, and best practice recommendations that shape implementation.

Themes of interest include:

1. Institutional policies for digital literacy and upskilling
2. Inclusive strategies for overcoming resource and skills gaps
3. Integration of local knowledge systems in professional learning pathways.
4. Analysis proceeds through comparative reading and mapping of concepts, drawing connections among frameworks, case studies, and institutional practices.

Central to the methodology is a threefold thematic concentration: cognitive, technical, and socio-emotional learning domains. Literature and case studies were interrogated to understand how Nigerian and African libraries structure training opportunities that sharpen critical thinking, deepen technical competency, and nurture collaborative and adaptive mindsets among staff. Special focus falls on efforts to move beyond rote acquisition of technological skills, instead fostering an agile workforce resilient amidst shifting user expectations and disruptive change.

The review integrates findings through a lens that foregrounds library realities in sub-Saharan Africa. Evidence and insights are not treated as isolated but are instead brought together in a holistic synthesis that balances global best practices with regional experiences. This integrative framing makes it possible to draw policy-relevant recommendations for sustainable upskilling, inclusive staff development, and strategic curriculum adjustments. The process ultimately equips library leaders and policymakers with practical, context-sensitive pathways that support their transition into the digital future. This methodology ensures scholarly rigour while remaining responsive to the unique challenges and opportunities found in African and Nigerian library environments, in concert with the global movement toward knowledge societies in the 4IR era.

Results and Discussion

The Fourth Industrial Revolution (4IR) has drastically transformed the skills and identities of library professionals. Recent research reveals fundamental changes in what is required to remain effective in library roles, showing both opportunities and challenges that institutions must address.

Emerging Skill Sets and Professional Identities in the 4IR

Skill requirements for library professionals now encompass much more than traditional abilities. Basic knowledge of cataloguing or reference services no longer suffices. Technical expertise includes understanding and working with artificial intelligence, big data analytics, digital preservation, and cybersecurity (Adekunle et al., 2021; Oladele & Akinyemi, 2022). In Nigeria specifically, many librarians show proficiency in elementary ICT activities but frequently struggle with more advanced tasks such as database management and automation (Nwaosusu & Chukwuedo, 2023). The professional identity of librarians has also shifted. Instead of primarily custodians of physical books, librarians now serve as facilitators of digital information access, educators of digital literacy, and active participants in complex knowledge ecosystems (Akinyemi, 2019). This calls for embracing a new identity that embraces adaptability, technical skill, and a readiness to meet changing user demands.

Evaluation of Upskilling Initiatives

Upskilling efforts have produced mixed outcomes. Several Nigerian libraries demonstrate enthusiasm for adopting 4IR technologies. Training sessions focused on digital literacy and automation have led to improvements in service speed and accuracy (Usonwanne, 2020). However, many such efforts concentrate on basic digital tools without covering the

advanced skills necessary to meet current demands. Awareness of 4IR benefits tends to surpass actual technical expertise among librarians, creating a gap that hampers effective technology use (Nwaosusu & Chukwuedo, 2023). Funding limitations and lack of qualified trainers restrict access to meaningful, up-to-date training (Adekunle et al., 2021). Poor infrastructure further aggravates the situation, highlighting systemic issues rather than isolated skill shortages.

Holistic Framework for Lifelong Learning

Effective workforce development requires a comprehensive framework addressing cognitive, technical, and socio-emotional learning. The cognitive aspect calls for nurturing critical thinking and ethical awareness, enabling librarians to evaluate digital tools with insight and responsibility (Oladele & Akinyemi, 2022). The technical element promotes skills in data analysis, digital archiving, AI utilisation, and cyber safety. Recruiting younger professionals well-versed in technology strengthens this dimension (Adekunle et al., 2021). Socio-emotional learning encourages teamwork, adaptability, communication, and resilience to help staff navigate constant change (Usonwanne, 2020). Incorporating these elements through continuous, hands-on training, mentorship, and partnerships with technology providers creates an ecosystem supportive of ongoing development (Nwaosusu & Chukwuedo, 2023).

Barriers to Success

Several obstacles hinder progress. Chronic underfunding prevents libraries from purchasing necessary technology and funding quality training programs (Adekunle et al., 2021). Resistance emerges from comfort with traditional methods and fear of new tools, slowing adoption (Usonwanne, 2020). Rapid technology evolution keeps skills from staying relevant for long, demanding continuous learning. However, outdated curricula and delayed training updates mean some librarians struggle to keep pace (Nwaosusu & Chukwuedo, 2023).

Strategies for Practice

1. Governments and institutions should increase consistent funding for library infrastructure and staff development (Adekunle et al., 2021). Library education programs must update courses to include current digital competencies and collaborations with technology experts (Oladele & Akinyemi, 2022).
2. Libraries should cultivate learning-friendly cultures through incentives, integrating skill growth into staff evaluations and career planning (Usonwanne, 2020). Enabling peer mentorship and knowledge-sharing

networks strengthens internal capacity efficiently (Nwaosusu & Chukwuedo, 2023). Embedding everyday learning opportunities ensures skills remain practical and relevant.

3. The research stresses the need for library professionals in Nigeria and Africa to embrace lifelong learning and advanced digital skills to remain vital contributors to knowledge access. Addressing barriers through strategic funding, education reform, and organisational culture will help libraries meet the demands of a rapidly changing digital world.

Summary and Conclusion

The Fourth Industrial Revolution (4IR) has brought about dramatic shifts in the skills required of library and information professionals. The transition from traditional roles focused on managing physical collections to dynamic positions within digital ecosystems requires a reimagining of competencies, identities, and continuous learning. Recent literature, especially within Nigeria and the broader African context, highlights how emerging technologies such as artificial intelligence, big data, and digital curation demand not only technical skills but also cognitive and socio-emotional capabilities. While foundational digital literacy remains critical, professionals must now engage critically and ethically with complex digital tools to meet evolving user needs and maintain libraries' relevance.

Evaluations of existing upskilling initiatives reveal a mixture of achievements and persistent difficulties. Many libraries have embraced training programs introducing digital technologies, resulting in improvements to efficiency and service quality. However, there remains a significant gap between awareness of 4IR innovations and the advanced competencies required to fully exploit them. Resource limitations and lack of access to high-level training impede progress, especially in institutions with constrained budgets. Furthermore, institutional resistance and outdated curricula contribute to slow adoption and insufficient preparation for rapid technological changes. This combination of factors illustrates how the challenges are systemic, affecting both individuals and organisations.

A holistic framework for lifelong learning emerges as the recommended strategy to prepare library staff for the demanding environment of the 4IR. This framework integrates cognitive learning that fosters critical thinking and ethical understanding, technical learning focused on data analytics, AI applications, and digital preservation, and socio-emotional learning that enhances collaboration, resilience, and adaptability. Practical implementation involves continuous

professional development, including workshops, mentorship, experiential learning opportunities, and partnerships with academic and technology stakeholders. Embedding learning into everyday library operations ensures staff remain agile and responsive to emerging tools and user expectations.

Despite clear recognition of its importance, several barriers impede widespread adoption of effective upskilling and lifelong learning. Financial constraints continue to limit investment in infrastructure and staff development. Organisational culture sometimes resists change, with individuals fearing new technologies or clinging to familiar routines. Additionally, the rapid pace of technological obsolescence requires learning systems that can adapt swiftly, which many current education and training models fail to provide. Addressing these challenges demands coordinated efforts among policymakers, educational institutions, and library leadership to secure funding, revise curricula, and cultivate learning environments that embrace innovation.

In conclusion, navigating the Fourth Industrial Revolution calls for a fundamental transformation in how library and information professionals develop and apply their skills. The merging of cognitive, technical, and socio-emotional learning within a sustainable lifelong learning framework offers a robust pathway to build capacity and resilience. Libraries in Nigeria and Africa as a whole stand to benefit from strategic investments in training, curriculum modernisation, and organisational reform that places continuous learning at the heart of professional life. Ultimately, such efforts will ensure libraries remain indispensable knowledge hubs, equipped to serve rapidly evolving digital societies. The future relevance of libraries depends on their ability to empower their workforce with the tools, mindset, and support necessary to thrive amid technological change.

Recommendations

The following recommendations were made based on the discussion in the study:

1. Governments, funding agencies, and educational institutions should allocate more resources for up-to-date technology, digital infrastructure, and ongoing professional training.
2. Library schools should revise undergraduate and postgraduate curricula to include advanced digital competencies such as data analytics, artificial intelligence applications, digital curation, and cybersecurity.

3. University libraries management should create structures and incentives for experienced and tech-savvy librarians to mentor colleagues, supporting both intergenerational learning and knowledge transfer.
4. Management of academic libraries should promote communities of practice or staff learning circles within and across library networks to facilitate regular discussions on emerging technologies and best practices.
5. Library staff should be sensitised on the benefits of 4IR technologies using practical demonstrations, success stories, and training in change management.
6. University management should involve library personnel in technology adoption decisions, ensuring a sense of ownership and reducing technophobia or resistance.

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Enhancing the Sustainability of Academic Library Buildings through Performance Based Design Approaches

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Abstract

The effective performances of academic library buildings have become a critical success factor that cannot be overlooked to ensure competitiveness for tertiary education institutions. Academic library building performance can have positive impacts on tertiary educational goals and objectives. This study examined the challenges and prospects of adopting performance-based design (PBD) approaches for the planning, designing and management of new academic library buildings. Rather than relying on the conventional approaches to design that emphasized aesthetics and prescriptive standards often at the expense of optimal performances, performance-based design (PBD) approaches can ensure that library user needs, expectations and aspirations are met. Employing a qualitative research approach using content analysis, the study developed a conceptual framework for the relationship between library building design features and architectural elements and building performances. Findings from the study enumerated some challenges faced by tertiary institutions in employing performance-based design approaches for the planning, designing and management of existing academic library buildings. The study concluded that performance-based design of academic library buildings can assist tertiary institutions in ensuring functionality and sustainability and also provide user feedback necessary to inform future planning and management throughout a building's life cycle. The study recommended that employing performance-based design (PBD) approaches for new academic library buildings can be a transformative tool that prioritizes measurable outcomes such as energy efficiency, thermal comfort, structural resilience and user satisfaction. Further, the paper advocated for the integration of user feedback mechanisms through post-occupancy evaluation (POE) for improvements in academic library building performances.

Keywords: Tertiary education institutions, academic library buildings, performance elements, Performance based design, sustainability

Introduction

Academic libraries have become valuable assets whose physical aspects must be evaluated from the perspectives of their users in order to determine the extent to which they satisfy intended usage and the degree to which they support the educational process of tertiary institutions. The academic library building serves as a hub of learning and research in an institution (Ugwuanyi, Okwor & Ezeji, 2011). According to Akporhonor (2005), academic libraries are established for the conservation and dissemination of knowledge and information which is the primary mission, in addition to assisting their parent institutions' missions of teaching and research. Shika, Sapri, Jibril & Sipan, (2013) and Ahmad, Shoaib & Shaukat (2021) argued that the purpose of setting up academic libraries in tertiary educational institutions is to meet the intellectual needs of the academic community. To achieve this goal, academic library buildings and facilities should be designed to meet the functional, technical, and behavioural requirements that affect the efficiency and productivity of their occupants.

Ugwuanyi *et al.* (2011) argued that it is necessary to understand how users feel about library building spaces and act within them in order for the building to work better for users and for users to perform better within the building. The efficient operation and productivity of academic library buildings must be prioritized, as their quality is important in attracting and retaining students (Hassanain *et al.*, 2020). However, literature is lacking on the significance and benefits of performance-based design (PBD) for academic libraries towards the realisation of tertiary education goals and objectives.

Statement of the Problem

The state of academic library buildings in many tertiary education institutions is that they are unable to meet the needs, expectations and aspirations of intended users. Indoor environmental quality issues, poor circulation and accessibility, noise pollution from both humans and vehicular intrusion as a result of uncontrolled physical developments and deviation from the original master plans are common occurrences (Akanmu, Nunayon & Eboson, 2021; Singh & Mishra, 2021; Aliyu & Makun, 2022). End users such as students and faculty are rarely involved in the planning, design and construction of their academic library buildings (Olatunji, 2013). Surprisingly, these buildings are not even assessed during occupation to evaluate their actual performance after construction. Consequently, there is a gap between what the users wanted and what the architects are designing. There are ample evidences that non-functional academic library buildings and

facilities has led to unproductivity of learning environments in Nigeria (Ojogwu & Alutu, 2009; Okeke *et al.*, 2016). Performance based design (PBD) can offer a paradigm shift and transformative approach that prioritises measurable building performance outcomes of academic library buildings.

Objective of the Study

The broad objective of the study is to examine the current operational performance of academic library buildings and facilities in Ogun State with a view to ensure improvements.

The specific objectives are to:

1. Appraise the goals and objectives of tertiary education in the study area;
2. Examine the current delivery processes of academic library buildings in the study area; and,
3. Develop a performance-based design (PBD) conceptual framework for the relationship between design outcomes and tertiary educational building performance.

Literature Review

Tertiary Education in Ogun State

Tertiary education is an avenue for the expansion and revolution of any nation and adequate provision for educational buildings and facilities is required because teaching and learning cannot take place in a vacuum (Joel & Ayinla, 2015). Adequate provision of learning materials and infrastructures can have a positive impact on educational goals. The national policy on education (FGN, 2004) has highlighted the fundamental concept of tertiary education in Nigeria which entailed the provision and acquisition of functional education that enables students key into the strategic goals of sustainable development. Tertiary institutions are expected to focus majorly on pedagogical techniques, research and innovation and vocational and technical education. According to Okolie (2011), the philosophy is based on developing the individual into an effective citizen capable of fully integrating into the Nigerian community.

The National Policy on Education (FGN, 2004) also enumerated the tertiary education goals, which include contributing to national development through higher level relevant manpower training, developing and instilling values for the sustenance of the individual and society and developing an individual's intellectual capacity to understand and appreciate their local and external environment. It included the acquisition of both physical and intellectual skills that will enable individuals to be self-reliant and useful members of society, encouragement of scholarship and national unity and promotion of national and international understanding and

interaction. According to Ojogwu and Alutu (2009), and Joel and Ayinla, (2015), knowledge management is critical to rapid technological change and sustainable development. Thus, achieving these goals required that the educational environment must be given the highest consideration for effective functioning and productivity. Okeke and Osuala (2016) highlighted that governments should make adequate resources available to make tertiary education available at all levels, and be able to meet the nation's educational manpower and development needs.

Challenges of Tertiary Education in Ogun State

Tertiary education institutions face enormous challenges due to underfunding and inadequate infrastructure, making it impossible for them to fulfill the responsibilities of achieving the previously stated goals (Isa & Yosuff, 2015; Okeke & Osuala, 2016). Over time, stakeholders have expressed growing concern about the quality of education in Nigeria, and that if long standing challenges such as funding, inadequate human and material infrastructures, poor management, and so on are not addressed, the general goals and objectives of national educational policies may not be achieved or thwarted.

Tertiary Education Institutions in Ogun State

Ogun State, which was early influenced by missionary activities, is historically one of Nigeria's most educationally advanced states. Between 1900 and 1914, the number of her primary schools increased from 24 to 90. Her educational policy is in conformity with the Nigerian National Policy on Education. The policy's main goal is to provide free and high-quality education to all in the state. Tertiary education in Ogun State aims to develop the high-level manpower required for the state's overall social and economic development. There are currently 29 government-accredited tertiary educational institutions in the state. Ogun State is home to fourteen universities, including a federal university of agriculture, two state-owned universities, and eleven privately owned universities as shown in table 2.1. Ogun State has ten polytechnics. One federal polytechnic, six state-owned polytechnics, and three privately owned polytechnics spread throughout the state as shown in table 2.2. As shown in Table 2.3, there is one federal college of education, one state owned college of education, and three privately owned colleges of education.

Table 2. 1: List of Universities in Ogun State

S/N	NAME OF UNIVERISTY	LOCATION	OWNERSHIP
1.	Federal University of Agriculture	Abeokuta	FEDERAL
2.	Olabisi Onabanjo	Ago Iwoye	

	University		STATE
3.	Tai Solarin University of Education	Ijebu Ode	PRIVATE
4.	Bells University of Technology	Sango-Ota.	
5.	Babcock University	Ilishan, Remo	
6.	McPherson University	Lagos/Ibadan Expressway	
7.	Crescent University	Adeun, Abeokuta	
8.	Covenant University Idiroko	Sango-Ota.	
9.	Crawford University Faith City	Igbesa	
10.	Chrisland University	Obalende, Abeokuta	
11.	Mountain Top University	Lagos/Ibadan Express way	
12.	Christopher University	Mowe	
13.	Southwestern University	SaOkunowa	
14.	Hallmark University	Ijebu-Itele	

Source: aboutnigeria (2023)

Table 2. 2: List of Polytechnics in Ogun State

S/N	NAME OF POLYTECHNIC	LOCATION	OWNER SHIP
1.	Federal Polytechnic	Ilaro	FEDERAL
2.	Moshood Abiola Polytechnic	Abeokuta	STATE
3.	Ogun State Institute of Technology	Igbesa	
4.	Gateway ICT Polytechnic	Saapade	
5.	D.S Adegbenro ICT Polytechnic	Itori	
6.	Ogun State College of Health Technology	Ilese, Ijebu	
7.	Gateway Industrial and Petro-Gas Institute	Oni, Waterside	
8.	Abraham Adesanya Polytechnic	Ijebu Igbo	PRIVATE
9.	Owu College of Management Technology	Wasimi, Ewekoro	
10.	Allover Central Polytechnic	Sango Ota	

Source: aboutnigeria (2023)

Table 2. 3: List of Colleges of Education in Ogun State

S/N	NAME OF COLLEGE	LOCATION	OWNERSHIP
1	Federal College of Education	Osiele	FEDERAL
2	Tai Solarin College of Education	Omu Ijebu	STATE
3	Yewa Central College of Education	Rounder, Abeokuta	PRIVATE
4	Awori District College of Education	Konifewo, Ota	

	5	Piaget College of Education	Abeokuta	

Source: aboutnigeria (2023)

The federal institutions are significantly developed, whereas the state institutions are in various stages of development. The private institutions are also at various stages of development. Apart from a few that are affiliated with long-established missionary and religious organizations, the majority of them have only been operating from temporary locations after acquiring large parcels of land for permanent operations. Ogun State and its citizens have been blessed with a large number of tertiary educational institutions. However, the issue is the quality and adequacy of educational buildings and facilities, as well as the relevance of graduates to the needs of the economy. In general, inadequate and poor educational infrastructure have severe impact on the people. Inadequate infrastructure can lead to overcrowded classrooms, making it difficult for teachers to teach. Inadequate facilities and infrastructure also mean that many students will be excluded from school because there is not enough room for them.

Performance based buildings and facilities

The provision of sustainable and performance-based buildings and facilities for tertiary institutions has become a priority in order to enable functional and productive performances (Khalil & Nawawi, 2008; Olatunji, 2013; Norazman, Nashruddin & Ani, 2020). Tertiary education institutions must have buildings and environments that add value, improve performance, and provide satisfactory occupancy for the community of users (Amaratunga & Baldry, 2016 and Ibrahim, Osman, Bachok & Mohamed, 2016). For effective operation and productivity, educational buildings must be given the highest priority (Ojogwu & Alutu, 2009; Olatunji, 2013; Mustafa, 2017). The state of buildings and facilities in an educational setting can influence teachers and learners conduct (Olatunji, 2013; Abisuga, Wang & Sunindijo, 2019).

Tertiary institutions are expected to build appropriately to improve performance and support their core mission of providing qualitative higher education that is globally competitive. Individuals and corporate bodies all over the world have used performance-based approaches to acquire and evaluate their built facilities (Amaratunga & Baldry, 1999; Khalil & Nawawi, 2008; Norazman *et al.*, 2020).

Dimensions of building performance

The performances of tertiary education buildings such as the academic libraries can be considered under the three classifications: technical, functional and behavioural elements

of performance (Dursun & Ozsoy, 2008; Shika *et al.*, 2013; Shehahdhri, 2018; Ejoor *et al.*, 2021).

Technical Performance Element

The technical performance addresses survival attributes such as security, structural adequacy, cleanliness and sanitation, fire safety; that is fire resistance of the major structural elements of a building, fire extinguishment and containment, flame spread, smoke generation, ease of egress in case of fire, ventilation and health of occupants. Technical performance addresses issues pertaining to indoor environmental qualities (IEQ) elements such as, comfort health, and productivity of occupants (Choi & Moon, 2017; Mustafa, 2017). Indoor environmental quality elements include thermal comfort consideration (HVAC system and natural ventilation system), indoor air quality, visual comfort (the quantity and quality of lighting, glare, control of shadows, and adequate luminance. Acoustic comfort conditions in a building that relates primarily to providing conditions in a building that provides for a clear communication of speech between users and noise control through walls, floors, windows, doors and other openings that ensure adequate reduction of sound from other activity areas.

Functional Performance Element

The functional performance deal with the functionality and efficiency level of the design and architectural features in the academic educational building. Functional elements include accessibility, size or spatial capacity for activities, arrangement of spaces, order of spaces and spatial relations, adequacy of necessary facilities. Other elements include utilities, telecommunications, responsiveness to change overtune and efficiency of communication and circulation. Functional performance has to do with elements that are directly connected to the activities within a building. They are expected to be in conformity to the specific needs and user requirements of the building occupants. Mustafa (2017) and Preiser *et al.* (2015), established that the direct connection between a building's functional aspects and the needs of its users is an important reason for its relevance in post occupancy evaluation studies.

Behavioural Performance Element

The behavioural performance aspect attempts to create a connection between occupant's activities and the physical environment. Scholars believed that people and human settings are inseparable components and that, settings can determine the display of satisfaction or dissatisfaction behaviour on the part of users of buildings or services (Bitner, 1990; Azila-Gbettor *et al.*, 2013). Evaluation is based on individuals' expressions in relation to comfort and aesthetic issue. It is also referred to as

social interaction that are subjective and reflect individual tendencies (Dursun & Ozsoy, 2008). Mustafa (2017) described it to include the effect of area size and number of persons that share a space upon a building occupant and the effect of functional distance between spaces upon the frequency of use. Behavioural performance also includes factors of occupants' comfort and satisfaction as affected by spatial configuration of circulation routes and impact on social interaction and features that affect the building's image and outlook (Preiser *et al.*, 2015). Behavioural aspects can have much influence on user satisfaction with building performance and perceived service quality.

Methodology

Conceptual Framework for Performance based design (PBD)

Based on extensive literature review, this study has developed a performance-based design (PBD) conceptual framework as shown in figure 3.1. The framework established a direct influence of the respective performance elements (functional, technical and behavioural) on the performance of academic library buildings in the study area. Furthermore, there is an established indirect influence of the moderating factor of (socio-economic characteristics of users such as age, gender, marital status, educational qualifications, among others) on the effectiveness of performances. Meanwhile, the moderating factor such as age, gender, marital status and educational qualifications could vary the effect of the performance elements on the effectiveness of the buildings. For instance, the age and gender categories of the users, young and old could influence their preferences and perception on the technical, functional and behavioural performances as characterised by the building.

Previous studies by (Nawawi & Khalil, 2008), agreed that occupants' satisfaction with the building elements highly correlates with the performance of public buildings". Therefore, satisfaction has a direct relationship with the overall performance of academic library buildings in meeting the needs, expectations and aspirations of users (Rosi & Behzad, 2017). Consequently, satisfaction with the behavioural, technical and functional elements or aspects of building performance (Khair *et al.*, 2012), as expressed in the design objectives and user requirements is a function of the level of performance of the building. Satisfaction of users is measured based on user requirement that are related to the building performance attributes (Liu, 1999; Ilesanmi, 2010; Ibem *et al.*, 2013; Gopikrishnan & Topkar, 2017; Seshadhri & Paul, 2018). This study has adopted the investigative approach in the assessment

framework and integrated building performance attributes for academic library buildings in the study area.

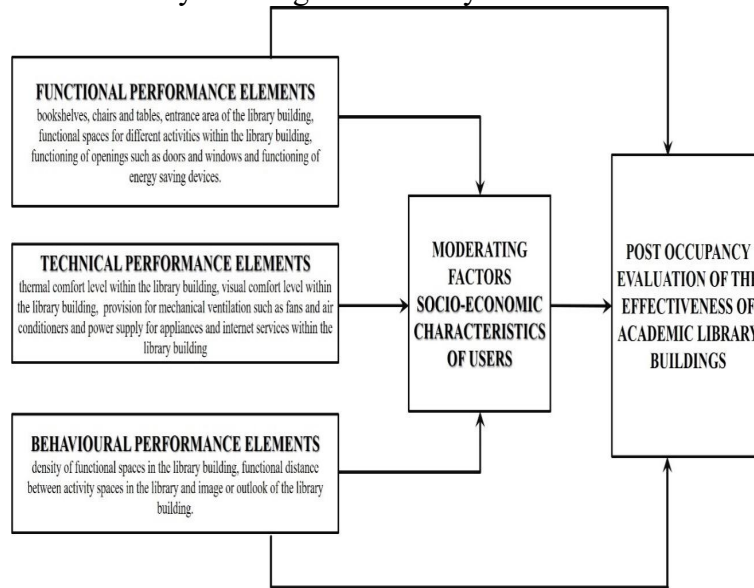


Figure 3.1: Conceptual Framework for performance based design (BPD) of academic library buildings in tertiary Institutions in Ogun State, Nigeria.

Sources: Researchers field work, 2023

Findings and Discussion of Findings

Findings from the study have established a direct influence of the respective performance elements (functional, technical and behavioural) on the effectiveness of the performance of academic library buildings in the study area. Furthermore, there is established an indirect influence of the moderating factor (socio-economic characteristics of users i.e. age, gender, marital status, educational qualifications etc.) on the effectiveness of performances. Meanwhile, the moderating factors such as age, gender, marital status, educational qualifications etc. could vary the desired outcome and the operational performance of the academic library buildings. For instance, the age and gender categories of library users either young or old could influence their preferences and perception on the functional, technical and behavioural performances. Findings have further suggested that it is very crucial to factor user requirements into the planning and design processes in order to have measurable outcomes from the buildings.

Also, with regards to the health condition of users, findings have supported the positive relationship between the indoor environmental quality of academic library buildings and the health and wellbeing of users in terms of impacts on productivity and efficiency (Akanmu *et al.*, 2021). Furthermore, findings have shown a paucity of literature related to users with disabilities and that most educational buildings including

libraries in the study area were designed not considering the disabled. This may probably be due to inadequate knowledge of the needs of the few disabled who use academic libraries (Ekwelem, 2013). Globally, it is expected that appropriate measures be made on equal basis to provide access to the academic library building by all categories of users. Empirical studies have shown that the value of academic library buildings also depend on user satisfaction regarding their performances including the quality of the physical environment (Mustafa, 2017).

Conclusions

Performance based design (PBD) could contribute immensely to improving the quality of academic library building design and delivery processes in tertiary education institutions. Apart from ensuring a sustainable environment, it provides feedback on environmental issues related to building and inform planning and management through the life cycle of the building. Performance based design (PBD) could be a tool used for formulation of government policies, development of new theories or research tools and dissemination of information on the performance of buildings to relevant stakeholders (Ibem *et al.*, 2013).

Recommendations

Sequel to the findings of this study, the following recommendations have been brought forward:

1. It is recommended that adequate consideration be given to each phase of the performance-based design processes in order to achieve functional, sustainable and user responsive outcomes.
2. There should be increased end user involvement in the planning, designing and management of academic library buildings at the federal, state and privately owned tertiary educational institutions to achieve significant improvements.
3. Adequate consideration and priority should be given to accommodating people with disabilities through universal design and inclusiveness in the design, planning and construction of academic library buildings in all tertiary institutions in Nigeria.
4. All regulatory agencies of tertiary education under the Federal ministry of education in Nigeria and the physical planning departments of respective tertiary educational institutions should ensure conformance to planning and designing standards and requirements of their library buildings and facilities for the achievement of sustainable learning environment.

5. Tertiary educational institutions in Nigeria should imbibe performance-based design (PBD) in the design and delivery of academic library buildings by integrating users' perspectives, insights and opinions in order to achieve best quality in building performance management. Moreover, by evaluating the feedback from users, it will ensure that the resources in terms of time and money spent in their management will not be a waste and planning departments are able to make inputs for programming for the future.

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Sustainability of Library and Information Science Education in the Era of Artificial Intelligence in Nigeria

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Abstract

The emergence of Artificial Intelligence (AI) as a transformative force in the global information landscape poses both significant challenges and opportunities for Library and Information Science (LIS) education, particularly in developing contexts like Nigeria. This paper critically explores the sustainability of LIS education in Nigeria amid rapid technological advancements driven by AI. It discusses the current state of LIS education in the country, highlighting issues such as outdated curricula, inadequate digital infrastructure, and the lack of AI-literate faculty, all of which threaten the relevance and future viability of the profession. The paper argued that without urgent reform, especially in the area of the integration of AI, data science, and digital ethics into LIS programmes, graduates will remain ill-equipped to meet the evolving needs of 21st-century information environments. The paper recommended curriculum redesign, investment in digital infrastructure, faculty development, and stronger industry-academia collaboration. The paper concluded by asserting that sustainability is not about maintaining the status quo but about transforming LIS education into an innovative, adaptive, and globally competitive discipline.

Keywords: *Artificial Intelligence, Curriculum reform, Digital infrastructure, LIS education, Sustainability.*

Introduction

Library and Information Science (LIS) education in Nigeria has served as the academic foundation for developing professionals responsible for managing, organising, and disseminating information across various sectors. Therefore, as society transitions into an increasingly digital and knowledge-driven era, the integration of advanced technologies, particularly Artificial Intelligence (AI), into all areas of life is transforming how information is created, accessed, managed, and utilised (Ifijeh and Yusuf, 2020). In this context, the sustainability of LIS education has become a crucial concern, especially regarding its relevance, responsiveness, and adaptability to emerging trends such as AI. Artificial Intelligence, which

encompasses machine learning, natural language processing, robotics, and data analytics, is rapidly influencing the landscape of librarianship globally. Libraries are no longer solely repositories of physical materials, as they are evolving into intelligent, interactive, and data-driven information hubs (Dlamini and Ezinwanne, 2023). For LIS education to remain sustainable in Nigeria, it must evolve to prepare graduates with the competencies required to thrive in this AI-powered information environment. However, many Nigerian LIS schools still operate with outdated curricula, inadequate infrastructure, and limited exposure to current technological innovations (Adeleke and Ogunsola, 2022). These challenges raise pressing questions about whether the current system can withstand and effectively respond to the technological transformations shaping the profession.

This paper argues that the sustainability of LIS education in Nigeria hinges on its ability to integrate AI and related digital technologies into its curriculum, pedagogy, and research. It further contends that unless LIS departments, policy makers, and library educators embrace these changes, the discipline may lose its relevance in the face of rapidly evolving user expectations and global best practices. The paper therefore provides a critical reflection on the state of LIS education in Nigeria, highlights the implications of AI for the profession, and offers insights on how sustainability can be achieved in this transformative era.

Context and Background

Library and Information Science (LIS) education in Nigeria has evolved since its formal inception in the 1960s, with institutions like the University of Ibadan, Ahmadu Bello University, and later others leading the development of professional programmes for librarianship. These programmes, traditionally designed around cataloguing, classification, reference services, and collection development, have played a vital role in shaping the human resource base for Nigerian libraries (Ocholla and Shongwe, 2021). However, the rapidly evolving digital landscape, driven largely by Artificial Intelligence (AI), data science, and emerging technologies, now demands a paradigm shift in both the content and delivery of LIS education.

At present, LIS education in Nigeria is coordinated through accredited institutions and monitored by regulatory bodies such as the National Universities Commission (NUC) and the Librarians' Registration Council of Nigeria (LRCN). While these bodies have made efforts to incorporate Information and Communication Technology (ICT) into LIS curricula, there

remains a significant gap in the integration of AI-focused content. Afolabi and Chigbu (2022), reported that many LIS programmes in Nigerian universities still emphasised traditional skills, with limited exposure to machine learning, digital ethics, algorithmic literacy, or data analytics.

Globally, LIS education is shifting towards interdisciplinary frameworks, blending library science with computer science, digital humanities, and information systems. In contrast, many LIS schools in Nigeria struggle with infrastructural deficits, lack of access to modern teaching tools, and underfunding, which hinders innovation and responsiveness (Ogunmodede and Ojo, 2023). Compounding these challenges is the shortage of LIS educators who are proficient in AI and related technologies, creating a knowledge gap between current teaching practices and global LIS trends.

Moreover, Nigeria's broader educational and digital policy landscape has not adequately prioritised AI integration within professional training programmes, including LIS. Despite the launch of Nigeria's National Artificial Intelligence Strategy in 2024, its impact on LIS education has yet to be realised in practical terms (Federal Ministry of Communications, Innovation and Digital Economy, 2023). Thus, without deliberate policy alignment and investment, LIS education may remain disconnected from the technological realities shaping information work. This background highlights the urgent need for transformation in LIS education to ensure its sustainability. A failure to align with AI-driven developments could render LIS graduates ill-equipped to meet the demands of 21st-century library users and employers.

Theoretical Framework

To critically assess the sustainability of Library and Information Science (LIS) education in Nigeria in the era of Artificial Intelligence (AI), this paper draws upon two interrelated theoretical frameworks of Innovation Diffusion Theory and Socio-Technical System Theory. These theories provide insight into the dynamics of technological adoption, institutional change, and the human-technology interface within educational systems.

Innovation Diffusion Theory (IDT)

Innovation Diffusion Theory, developed by Everett Rogers (2003), explains how new ideas, technologies, or practices are communicated and adopted within a social system over time. The IDT emphasises five key attributes that influence adoption, which are, relative advantage, compatibility, complexity, trialability, and observability. Within the context of LIS

education, the adoption of AI-related technologies and curricula can be seen as an innovation requiring diffusion through academic departments, regulatory agencies, and professional associations. This theory is relevant to understanding why many LIS programmes in Nigeria have been slow to integrate AI competencies. Factors such as lack of perceived relative advantage, institutional inertia, resource constraints, and limited awareness among faculty and administrators often delay adoption. Applying IDT underscores the need for strategic awareness campaigns, capacity building, and evidence of successful implementation to promote AI integration in LIS education.

Socio-Technical Systems Theory (STS)

Socio-Technical Systems Theory, first articulated by Trist and Bamforth (1951) and later expanded by Bostrom and Heinen (1977), posits that effective organisational change requires the simultaneous optimisation of both social and technical subsystems. In educational settings, this includes aligning people (faculty, students, administrators), organisational structures (curricula, pedagogy, policy), and technologies (AI tools, infrastructure, digital platforms). This theory is particularly applicable in examining the sustainability of LIS education in Nigeria, as it emphasises the interconnectedness of human and technological factors. For AI integration to be effective and sustainable, institutions must address not only the availability of technological tools but also the social systems that govern their use, such as faculty competence, institutional culture, and governance frameworks. The STS thus advocates a holistic, systems-based approach to reform that balances innovation with institutional readiness and support mechanisms.

Application to the Study

Together, IDT and STS provide a robust theoretical foundation for analysing the challenges and opportunities facing LIS education in the AI era. While IDT focuses on the process and patterns of innovation adoption, STS highlights the need for alignment between technological advancement and human/institutional capacity. These frameworks support the argument that sustainability in LIS education cannot be achieved through technology alone but must be accompanied by strategic human development, curricular redesign, and policy reform.

Conceptual Framework

The conceptual framework for this paper is built on the interrelationship between AI integration, curriculum development, institutional capacity, and educational sustainability in LIS. This framework proposes that the sustainability of LIS education is influenced by:

- **Technological Integration:** The extent to which AI tools, platforms, and competencies are embedded into teaching and learning processes.
- **Curriculum Relevance:** The degree to which LIS curricula reflect current trends in AI, data science, digital literacy, and user-centered information systems.
- **Faculty and Institutional Capacity:** The skills of LIS educators and the availability of infrastructure to support technology-driven instruction.
- **Policy and Governance:** The role of national and institutional policies in supporting innovation, funding, and regulatory oversight.

These four components are interdependent. For example, technology adoption cannot be effective without competent faculty, and curriculum reform is unlikely to be sustained without supportive policies. This conceptual model serves as a foundation for the recommendations to support a holistic understanding of what sustainability entails in the AI era.

Methodology

Although this paper is structured as an opinion paper, its arguments are grounded in a qualitative, interpretive approach informed by critical review of existing literature, policy documents, and recent scholarly discourse on AI and LIS education in Nigeria and globally beyond. The methodological stance is constructivist, acknowledging that knowledge about sustainability in LIS education is shaped by social, institutional, and technological realities. Through critical synthesis of scholarly evidence and theoretical models, the paper constructs an informed position on what sustainability should look like and how it can be achieved. Rather than generating primary data, the paper uses document analysis and conceptual reasoning to interrogate existing challenges and propose forward-looking solutions. This method allows for a reflective and normative engagement with complex issues and provides a basis for academic debate and policy advocacy.

The Need for Transformation in LIS Education

The sustainability of Library and Information Science (LIS) education in Nigeria fundamentally depends on its ability to undergo urgent and systemic transformation in response to the growing influence of Artificial Intelligence (AI) across the

global knowledge economy. The relevance of the LIS profession now lies not only in preserving and organising information but also in navigating the complexities of digital ecosystems, data governance, machine learning algorithms, and intelligent search systems (Lopatovska and Arapakis, 2021). If Nigerian LIS education fails to transform accordingly, it risks producing graduates who are out of sync with the competencies demanded by 21st-century information environments. One of the strongest arguments for transforming LIS education lies in the fact that AI is rapidly changing how information is produced, accessed, retrieved, and evaluated. Also, libraries around the world are already using AI-driven tools to automate cataloguing, improve user experience through chatbots and recommendation systems, detect plagiarism, and analyse user behaviour for improved service delivery (Kari and Savolainen, 2023). These developments require a new breed of librarians equipped with digital, computational, and analytical skills, which far beyond the traditional scope of cataloguing and reference services that are still dominant in Nigerian LIS curricula.

In addition, the transformation of LIS education is necessary to address the changing expectations of users in an AI-driven world. Today's library users, particularly digital natives, expect real-time, personalised, and intuitive services that mirror the experiences provided by commercial digital platforms like Google, Amazon, or Netflix. Meeting these expectations requires LIS professionals who understand algorithmic systems, information architecture, data privacy, and user interaction design (Odede and Ogunbanwo, 2023). Without a curriculum that integrates such emerging competencies, Nigerian LIS graduates may remain ill-prepared for the contemporary information marketplace. Furthermore, the transformation of LIS education is essential for professional competitiveness and sustainability. With the growing trend of interdisciplinary job roles, such as data librarians, digital curators, and knowledge analysts, traditional LIS qualifications must be complemented with expertise in AI and data science to remain viable in both library and non-library sectors (Zhou and Lin, 2022). Institutions in developed countries are already restructuring LIS programmes to incorporate subjects like machine learning, digital forensics, computational linguistics, and algorithmic bias. Nigeria must not lag behind if it seeks to produce globally competitive LIS professionals.

The sustainability of LIS education in Nigeria necessitates a transformative shift from conventional, analog-centered teaching to a dynamic, AI-inclusive academic model. This

involves reimagining curricula, up-skilling faculty, improving digital infrastructure, and fostering cross-disciplinary collaboration. Failure to act decisively will not only diminish the relevance of LIS education but also jeopardise the profession's future role in an increasingly intelligent and data-driven society.

Challenges and Issues

The integration of Artificial Intelligence (AI) into Library and Information Science (LIS) education in Nigeria is both necessary and urgent, with several critical issues and systemic concerns that continue to undermine the progress and sustainability of this transition. These challenges, if not addressed, will impede the ability of LIS education to meet global standards and to produce professionals capable of functioning effectively in a technologically advanced information society.

Inadequate ICT Infrastructure

A significant barrier to AI integration in LIS education is the persistent inadequacy of Information and Communication Technology (ICT) infrastructure across many Nigerian higher institutions. Most LIS departments operate with outdated computer laboratories, unreliable internet connectivity, and limited access to AI-enabled tools and software (Abubakar and Lawal, 2023). These infrastructural shortcomings hinder both teaching and practical exposure to modern technologies, making it difficult for students to acquire hands-on experience in digital systems, machine learning, or big data analytics.

Shortage of AI-Literate Faculty

Another pressing issue is the lack of qualified LIS educators with expertise in AI and related emerging technologies. The majority of LIS faculty in Nigeria was trained in conventional library science and may lack formal training or practical experience in fields such as data science, computational thinking, or algorithmic processes (Okike and Adetimirin, 2022). This creates a competency gap that prevents effective curriculum redesign and innovation in teaching methodologies. Without retraining or strategic recruitment, many departments may continue to deliver outdated content that fails to reflect the realities of modern information work.

Outdated Curriculum

Despite global shifts in LIS education, many Nigerian LIS programmes still retain curricula heavily weighted toward traditional subjects such as cataloguing, indexing, and reference

services, with minimal focus on AI, data governance, or digital ethics (Iroaganachi and Ajibola, 2021). This misalignment between academic content and industry demands not only limits the employability of graduates but also reduces the credibility and perceived value of LIS qualifications in the broader job market.

Policy Gaps and Institutional Inertia

There is also a lack of cohesive national and institutional policies that promote the integration of AI into professional education, including LIS. Although Nigeria launched its National Artificial Intelligence Strategy in 2023, its implementation in the education sector remains vague and underfunded (Federal Ministry of Communications, Innovation and Digital Economy, 2023). Moreover, many institutions exhibit a degree of inertia and resistance to change, due to bureaucratic red tape, fear of disruption, or reluctance to revise legacy systems.

Limited Industry-Academic Collaboration

Sustainable LIS education in the AI era requires strong collaboration between academia and the technology industry. Unfortunately, Nigerian LIS schools often operate in isolation from tech companies, innovation hubs, and research centres. This disconnect reduces opportunities for internships, mentorship, and curriculum co-design, which are essential for exposing students to real-world applications of AI in information management (Edewor, et. al, 2023). The sustainability of LIS education in Nigeria faces multi-layered challenges that require holistic and strategic intervention. Infrastructure, faculty development, curricular reform, policy innovation, and cross-sector collaboration must all be addressed to build a future-ready LIS education system.

Conclusion

The sustainability of Library and Information Science (LIS) education in Nigeria in the era of Artificial Intelligence (AI) is no longer a matter of theoretical concern, it is an urgent necessity. As AI continues to redefine the global information landscape, Nigerian LIS institutions must rise to the challenge of producing future-ready professionals who can thrive in technologically advanced environments. This requires a deliberate departure from traditional, analogue-based educational models toward curricula and teaching methods that reflect the realities of an AI-powered world. It has been argued that the integration of AI into LIS education is central to the discipline's continued relevance, viability, and professional impact. However, several challenges, including infrastructural

limitations, outdated curricula, lack of AI-competent faculty, and weak policy implementation, continue to hinder progress. These issues must be addressed through a combination of government policy reform, institutional innovation, faculty retraining, and collaborative engagement with the technology industry.

Sustainability in this context is not about preserving the status quo but about evolving LIS education into a dynamic, adaptive, and technologically literate field. The goal should not be merely to keep up with global trends, but to position Nigerian LIS education as a proactive contributor to Africa's knowledge economy. Only then can we produce graduates who are not only competent information professionals but also ethical and innovative agents of digital transformation. In conclusion, the future of LIS education in Nigeria depends on the choices made today. Stakeholders, educators, policymakers, librarians, and students, must work collectively to foster a culture of innovation, adaptability, and excellence. Artificial Intelligence is not a threat to LIS, but a powerful tool that, if harnessed appropriately, can lead to a more sustainable, impactful, and globally competitive LIS profession.

Recommendations

The preceding analysis underscores that the sustainability of Library and Information Science (LIS) education in Nigeria depends on its capacity to adapt to emerging technological realities, particularly Artificial Intelligence (AI). To ensure relevance, quality, and professional competitiveness, a strategic and multi-dimensional approach is required. The following recommendations are proposed as practical steps toward transforming LIS education and ensuring its long-term sustainability in the AI era.

1. **Integration of AI and Data Science into LIS Curricula**

There is an urgent need for LIS departments to revise and modernize their curricula to include core topics such as machine learning, natural language processing, big data analytics, AI ethics, and algorithmic bias. These areas are now critical to information science and are being incorporated into LIS programmes globally (Zhou and Lin, 2022). Nigerian institutions must move beyond token ICT courses and ensure that students develop both conceptual and applied knowledge of AI systems.

2. **Faculty Training and Professional Development**

The transformation of LIS education must begin with the educators. Faculty members should be provided with opportunities for reskilling and up-skilling through workshops, industry certifications, sabbaticals, and

collaborations with computer science and data science departments (Okike and Adetimirin, 2022). Without such targeted professional development, efforts to reform curricula or introduce AI-related content will be superficial at best.

3. Investment in Digital Infrastructure

Adequate infrastructure is foundational to sustainable AI education. Government agencies, university administrations, and donor organizations must prioritise the provision of high-speed internet, modern computer labs, AI software tools, and digital libraries. Public-private partnerships (PPPs) can play a significant role in mobilizing resources and expertise to upgrade LIS teaching and learning environments (Abubakar and Lawal, 2023).

4. Strengthening Industry-Academic Collaboration

To bridge the gap between theory and practice, LIS departments must actively engage with technology firms, AI startups, research institutes, and professional associations. Such partnerships can facilitate curriculum co-design, guest lectures, internships, hackathons, and real-world AI projects for students. These collaborative models will ensure that LIS education remains responsive to workplace realities (Edewor, et. al, 2023).

5. Policy Reforms and Strategic Implementations

Government agencies, including the National Universities Commission (NUC) and Librarians' Registration Council of Nigeria (LRCN), should update accreditation guidelines to reflect AI and emerging technology competencies as core to LIS education. Furthermore, the recently launched National Artificial Intelligence Strategy should be operationalised within the higher education sector, with clear frameworks for implementation, funding, and accountability (Federal Ministry of Communications, Innovation and Digital Economy, 2023).

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Technology Enhance Learning in Library and Information Science Education for Knowledge-Driven Economy

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Abstract

This study is a narrative review because it explores the use of the technology-enhanced learning (TEL) in Library and Information Science (LIS). The narrative review approach consists of carrying out a study using the technique and data obtained from synthesised literature and documents. Working LIS educators, students and practitioners in selected institutions that will use structured questionnaires as well as interviews. Description and inferential statistical values were applied to the quantitative data, and qualitative answers gave deeper data on the user experiences and perception. Findings demonstrate that TEL has a great impact to enhance engagement, digital literacy skills, critical thinking, and employability of learners towards the new requirements of the global knowledge economy. Nonetheless, they still have to address issues, including poor infrastructure, scanty digital capabilities of faculty, and disparity in access to technology. The research paper makes a conclusion that the institutional investment in developing digital capacity building facilities, reconceptualization of curriculum provision of technology skills and lifelong learning may aid in improving the efficacy of TEL in your LIS education.

Keywords: TEL, LIS education, KDE, Digital literacy, E-learning, Information professionals, ETEC, course design, ICT learning, digital skills.

Introduction

In today's rapidly evolving global landscape, the transition towards a knowledge-driven economy has significantly reshaped the expectations placed on higher education, particularly in disciplines like Library and Information Science (LIS). Thus as, Information becomes the cornerstone of innovation, economic development, and societal advancement, there is a growing demand for highly skilled information professionals capable of managing, curating, and disseminating

knowledge efficiently. This transformation necessitates a paradigm shift in LIS education, wherein traditional teaching methods are complemented, and in many cases, replaced, by technology-enhanced learning (TEL) approaches to meet contemporary educational and labor market needs.

Technology-Enhanced Learning (TEL) can be described as the use of technology to support, enhance, or transform the learning process, which involves the integration of digital tools, platforms, and resources to improve educational outcomes, making learning more engaging, accessible, and effective. Within the LIS education, TEL consists of virtual learning environments, online databases, multimedia, simulation software, learning management systems, artificial intelligence and mobile applications. Besides the expansion of LIS programmes in the forms of delivery, these technologies provide the learner with real-life digital skills to overcome the challenges and complexities of the contemporary information environment.

The significance of TEL in mastering LIS education is highly meaningful in providing graduates with knowledge on expectations of a knowledge-based economy, whose competitive advantage is characterized by intellectual capital, access to information, and proficiency with technologies. Since economies are transitioning towards countries that focus on innovation, services and digital transformation, it is crucial to have people who are skilled to utilize technology to organize knowledge assets as professionals. As feeble as it may seem, LIS education needs to accept TEL not only as a teaching method, but also as one of means of adapting to our economic system.

This paper examines the current application of TEL on LIS education its usefulness in the training of graduates who are well equipped to work in a knowledge based economy. Using empirical method, the study will answer some evidence-based questions about the advantages and disadvantages of TEL integration with the LIS programmes, as well as the opportunities. It is hoped that these results will guide teachers, policy makers, and curriculum developers to best practices to prepare curricular content to meet the changing information society.

The new digital environments have appeared as new digital ecosystems, such that the creation, organization, storage, and accessibility of information are totally transformed in the new digital environment in terms of big data, artificial intelligence,

machine learning, and cloud computing. These changes obligate LIS professionals to not only possess basic knowledge of library activities; these professionals must be technology-savvy with respect to assisting data management, information digitization, data retrieval, and providing user-centric services. Thus, LIS education needs to transform its purposes in the face of these realities and integrate TEL tools and approaches in which critical thinking, problem-solving, and adaptability can be developed. The application of TEL in LIS education is conspicuous in developing countries such as Nigeria and the rest of Sub-Saharan Africa. It holds the promise of filling educational disparities brought about by low physical accessibility to infrastructures and educational resources as well as the presence of skilled faculty. MOOCs, use of OERs, and the digital learning platforms offer institutions an opportunity to democratize learning opportunities and enhance the quality and the scope of LIS programmes. Nevertheless, this type of initiative can only succeed where there remain favorable policy environments, digital literacy skills within the teaching community and students, and durable investment on ICT infrastructure.

Although TEL in LIS education is useful, this process is subjected to numerous limitations. They are resistance to change on the side of the faculty members, insufficient institutional support, technological inequalities among the students, and failure of training on how to use digital tools efficiently. Answers to these challenges would be the adoption of the entire approach, curriculum re-designing, faculty development, joint partnership, and periodic assessment of learning outcomes. Here, TEL needs not to be regarded solely as a technological supplement, but they are to be understood as a component of pedagogical innovation seeking to improve the quality and relevance of education. The rationale of the present study lies in the assumption that LIS education transformation with the help of TEL is not a matter of choice but a necessity. It looks at how TEL has been adopted in LIS programmes, the pedagogical approaches in use, what level of interaction exists between the students and what skills are being learned based on the demands of the knowledge economy. The study offers a multifaceted picture of the contemporary educational environment by the means of collecting both quantitative and qualitative data through LIS educators, students and administrators, and formulating recommendations to be undertaken in the future in order to promote further evolution.

Conclusively, technology-facilitated education has become an important driver of innovation in LIS with sweeping influences on the employability of graduates and competitiveness of

institutions and academy and national growth. Historically the global economy has been increasingly dependent on knowledge and information as principal resources, and the importance of this fact requires LIS education to actively respond to this trend and develop digitally proficient, nimble and future ready workforce.

Statement of the Problem

The growing trend of a knowledge driven economy has levied a lot of pressure on institutions of higher learning including institutions that offer Library and Information Science (LIS) programmes on making sure that they produce graduates that are digitally competent, innovative and flexible to work in this new knowledge-based economy. Technology-Enhanced Learning (TEL) has become a potent medium to reshape LIS learning through enhanced learning activity experience, better access to knowledge and providing students with the necessary 21st century skills. Although the potential of TEL is drafted, several LIS programmes especially those in the developing world are still embracing traditional teaching methods, which in most cases, are obsolete and ineffective in equipping students with the knowledge and skills that will help them in the current information environment. There are a number of concerns that impede success in the implementation of TEL in LIS education. These are poor ICT infrastructures, low digital literacy among teachers, unavailability of training in pedagogy with the respect to using educational technologies, and educational change unwillingness. There is also an empirical gap in determination of the impacts of TEL application on learning outcomes, student engagement, and on employability of LIS programmes. Although digital tools are used in some institutions, implementation is usually uncoordinated, weak, and irrelevant as it fails to match the curriculum objectives and industry demands.

Moreover, as the world embraces the importance of knowledge management and data handling, digital delivery of professional services, LIS graduates can be largely unprepared to enter modern society because they are not exposed to TEL-based learning environments. Such a gap in alignment of LIS training with labor market needs begs a question on its relevance, the quality and in effect its usefulness of LIS training in easing or playing a part in the national development and global competitiveness. Thus, it is crucial to analyze the existing deficiencies and possibilities of the currently acquired TEL-integrated LIS education, determine any existing gaps, and present data-based information that could be used to formulate policy, and redesign the curriculum and teach it more effectively. The current research will attempt to solve this issue

by conducting empirical research about the purpose of TEL in LIS education and its ability to equip graduates with the effective engagement in knowledge-driven economy.

Research Objectives

The specific objectives of the study are to:

1. observe the existing degree of utilisation of technology-enhanced learning, in Library and information science (LIS) education.
2. analyse how technology enhanced learning would provide a solution to the current chasm between the requirements of the knowledge driven economy and LIS education as practiced in the traditional approach.
3. determine technological tools and perform widely used in LIS education and to evaluate its degree of efficacy.
4. identify the digital skills needed by LIS Students so that they could flourish within a knowledge-based economy.
5. ascertain the challenges faced when it comes to implementation and execution of technology based learning by LIS institutions.
6. determine how LIS educators and students feel about the effects of technology-enhanced learning on the outcomes of learning and employability.

Research Questions

1. What is the current level of utilization of technology-enhanced learning in Library and information science (LIS) education?
2. What role does technology-enhance learning play in bridging the gap between traditional LIS education and the demands of a knowledge-driven economy?
3. What technological tools and platforms are commonly used in LIS education, and what is their level of effectiveness?
4. What digital competencies are required for LIS students thrive in a knowledge-driven economy?
5. What challenges are faced by LIS institutions in adopting and integrating technology-enhanced learning?
6. What are the perceptions of LIS educators and students regarding the impact of technology-enhanced learning on learning outcomes and employability?

Literature Review

The integration of Technology-Enhanced Learning (TEL) into Library and Information Science (LIS) education has become increasingly critical in preparing graduates for participation in a knowledge-driven economy. TEL refers to an effective form of deploying digital tools in a shrewd way to aid, improve, and change learning. A variety of TEL tools have been adopted in

LIS programmes around the world, and in the recent years, learning management systems (LMS), virtual simulations, digital libraries, and even artificial intelligence applications that help streamline the instruction delivery process and augment student-centered education became widely used (Kumar & Muthuraj, 2023).

TEL and the Transformation of LIS Education

LIS education has evolved in order to introduce a broader scope of subjects that include data science, digital curation and information policy to the traditional branches of cataloguing, reference services, and information organization. This development of TEL has enabled a flexible, interactive and accessible learning that could match the modern pedagogical requirements (Olaore & Osunrinade, 2022). An example can be given in the use of multimedia resources, asynchronous message boards and real-time e-collaboration tool which enhances interaction especially with distance learners.

Investigations have revealed that TEL contributes to deeper learning because it encourages active participation and critical thinking in the minds of the students (Ndukwe & Daniel, 2023). As such, the transformation toward the learner-focused pedagogy with the use of the TEL tools lies at the core of providing LIS graduates with the digital and analytical skills necessary in the world of the knowledge economy. Also, there has been the introduction of new technologies within the training process of LIS such as recommendation systems based on AI, metadata automation, and digital repositories to progressive institutions (Ahmed & Shehu, 2023).

TEL and the Knowledge Economy

The knowledge economy focuses on intellectual skills, access to information and technological innovations as the main drivers of an economy. In turn, it is the requirement, which makes LIS professionals advanced in digital literacy, information management, and exploitation of technology to address issues related to information. TEL is one of the most important stages of the fill-in stage between academic schooling education and the industrial requirements (Bello & Musa, 2022). TEL can improve graduates and lifelong learning via the simulation of real-world information environments, thus, increasing their employability. Okoro et al. (2023) assert that universities that invest in digital learning resources would have more qualified graduates with LIS degrees who will contribute to digital transformation in libraries, archives, research institutions, and knowledge-based organizations. Such tools enable students to get acquainted with two emerging trends: digital librarianship, data ethics, and open science.

Challenges in TEL Integration

Nevertheless, TEL in LIS education has numerous challenges even though its application has its advantages. The typical obstacles are infrastructure shortage, poor digital skills of the teaching staff, and non-uniform policy across institutions, particularly in less-developed nations of the world (Ezeani & Nwabueze, 2023). Also, there are certain teachers who do not want to embrace new technologies either because of un training or fear of the disruption of pedagogy. The other issue is the digital divide issue among the students, which can prevent their equal contribution to the TEL environments. The availability of fast internet, reliable devices and digital literacy support is still not even, and the risk of texting non-inclusiveness in TEL-supported instructional techniques in LIS training exists (Adeyemi & Taiwo, 2024).

Emerging Trends and Best Practices

The latest research suggestions to prepare LIS professionals is to maintain continuous professional experience, restructure curriculum (achieve the integration of TEL competencies), and find ways to implement hybrid models of learning that include combination of places of actual learning and online experiences (Ibrahim & Okafor, 2023). It is also advised that institutions seek alliances with those organizations that provide technology and international LIS organizations to improve both the standards and scope of TEL projects. As stated in the literature, TEL has been reported to transform the LIS education through innovation, access, and skill acquisition in line with the knowledge-driven economy. Nevertheless, organizational expenditure on strategic investment, and facilitation through training and policy is necessary in solving the continued challenges that confront effective TEL implementation. The success of TEL adoption needs a data-driven approach to achieve an optimal sinceimetric representation with the highly probable outcome to make sure that the LIS graduated students should make significant contribution to the information society on the global scale.

Dynamic nature of the field of information and the fact that the digital landscape is becoming more and more complex necessitates LIS education to proceed at a fast pace in keeping up with the changes. Technology-Enhanced Learning (TEL) offers the means of such adaptation, making learners able to obtain, employ, and perfect skills required in the knowledge-based society. Studies show that, TEL is also beneficial in the ability to convey contents, as well as to support personalization of learning, flexible and self-paced instructions, which are

crucial in design of critical thinking, and digital/problem-solving literacy (Alhassan & Ogunlade, 2024).

TEL and Curriculum Innovation in LIS Education

TEL facilitates curriculum innovation by introducing the real world digital tools and platform into the LIS learning experience. As an example, the LIS education is including more topics on digital curation, metadata processing through MARC and Dublin Core Xn 见 perceived in the learning of information retrieval based on AI-driven databases (Obasi & Folarin, 2023). This is because when such components are incorporated into the curriculum, TEL will train LIS students to obtain on-job experience aligned with the existing job market. The trend in curriculum frameworks of multiple countries is to promote the implementation of digital learning systems and platforms, multimedia-based content, and data-visualizing technologies in the course of training LIS. Yusuf and Salami (2023) conducted a study in which it was revealed that students who were placed in a blend learning environment were more motivated and skill-mastered than those who were in traditional classrooms. Teaching virtual reference services, digital cataloging software and open source, such as Koha library systems, can also make it possible to give the students the practical knowledge of what is required in digital library environments.

Global Perspectives on TEL Adoption in LIS

The utilization of TEL in LIS workers preparation varies with respect to its affordability and complexity all over the world. Nearly guaranteed to be tapped into by LIS programmes in developed nations are AI, learning analytics, and cloud-based technologies and immersive technologies, notably, virtual reality (VR) and augmented reality (AR), that will help construct a real-world library condition (Smith & Harvey, 2022). Conversely there are numerous problems in developing countries due to difficulty in funding, access and training of institutions. However, research indicates that more interest and effort are put in integrating TEL in Africa and Asia. An example, the African Library and Information Associations and Institutions (AfLIA) have launched several potentials of capacity-building that would help LIS instructors embrace the usage of the TEL tools and digital pedagogy (AfLIA, 2023). The purpose of such initiatives is: (a) to minimize technological gap and (b) enhance innovation based education in LIS.

The knowledge-based economy exists on the concept of innovation, data literacy, and efficient management of intellectual property. With an adequate implementation of TEL, current LIS graduates will be ready to address such demands through providing them with the job scenario-competencies like

digital archiving, information ethics, database management, and digital communication (Chukwuemeka & Igbokwe, 2023). Currently desired of graduates by employers are those who can utilize integrated library systems (ILS) and run institutional repositories, and assist in transforming their institutions. TEL offers options to learn through projects, internships online, or learn to collaborate with others to solve problems, which all make one more employable and helps to become ready to be among your peers once in the workplace (Daramola & Olajide, 2022). By extension, such alignment between TEL-based LIS education and the knowledge economy is important in its national development efforts, which are aimed at the process of innovation and human resources development.

Digital Literacy and Inclusion in TEL Environments

TEL has digital literacy as its building block. The actual TEL adoption requires the skills of educators and students to operate and navigate digital tools. Nevertheless, the skewed level of digital literacy is a threat to the learning process. Afolayan and Balogun (2024) state that the vast majority of LIS students who study in public universities in Nigeria lack access to devices, digital skills, and reliable internet, which interferes with their complete engagement in TEL environments. One of the solutions to this is to digitally include them in terms of subsidized equipment, internet connection, and digital skills learning courses so that the organizations can promote equal TEL conditions. Moreover, they need to educate teachers on how to use technologies, but also in the ways of using technological assistance to support and instruct the process of teaching (Ogbonna & Nkanga, 2023).

The measurement of the effectiveness of TEL in LIS education is something necessary to achieve better performance. The performance and engagement of students and the level of satisfaction could be tracked through learning analytics and feedback mechanisms. Some of these scholars advocate the use of continuous evaluation measures within the TEL programmes to streamline the delivery channels and well as make sure that the industry requirements are met (Ajibola & Onuoha, 2022). Constant assessment also enables the detection of gaps in the curriculum to which more TEL resources could be dedicated. To give an example, the absence of exposure to digital preservation tools might become visible through the responses of the students and push the instructors to incorporate the relevant simulations or software tutorials.

Research Methodology

The study uses a mixed-methods research design to understand all the features of how Technology-Enhanced Learning (TEL)

is intertwined in the education of Library and Information Science (LIS) and whether it is in compliance with the requirements of knowledge-driven economy. The aim of the research is to focus on LIS educators, students, and academic administrators working in certain universities that have LIS programmes. The Population of the study is 40 participants and the sample size use is 35 respondents from LAUTECH (9), UNIOSUN (11), EKSU (10) & Adeleke University (5). There is a purposive sampling method to identify the institutions having active TEL projects, and the stratified random sampling will provide a fair representation of the staff and students.

Data Collection Methods

Structured questionnaires are administered to LIS students and lecturers to gather data on the availability, usage, effectiveness, and perceived impact of TEL tools. Semi-structured interviews and focus group discussions are conducted with key informants (lecturers, ICT staff, and academic administrators) to explore deeper insights into challenges, perceptions, and institutional readiness. Quantitative data is analysed using descriptive statistics (frequency, percentage, mean) and inferential statistics (e.g., chi-square tests) to examine relationships and differences across variables. Qualitative data is analysed thematically, allowing the researcher to identify patterns and narratives related to TEL practices, challenges, and outcomes.

To ensure validity, the research instruments are reviewed by experts in LIS and educational technology. A pilot test is conducted to refine the questionnaire. Reliability is confirmed using Cronbach's alpha coefficient to assess internal consistency. Ethical approval is obtained from the appropriate review board. Participation is voluntary, and respondents' confidentiality and anonymity are strictly maintained. This methodological approach allows the study to generate both broad statistical trends and in-depth contextual insights into the integration of TEL in LIS education and its contribution to preparing graduates for the knowledge-driven economy.

S/N	Name of University	State	Number of Respondent
1	LAUTECH	Oyo	9
2	UNIOSUN	Osun	11
3	EKSU	Ekiti	10
4	Adeleke University	Osun	5
	Total		35

Research question 1: What is the current level of utilization of technology-enhanced learning in Library and information science (LIS) education?

Table 1: Current level of utilisation of technology-enhanced learning in Library and information science (LIS) education

S/N	ITEMS	SA	A	SD	D	M	ST. D	Rank	REMARK
1.	Digital Libraries/e-resources	20	11	3	1	3.43	0.77	1st	Accepted
2.	Virtual Classrooms (e.g., Zoom, Google Meet)	19	12	3	1	3.40	0.76	2nd	Accepted
3.	Interactive media(videos, podcasts, simulations)	18	14	2	1	3.40	0.73	3rd	Accepted
4.	Online assessments/ quizzes	16	13	4	2	3.23	0.86	4th	Accepted
5.	Learning Management Systems (e.g., Moodle, Blackboard)	14	15	4	2	3.17	0.84	5th	Accepted
6.	Social Media Platforms(e.g., WhatsApp)	8	10	9	8	2.51	1.08	6th	Rejected
	WEIGHTED MEAN					3.19			

The results demonstrate that the majority of digital learning tools were accepted as favorable with digital libraries/e-resources being on top. Interactive media and virtual classrooms topped the list technologies used by the respondents, which shows their significant contribution to online education. The LMS and Online assessment/quizzes was also accepted as being utilised in LIS education. However, social media sites ranked lowest and was rejected as being used in LIS education. Overall, the weighted mean 3.19 indicates high level of TEL utilisation in LIS as affirmed by the respondents.

Research question 2: What role does technology-enhance learning play in bridging the gap between traditional LIS education and the demands of a knowledge-driven economy?

Table 2: Role of Technology-Enhanced Learning in Bridging the gap between Traditional LIS Education and the Demands of a Knowledge-driven Economy

SN	ITEMS I perceive the role of TEL that:	SA	A	SD	D	M	ST. D	Rank	REMARK
1.	TEL support the development of critical thinking and innovation skills.	25	9	1	0	3.69	0.52	1st	Accepted
2.	TEL equips student with essential digital skills for the modern information environment	24	7	3	1	3.54	0.77	2nd	Accepted
3.	TEL improves the quality of LIS education compare to traditional methods.	20	12	3	0	3.49	0.65	2nd	Rejected
4.	TEL prepares LIS graduates for roles in	19	13	3	0	3.46	0.65	2nd	Rejected

5.	TEL aligns LIS education with technological changes in the information profession. I enjoy some features and functionalities from these platforms that improve my research	17	16	1	1	3.40	0.68	5th	Rejected
6.	TEL has modernize and improved the	16	14	3	2	3.26	0.84	6th	Rejected
	WEIGHTED MEAN					3.47			

The results have shown that the majority of respondents were welcoming to the positiveness of Technology-Enhanced Learning (TEL) in LIS Education. The practice, which scored the highest (mean = 3.69), was TEL and its capacity to enable critical thinking and innovation. It was also considered to be efficient in terms of advancing the quality of education (mean = 3.49) and provision of students with the skills on digital devices (mean = 3.54). Nevertheless, the contributions of TEL its contribution to curriculum modernisation (mean = 3.40) and adaptation to the changes in technology (mean = 3.26) were rejected by the respondents. Overall, with the weighted mean of 3.47, it can be deduced from the results that the role of TEL in bridging the gap between traditional LIS education and the demands of a knowledge-driven economy was positive. In general, the average of 3.47, weighted, portrays a rather positive attitude toward the effect of TEL.

Research question 3: What technological tools and platforms are commonly used in LIS education, and what is their level of effectiveness?

Table 3: Technological Tools and Platforms Commonly Used in LIS Education

SN	ITEMS I believe that :	SA	A	SD	D	M	ST. D	Rank	REMARK
1.	Video conferencing tools provide an effective alternative to face to face teaching.	22	11	0	2	3.51	0.77	1st	Accepted
2.	Online assessment are reliable method for evaluating student performance in LIS	20	13	1	1	3.49	0.69	2nd	Accepted
3.	Multimedia improves student engagement and understanding of LIS concepts. I enjoy some features and functionalities from these platforms that improve my research	19	15	0	1	3.49	0.65	2nd	Accepted
4.	Learning Management System enhance access to course content and communication with lecturers	15	16	3	1	3.29	0.74	3rd	Accepted

5.	Social Media Platform are effective for academic communication and reminder	14	15	5	1	3.20	0.79	5th	Rejected
6.	Digital Libraries and database support	14	14	4	3	3.11	0.92	6th	Accepted
7.	Collaborative platform promotes teamwork	13	5	13	4	2.77	1.07	7th	Rejected
	WEIGHTED MEAN					3.27			

According to the findings, it was apparent that the majority of the technology tools were being used in LIS education. Video conferencing tools was the most used promising (mean = 3.51) since it is found to be useful alternatives to face - to - face teaching. Multimedia and online tests also had high rating of usage in engagement and performance measurement of LIS education. The use of collaborative platforms and social media was refused, however, which means that its academic viability was questioned. Weighted average mean of 3.27 implies high level usage of technology use in LIS education.

Research question 4: What digital competencies are required for LIS students thrive in a knowledge-driven economy?

Table 4: Digital Competencies Required for LIS Students In a Knowledge-Driven Economy

SN	ITEMS It is essential for LIS Student to be :	S A	A	S D	D	M	ST.D	Rank	REMARK
1.	Knowledgeable of data organization, cataloguing, and metadata standard in digital format	22	11	2	0	3.57	0.60	1st	Accepted

2.	Skillful in digital content creation(e.g , blogs, videos, Info graphics)	19	12	3	1	3.40	0.76	2nd	Accepted
3.	Competent in managing electronic resources and digital libraries	20	10	3	2	3.37	0.86	3rd	Accepted
4.	Proficiency in using digital Information retrieval tools (e.g. , databases , search engine)	18	13	3	1	3.37	0.76	3rd	Accepted
5.	Digital literate, Including the ability to evaluate online information, is necessary for professional practice	16	14	3	2	3.26	0.84	5th	Rejected
6.	Competent in using Learning	14	15	4	2	3.17	0.84	6th	Rejected
	WEIGHTED MEAN					3.36			

The results show Knowledge of data organization and metadata standards had the highest importance on a mean of 3.57 while the digital content creation skills had the second-highest importance with mean of 3.40. Also, the skills on digital retrieval tools and e-resource management and competency in

managing electronic resources and digital libraries with mean of 3.37 respectively were considered as were also considered as competencies required for LIS students thrive in a knowledge-driven economy accepted as well. Digital literacy and knowledge of LMS use, however, were not considered as competencies required for LIS students thrive in a knowledge-driven economy since it has minimal level of acceptance by the respondents. Overall, the weighted mean of 3.36 shows that digital competencies are required for LIS students to thrive in a knowledge-driven economy.

Research question 5: What challenges are faced by LIS institutions in adopting and integrating technology-enhanced learning?

Table 5: Challenges Faced by LIS Institutions in Adopting and Integrating Technology-Enhanced Learning

SN	ITEMS Challenge s include:	SA	A	SD	D	M	ST.D	Rank	RE MA RK
1.	Inadequate ICT Infrastructure (e.g. Internet Access, Hardware, Software)	21	11	2	1	3.49	0.73	1st	Acc epte d
2.	Limited funding and budget allocation	18	13	3	1	3.37	0.76	2nd	Acc epte d
3.	Lack of sufficient training and skills	16	14	3	2	3.26	0.84	3rd	Acc epte d
4.	Resistance to change among academic staff	14	15	4	2	3.17	0.84	4th	Acc epte d
5.	Lack of Institutional policies or Strategic framework	13	13	6	3	3.03	0.94	5th	Reje cted
6.	Insufficient technical support for maintainin	10	12	8	5	2.77	1.02	6th	Reje cted

7.	Limited access to high qualities, license	8	10	9	8	2.51	1.08	7th	Rejected
	WEIGHTED MEAN					3.09			

Based on the results, the inadequate ICT infrastructure, insufficient funding, insufficient training, respectively and resistance to change among academic staff are identified as major obstacles to technology-enhanced learning (TEL) in LIS education. Nevertheless, such issues as the absence of institutional policies, accessibility of licensed platforms, and technical support were not considered as major obstacles admitted. On the whole, the aspect of weighted mean 3.09 indicates moderate concern regarding these challenges.

Research question 6: What are the perceptions of LIS educators and students regarding the impact of technology-enhanced learning on learning outcomes and employability?

Table 6: Perceptions of LIS Educators and Students Regarding the Impact of Technology-enhanced Learning on Learning Outcomes and Employability

SN	ITEMS	SA	A	SD	D	M	ST.D	Rank	REMARK
1.	TEL makes learning more flexible and accessible for LIS student	20	12	2	1	3.46	0.73	1st	Accepted
2.	TEL has enhanced my understanding of LIS concept	18	13	3	1	3.37	0.76	2nd	Accepted
3.	TEL supports self-paced and independent learning among LIS student	17	14	2	2	3.31	0.82	3rd	Accepted

4.	TEL increase student engagement and interest in LIS course	15	13	5	2	3.17	0.88	4th	Accepted
5.	TEL has made LIS education more practical and aligned with real world application	14	12	6	3	3.06	0.95	5th	Rejected
6.	TEL has positive influence on the employability	11	11	8	5	2.80	1.04	6th	Rejected
7.	TEL has helped in developing job skills	9	10	9	5	2.54	1.01	7th	Rejected
	WEIGHTED MEAN					3.10			

The findings show that Technology-Enhanced Learning (TEL) is perceived to improve flexibility, accessibility, and understanding in LIS education, with these items ranked highest and accepted. The TEL also supports self-paced learning and increases student engagement, though to a lesser extent. However, its impact on practical application, digital skill development, and employability was rejected by respondents. The highest-rated benefit was flexibility in learning (mean = 3.46). Overall, the weighted mean of 3.10 reflects positive moderate approval of TEL's effectiveness in enhancing learning experiences in LIS education.

Discussion of Findings

The research analyzed the use, effectiveness, functions of Technology-Enhanced Learning (TEL) and its competencies and perceived the influence in Library and Information Science (LIS) education. The results have shown that TEL is considerably embedded into LIS learning, where high values of usage are identified of different tools. E-resources and digital libraries topped the list of the most frequently used followed by interactive media and virtual classrooms. Online testing and

learning management systems were also well welcomed and they implied their activity in organizing the remote learning and evaluation. The social media were however not considered as means of education implying that there is little confidence or applicability in educational contexts.

TEL was also viewed as to act as a key point that would help to narrow the divide between the traditional LIS education and what is required by the knowledge-based economy. The greatest recognized advantage was that it helps to foster both critical thinking and innovation, as well as developed student digital skills so that they would be able to cope in the current information environment. Although the positive comments with reference to TEL on the quality of education were provided, there was more doubt about its effectiveness in curriculum modernization and graduates readiness to take up real-world job positions. It means that TEL has established progress in the renewal of teaching methods but has not achieved high levels of integration into the overall institutional intentions.

Technologically, video conferencing applications were reported as the most efficient substitute to live learning, followed by multimedia resources and assessment tests on the Internet. These tools were regarded as boosting performance and engagement. Collaborative forums and social media were however considered to be less effective, perhaps because of the lack of structure or rather lacking in accordance with any academic objective. The use of technological resources in the LIS education system was found to be advantageous in general terms, however not all used pieces of technology were popular among all users.

Concerning the digital skills, which are required of LIS students, the respondents emphasized the significance of being educated in data organization, metadata conventions, and the production of online content. The ability to use digital retrieval tools and deal with electronic resources was also stressed. Unexpectedly, the level of digital literacy and the ability to work with technology in education, applying to LMS in this case, was not ranked too high which points to a possible underestimation of such rudimentary skills or a deficiency of such skills among students. The paper also found the main obstacles to the TEL adoption in LIS institutions. The most eminent challenges were poor ICT infrastructure, funding, and training. Integration was also not facilitated by resistance to change of the academic staff. Conversely, other factors like lack of institutional policies, limited technical assistance and inadequate access to licensed platforms were not deemed to constitute significant

impediments, meaning that operational and capacity related issues are more urgent and demanding.

Lastly, there was a mixed perception in response to the role of TEL in learning outcomes and employability. The respondents indicated that TEL increases the flexibility of learning, knowledge of LIS concepts, and provides independent and self-paced learning. Nevertheless, its effectiveness with regard to employability, skill acquisition and practical implementation was largely denied. Although TEL is embraced in enhancing learning experiences, there is doubt regarding the role of TEL to adequately equip students with preparedness to the job market. Finally, TEL is thoroughly incorporated into LIS education and has a positive perception in terms of its teaching nature, although there is still some disparity between instructional utility and goal achievement with regard to employability and overall educational outcomes. The solution is to solve issues associated with infrastructure and training and align the curriculum to ensure the potential of TEL in the development of future-ready LIS professionals.

Conclusion

In a world where technology is changing so fast due to the current high demand knowledge driven economy, technology enhanced learning (TEL) has become a requirement in Library and Information Science (LIS) education. The use of TEL creates new possibilities in terms of quality and accessibility enhancement of the education, and the use of TEL permits the LIS students to prompt the crucial skills in flexible and interest-captivating learning process. Digital libraries, virtual classrooms, multimedia resources are some of the tools that have reinvented the modes of pedagogy by encouraging interactive and student-centered learning. It is important to mention that this transformation is necessary since LIS professionals must figure out how to work with digital information resources and new technologies to address the requirements of the contemporary information environment.

The findings reveal that TEL proves to have significant effects on the depth of thinking, innovation, and digital skills of LIS students essential in knowledge economy. The students are much more informed, equipped with information retrieving skills, ability to organize data, and be creators of digital content that make them effective information professionals. Nonetheless, even in the context of recognized positive outcomes, some gaps still exist when it comes to comprehensively modernizing the LIS curriculum in relation to the current technological progress and the need of the industry. It implies that the review and improvement of the curriculum

should be an ongoing process to guarantee that TEL is valuable in preparation of practical skills and readiness to work.

There are, however, various obstacles to the adaptation and incorporation of TEL in LIS learning. Poor ICT infrastructure, lack of funds, and the shortage of training of both teachers and students are revealed as important obstacles. Also, change aversions among the academic employees slow the implementation of TEL. These dilemmas pay attention to the requirement of institutional support and strategic planning to develop strong technological systems, offer professional training, and develop a culture that can accept the concept of innovation in teaching and learning.

The views towards TEL are overall approving toward the learning outcomes and the importance of employability, especially on higher flexibility, engagement of students, and the level of understanding of LIS concepts. There is however still reservation as to whether it can boost hands-on skills and make graduates more desirable in the digital age. This ambivalence shows that a stronger degree of correlation between TEL initiatives and the workplace and the demands of industry is required so that LIS graduates have both theoretical and applied knowledge as well as digital competence required by the marketplace.

To summarize, the new technology-based learning is revolutionizing LIS education with giant improvements that allow the appearance of individuals equipped with the skills and knowledge to operate in a knowledge-based economy. Nonetheless, in order to take the full advantage of its potential, organizations have to deal with issues of infrastructures, funding, culture, in addition to repayment of curricula and methods. In this way, LIS programmes will be able to empower future information professionals with the knowledge and capabilities they need to be successful citizens of an cyber-intensive, information-stuffed environment and, in the process, enhance their value to the knowledge base.

Recommendations

1. Departments of LIS ought to enhance the availability of internet services, computing devices, and associated software. This can be facilitated by government administrators and policy makers by usually availing funds specifically towards ICT advancement, associating services with the vendors and NGO and servicing audits to identify and further develop digital infrastructure.
2. Digital skills, such as metadata standards, creation of digital resources and management of them, should also be

taught in LIS curricula. This can be done on the basis of curriculum updates that are going to be made jointly in cooperation with professionals in industry, the implementation of compulsory modules on digital literacy, and the application of project-based methods of learning.

3. To be able to use technology in teaching, faculty members need continuous training to enable them execute the same effectively. Professional development plans like TEL tools training and certifications should also be implemented in learning institutions by rewarding participating faculty with opportunities to be honoured or promoted.
4. The policies to guide TEL implementation should be evident in institutions. Such committees should be set out by the universities and concerned authority to write up such policies, integrate TEL standards in quality assurance, and align them with their overall educational objectives like open and flexible learning.
5. To ensure graduates are prepared for the workforce, TEL practices should be aligned with industry needs. LIS departments can achieve this through regular industry consultations, co-creation of course content with professionals, and internships that emphasize the use of technology in real-world settings.
6. The use of proven TEL tools such as video conferencing platforms, multimedia learning resources, and online assessment systems should be prioritized. Training and support should be provided to faculty and students to integrate these tools into teaching and learning, with their effectiveness regularly evaluated through feedback and learning outcomes.
7. While social media can support informal communication, it should not be used as the primary platform for content delivery. Structured educational platforms such as Learning Management Systems (LMS) and institutional email should be emphasized for academic purposes.
8. Robust technical support is critical for the sustainability of TEL. Institutions should establish dedicated support centers or helpdesks, assign qualified technical staff for platform maintenance, and offer user training and resources to ensure smooth operation and adoption.

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Influence of Government Policy Implementation on the Development of School Libraries in Public Secondary Schools in Delta State, Nigeria.

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Abstract

This study explores the influence of government policy implementation on the development of school libraries in public secondary schools in Delta State, Nigeria. Effective policy implementation is crucial for enhancing the quality of school libraries and service delivery, which in turn can improve students' academic performance and information literacy. This conceptual study employs a critical review of existing literature on government policy implementation, school libraries, school librarianship, and education policy in Nigeria. The study synthesises key findings and insights from previous research to develop a deeper understanding of the relationship between policy implementation and school librarianship development in Delta State, Nigeria. Findings from the study reveals that government policy implementation plays a significant role in shaping the development of school libraries in public secondary schools in Delta State, Nigeria. Key factors influencing policy implementation include policy clarity, resource allocation, professional development, and library standards. The study highlights the need for effective policy implementation to enhance the quality of school libraries and librarianship. This study has practical implications for policymakers, educators, and school librarians in Nigeria. The findings suggest that policymakers should prioritise policy clarity, resource allocation, and professional development to support the development of school librarianship.

Keywords: Government Policy Implementation, School Librarianship, Public Secondary Schools, Delta State, Nigeria, Education Policy, Library Development, Policy Influence, School Libraries, Librarianship Development

Introduction

School libraries have been found to be vital ingredients in the delivery and sustainability of qualitative education at the basic and post basic educational levels in Nigeria. The National Policy on Education (NPE) mandates functional school libraries as core educational resources, yet implementation has been

uneven since its inception in 1977 (Ngwuchukwu & Dike, 2018). In Delta State, general education policy implementation suffers from underfunding, weak enforcement, and inconsistent supervision (Ossa, 2022). This study seeks to probe how these implementation components shape the development of school librarianship. Government policy implementation refers to the process through which formulated policies designed to achieve specific developmental or administrative objectives are translated into practical actions and outcomes by public institutions and agencies. It involves the coordinated execution of laws, regulations, programmes, and directives across various levels of government with the aim of achieving intended goals.

According to O'Toole (2000), policy implementation is "what develops between the establishment of an apparent intention on the part of government to do something, or to stop doing something, and the ultimate impact in the world of action." In this context, implementation is not merely administrative but is also political, financial, and institutional in nature. In the education sector, and particularly in school librarianship, policy implementation involves a series of deliberate actions such as: Allocation of financial and material resources for libraries, Recruitment and deployment of professionally qualified librarians, supervision and inspection to ensure compliance with standards, Provision of infrastructure and reading materials, Professional development and regulation through bodies like the Librarians' Registration Council of Nigeria (LRCN). In the Nigerian context, several challenges have been identified in policy implementation, including underfunding, bureaucratic inertia, inconsistent political will, and poor monitoring systems (Eze & Olaleye, 2016; Anyira, 2021). These challenges are particularly evident in Delta State, where despite the existence of policy frameworks mandating school library development, many public secondary schools remain without functioning libraries or qualified staff.

School libraries are essential educational institutions that support literacy development, curriculum delivery, and the cultivation of independent learning habits among students. Globally, school librarianship has evolved as a professional field underpinned by policy frameworks that guide its establishment, administration, and integration into formal education systems (IFLA, 2015). In Nigeria, the National Policy on Education (NPE) explicitly mandates the provision of functional libraries in all schools and emphasizes the need for trained personnel to manage them effectively (Federal Republic of Nigeria, 2013). Despite this policy commitment, the reality on ground, particularly in states like Delta State, reveals significant gaps in implementation. Many public secondary

schools lack properly equipped libraries, qualified librarians, and sustained funding, undermining the role of the library in supporting teaching and learning (Ngwuchukwu & Dike, 2018). In Delta State, the implementation of government policy on school libraries has been fraught with systemic challenges that have hindered the growth and professionalization of school librarianship. Although the National Policy on Education (NPE) mandates that every school be equipped with a functional library staffed by qualified personnel, this directive has not been effectively translated into practice at the state and local levels. Studies by Ngwuchukwu and Dike (2018) and Anyira (2021) reveal that many public secondary schools in the state either lack dedicated library spaces or operate under-resourced “libraries” without trained librarians. These shortcomings stem largely from poor implementation of existing policies characterized by inadequate funding, limited political will, weak enforcement mechanisms, and low levels of inter-agency coordination.

A school library is a dedicated learning and information resource center within a school, designed to support teaching, learning, and research by providing access to a wide range of information materials, services, and technologies. It plays a central role in the intellectual, social, and academic development of students by fostering reading literacy, promoting information literacy skills, and encouraging independent learning and critical thinking. According to the International Federation of Library Associations and Institutions (IFLA, 2015), a school library is "an essential part of the educational process, with the mission to provide information and ideas that are fundamental to functioning successfully in today's information and knowledge-based society." It should offer equitable access to books, digital content, periodicals, and other instructional resources that are age-appropriate and curriculum-aligned. In the Nigerian context, the National Policy on Education (Federal Republic of Nigeria, 2013) explicitly mandates the establishment and proper equipping of libraries in all schools. However, the reality across many public secondary schools, particularly in Delta State, reflects a lack of full implementation. Many schools operate without proper library facilities, and where they exist, they are often underfunded, poorly managed, and lack trained personnel (Esan, 2022; Anyira, 2021).

The development of school librarianship in Nigeria, therefore, depends not only on policy formulation but also on consistent policy implementation, adequate funding, professional staffing, and administrative oversight, all of which are essential for a school library to fulfill its educational mandate. According to

Anyira (2021), policy implementation failures in Nigerian educational institutions often stem from bureaucratic inefficiencies, insufficient stakeholder engagement, and weak enforcement structures. This study, therefore, conceptually examines the influence of government policy implementation on the development of school librarianship in public secondary schools in Delta State, Nigeria. It seeks to identify and analyze the key dimensions of policy implementation, such as; policy clarity, funding adequacy, enforcement mechanisms, and professional regulation and how they affect the establishment, staffing, resource availability, and service delivery of school libraries. Grounded in policy implementation and organizational development theories, this research aims to provide a framework that can guide future empirical studies and inform policymakers and educational administrators on best practices for bridging the gap between policy intent and educational outcomes in school librarianship.

Statement of the Problem

School libraries play a critical role in promoting reading literacy, supporting curriculum delivery, and enhancing students' academic achievement. In recognition of this, the Nigerian National Policy on Education (NPE) mandates the establishment of functional libraries in all schools and the provision of trained personnel to manage them. However, despite the existence of such policies, the actual state of school libraries in many public secondary schools across Nigeria, and particularly in Delta State, remains inadequate and underdeveloped. Field reports and scholarly investigations have consistently revealed poor implementation of education and library-related policies in Delta State (Ngwuchukwu & Dike, 2018; Anyira, 2021). Many schools operate without dedicated library facilities, trained librarians, or adequate funding for resource acquisition and library programming. Where libraries exist, they are often ill-equipped, under-utilized, and managed by unqualified staff. These conditions not only violate national policy standards but also hinder the development of a vibrant reading culture and the broader goals of quality education. This problem is rooted not in the absence of policy, but in the failure of effective policy implementation. Critical dimensions such as policy clarity, funding allocation, enforcement mechanisms, and professional regulation by agencies like the Librarians' Registration Council of Nigeria (LRCN) are either weak or inconsistently applied. Without deliberate efforts to address these gaps, the potential of school librarianship to support education reform in Delta State will remain unrealized.

Thus, this study is necessitated by the persistent disconnect between policy formulation and practice. It seeks to conceptually explore how the implementation of government policy influences the development of school librarianship in public secondary schools in Delta State, focusing on the systemic, administrative, and professional factors that either support or hinder this development. The aim of this study is to examine the influence of government policy implementation on the development of school librarianship in public secondary schools in Delta State, Nigeria, with a focus on how specific policy-related factors affect the establishment, staffing, resource provision, and functionality of school libraries. Specifically, the objective of the study were to identify the extent to which government education policies on school libraries are clearly communicated and understood by school administrators in Delta State, assess the adequacy and consistency of funding provided for the development and maintenance of school libraries in public secondary schools, examine the effectiveness of enforcement and monitoring mechanisms employed by government agencies in ensuring policy compliance regarding school library standards, explore the role of professional regulatory bodies such as the Librarians' Registration Council of Nigeria (LRCN) in supporting the development of school librarianship, analyze how these policy implementation components influence the establishment, staffing, and resource availability in school libraries within Delta State.

Literature Review

School librarianship plays a critical role in educational development by supporting teaching, promoting reading culture, and facilitating access to information resources. Scholars such as Aina (2004) and Issa et al. (2012) argue that effective school libraries are vital for developing critical thinking and lifelong learning skills among students. However, in many Nigerian secondary schools, particularly in public institutions, school libraries remain underdeveloped due to poor funding, inadequate staffing, and lack of structured policy implementation (Ajegbomogun & Salaam, 2011). Policy Formulation and Implementation in Nigerian School Librarianship. Ngwuchukwu and Dike (2018) present a historical overview of school library policy in Nigeria, from the 1977 National Policy on Education (NPE) through various initiatives, such as those by the Nigerian School Library Association (NSLA), UBEC, and state-level advocacy. They argue that despite progressive policy formulation, barriers to implementation such as inconsistent funding, inadequate

staffing, poor monitoring and others, have severely impeded best practices in school library development across decades. The implementation of government policies in school librarianship faces a number of barriers, many of which significantly hinder the development of effective school libraries. One of the most prominent barriers is inadequate funding. The chronic underfunding of the education sector, particularly in non-classroom services like libraries, severely limits the ability of school libraries to operate effectively. School libraries are often deprioritized during budget planning, which leads to poor infrastructure, outdated or non-existent resources, and a lack of ICT facilities. As a result, even when funds are allocated for libraries, they are often insufficient or misappropriated, making it difficult to achieve the goals set by policies. Another significant challenge is the lack of political will. While policies may exist on paper, the political commitment required to implement them is often absent. Decision-makers may endorse policies for political recognition, but fail to commit to their sustained implementation. This lack of commitment is often due to competing interests or a lack of accountability mechanisms, which ultimately prevents policies from being effectively executed.

The shortage of qualified personnel is another key barrier. Many public secondary schools either do not have qualified librarians or rely on untrained teachers to manage their libraries. Government policies often fail to address the need for recruiting, training, and retaining professional school librarians. This lack of qualified staff undermines the quality of services provided by school libraries and contributes to the failure of policies aimed at improving library services. Inconsistent policy monitoring and evaluation also hinder the implementation of school library policies. For policies to be effective, regular monitoring, evaluation, and feedback loops are necessary. However, in many cases, the implementation of these policies is rarely monitored, and even when reports are produced, corrective actions are seldom enforced. This lack of accountability leads to a disconnect between the policy's intended objectives and the actual outcomes observed in schools. Bureaucratic inefficiencies within the educational administration are another significant barrier. The bureaucratic structure in Nigeria's education system often causes delays in fund disbursement, creates unclear lines of responsibility, and results in excessive red tape. These inefficiencies reduce the effectiveness and timeliness of policy execution, hindering the progress of library development. Poor infrastructure and resource availability also present challenges.

Many schools in Delta State and across Nigeria lack the physical space, furniture, ICT tools, and even books to support a functional library. Even when policy provisions are made to equip libraries, these provisions are often not translated into practical interventions. As a result, schools continue to face difficulties in developing libraries that can meet the needs of students and teachers.

Weak stakeholder engagement further compounds these issues. The implementation of school library policies often excludes key stakeholders such as librarians, teachers, parents, and students. Without their involvement in the policy development and implementation processes, policies may lack local relevance or fail to gain the necessary buy-in, making them harder to implement effectively. Ambiguity in policy content is another factor that impedes successful implementation. Some policies lack clear implementation strategies or are vague in their language, leaving interpretation up to individual school administrators or local officials. This lack of clarity often leads to inconsistent execution of policies across schools, creating confusion and hindering effective implementation.

The lack of data and planning also undermines policy implementation. Without accurate data on the state of school libraries, policymakers may design policies that are not grounded in reality or fail to address the actual needs of schools. This disconnect between policy design and the on-the-ground realities further complicates efforts to implement effective library policies. Corruption and mismanagement of funds present additional challenges. The misappropriation of educational funds, coupled with poor accountability at local and state levels, hampers the delivery of resources meant for school libraries. Even when funds are allocated, corruption can derail the implementation process, preventing resources from being used as intended.

For policies related to school libraries to be successfully implemented, certain conditions must be met. Policies must be clearly articulated and communicated to all stakeholders to ensure that they understand their roles and responsibilities. Government agencies must also have the necessary resources and organizational capacity to execute these policies effectively. Sustained political and institutional support is critical, as is a strong commitment from education authorities, school administrators, and professional associations. Regular monitoring and evaluation are also essential to ensure accountability and ensure that policies remain aligned with their objectives.

Esan (2022) provides a thematic literature synthesis that demonstrates the challenges faced by Nigerian secondary schools, many of which still lack functional libraries. The core obstacles highlighted include poor funding, non-compliance with policy mandates, the absence of trained librarians, and a lack of dedicated library time. Esan underscores the role of advocacy by the Librarians' Registration Council of Nigeria (LRCN) and the Nigerian Library Association (NLA) in bridging the gap between policy and practice. Earlier studies, such as those by Egesimba (2011), echo similar findings, noting that libraries continue to suffer from obsolete materials, inadequate infrastructure, and minimal governmental support. Specific studies in Delta State further substantiate the wider national trends. Rhima (2025) examined budgeting practices in colleges of education in Delta State and identified systemic weaknesses in budget preparation, approval, and execution, reflecting broader issues in resource allocation for libraries in the region.

The Librarians' Registration Council of Nigeria (LRCN), established to regulate professional standards in librarianship, including certification and staffing criteria, has faced challenges with enforcement, especially in school contexts. Recent advocacy efforts by the Nigerian Library Association (NLA), particularly through its School Library Section, aim to promote compliance and accreditation, but the impact at the school level has been limited. The literature points to a persistent policy-implementation gap, where the National Policy on Education (NPE) mandates school libraries and trained personnel, yet implementation falters due to weak funding, enforcement failures, and poor clarity in policy communication. This aligns with broader theories of organizational development, which emphasize that policies without adequate administrative capacity, monitoring, and stakeholder engagement are ineffective.

School librarianship refers to the professional management, organization, and provision of information resources and services within school libraries to support teaching, learning, and literacy development. The growth and effectiveness of school librarianship are closely tied to educational policy, infrastructure, funding, human resources, and technological advancement. For the successful development of school librarianship, several areas are crucial. These include the establishment of libraries, which should involve the creation of dedicated library spaces, proper shelving, and basic collections.

Additionally, staffing and professionalization are key, which means employing certified librarians and trained personnel. Resource availability and utilization are also vital, ensuring that schools have access to books, digital resources, and library programs. Finally, service delivery is essential, which involves engaging users, promoting reading activities, and integrating library services into teaching and learning processes. In conclusion, the implementation of government policies for school libraries in Delta State, Nigeria, faces several significant obstacles, including inadequate funding, a lack of political will, shortages of qualified personnel, inconsistent monitoring, and poor infrastructure. These barriers hinder the development of functional school libraries that can support effective teaching and learning. Addressing these challenges requires clear and well-communicated policies, sustained political and institutional support, adequate funding, improved professional standards, and strong monitoring and evaluation systems. By addressing these issues, the effectiveness of school libraries in supporting education in Nigeria can be greatly improved.

Methodology

This research adopts a conceptual approach, grounded in qualitative analysis, to examine the influence of government policy implementation on the development of school librarianship in public secondary schools in Delta State, Nigeria. Rather than involving empirical data collection, conceptual research relies on the synthesis, analysis, and interpretation of existing literature, policy documents, and theoretical frameworks. Through this approach, the study aims to draw informed conclusions and propose new insights or models that enhance understanding of the subject. The study employs a qualitative and interpretive design, which allows for an in-depth exploration of policies and their implications for the development of school librarianship. Through critical analysis, the research investigates the conceptual relationships between government policy enactment, implementation practices, and the evolution of library services in secondary education.

This conceptual study is based on secondary data, which includes a variety of sources such as national and Delta State government policy documents and education plans, including but not limited to the National Policy on Education and library development frameworks. Additionally, reports from the Federal and Delta State Ministries of Education are examined, alongside scholarly journal articles, books, and conference proceedings that address school librarianship, education policy, and implementation strategies in Nigeria. The study also includes publications from professional bodies such as the

Nigerian Library Association (NLA) and UNESCO policy briefs on school libraries, as well as legal documents and policy frameworks related to education and library services. Through this approach, the research synthesizes existing knowledge and theoretical perspectives to provide new insights into the challenges and opportunities related to the implementation of school library policies in the region.

Findings and Discussion

Based on a critical analysis of relevant literature, government policy documents, and theoretical models on policy implementation and library development, several key findings emerged that shed light on the challenges faced by school libraries in Delta State, Nigeria. First, while government education policies at both the federal and state levels, such as the National Policy on Education (NPE), have acknowledged the importance of school libraries, the actual implementation of these policies remains weak in public secondary schools in Delta State. Despite the recognition of school libraries in official documents, the commitment expressed often does not translate into practical action on the ground. This gap between policy recognition and implementation highlights a significant challenge in ensuring that the goals of these policies are achieved.

Also, many public secondary schools in Delta State are severely underdeveloped in terms of library infrastructure and services. A large number of these schools either lack functional libraries altogether or operate libraries that are poorly equipped, underfunded, and staffed by unqualified personnel. This situation reflects a clear disconnect between the policy intentions for school libraries and the actual state of library development in these schools. The lack of proper infrastructure and resources undermines the effectiveness of school libraries, which are intended to support teaching, learning, and literacy development. The finding points to the lack of qualified personnel as a major barrier to the effective implementation of policies.

Despite policy provisions aimed at staffing school libraries with trained and certified librarians, many schools still employ untrained teachers to manage libraries. This leads to poor service delivery, as unqualified personnel are unable to effectively manage library resources or provide the necessary support for students and teachers. The absence of trained librarians not only undermines the goals of policy implementation but also limits the overall effectiveness of school libraries in contributing to educational development.

Furthermore, inadequate funding is identified as a primary implementation barrier. Insufficient budgetary allocations for education, and for school libraries in particular, hinder the development and modernization of library services. Library funding is often not prioritized in state and local education budgets, which makes it difficult to implement the goals outlined in policy documents. Without sufficient financial resources, it is challenging for schools to build or maintain functional libraries, purchase necessary materials, or integrate modern technologies into library services. The finding reveals the weakness of monitoring and accountability mechanisms in place for school library development policies. There is a lack of robust systems to monitor, evaluate, and enforce these policies. This results in irregular policy implementation, where some schools make ad-hoc efforts to improve their libraries while others do nothing at all. The absence of effective monitoring and accountability mechanisms means that policies are not consistently enforced, and there is little pressure for schools to comply with the standards set forth by the government. In addition, infrastructure and ICT deficiencies were identified as critical factors impeding the growth of school libraries in Delta State.

Most school libraries are not equipped with modern learning tools, such as digital resources, computers, or internet access. This lack of technological infrastructure undermines the shift toward 21st-century learning, which increasingly relies on digital literacy and access to online resources. Without these tools, school libraries cannot effectively support the needs of modern education, limiting their relevance and utility in today's educational landscape. The findings also indicate that policy implementation is affected by bureaucratic and political challenges. Bureaucratic inefficiencies, a lack of coordination between government agencies, and political instability contribute to the failure of consistent policy execution. Education and library development are often politicised, with decisions influenced by short-term interests rather than long-term educational goals. These political and bureaucratic challenges slow down the execution of policies and make it difficult to sustain progress in school library development.

Moreover, the finding highlights the issue of stakeholder exclusion. Teachers, librarians, parents, and students are rarely involved in the planning or implementation of library development initiatives. This exclusion leads to policies that may be misaligned with the actual needs of schools and local communities. Without the active participation of key stakeholders, it becomes harder to ensure that policies are

adopted, implemented, and sustained in a way that meets the needs of the school community. Lastly, the implementation of policies is not uniform across schools. There is significant variability in policy implementation between urban and rural schools. While some urban schools may have relatively better facilities, rural schools are often neglected. This uneven distribution of resources and attention deepens educational inequality, as students in rural schools are deprived of the same opportunities for learning and development that students in urban schools receive.

The disparity between urban and rural schools further exacerbates the challenges of equitable education delivery in Delta State. In summary, the findings reveal that while government policies on school libraries in Delta State may be well-intentioned, their implementation is hindered by several factors, including inadequate funding, a lack of qualified personnel, poor infrastructure, weak monitoring and accountability systems, and political and bureaucratic challenges. Additionally, the exclusion of key stakeholders and the uneven implementation across urban and rural schools contribute to the ineffective development of school libraries in the state. Addressing these barriers is crucial to ensuring that school libraries can fulfill their intended role in supporting teaching and learning.

Conclusion and Recommendation

This conceptual study has examined the critical role of government policy implementation in shaping the development of school librarianship in public secondary schools in Delta State, Nigeria. While national and state education policies explicitly recognize the value of school libraries in supporting teaching and learning, the practical reality reveals a significant implementation gap. Findings show that school librarianship in Delta State remains underdeveloped, primarily due to inadequate funding, lack of qualified personnel, poor infrastructure, limited monitoring, and weak political will. The absence of effective policy execution mechanisms has led to the marginalization of school libraries, thereby undermining their potential contribution to educational quality and student literacy.

Unless deliberate and sustained efforts are made to align policy with practice, the vision of functional and impactful school libraries will remain unrealized. The study reinforces the need for a strategic overhaul of the current policy implementation framework to revitalize school librarianship in public secondary schools. To bridge the gap between policy and practice and promote the development of school librarianship in Delta State,

several recommendations are proposed. First, it is crucial for the state government to prioritize dedicated funding for school library development within education budgets. This includes allocating resources for infrastructure, both print and digital collections, and ICT resources. The government can ensure that these vital educational spaces are adequately equipped to meet the needs of students and support effective learning. There must be a concerted effort to recruit and train qualified school librarians. All public secondary schools should employ professionally trained librarians who possess the necessary skills to manage and utilize library resources effectively. In addition to recruitment, continuous professional development and in-service training programs should be institutionalized to ensure that librarians stay updated with modern library practices, tools, and trends in the field. This will help ensure that school libraries are managed by competent personnel capable of delivering high-quality services.

It is essential to establish robust monitoring and evaluation frameworks to track the implementation of policies related to school library development. A strong monitoring system will allow for the regular assessment of library conditions and the identification of areas for improvement. Independent audit teams or education inspectors should be tasked with regularly evaluating the state of school libraries and ensuring compliance with established policy standards. These efforts will help to address the inconsistencies in implementation and ensure that schools meet the required standards. The recommendation involves strengthening policy enforcement and political commitment. The Ministry of Education and other relevant agencies must demonstrate stronger political will by strictly enforcing existing policies and holding stakeholders accountable for non-implementation. This requires a commitment to following through with the provisions of policies and ensuring that all involved parties fulfill their responsibilities. Without strong enforcement, policies risk remaining unimplemented or only partially executed, limiting their effectiveness.

Integrating ICT and digital resources into school libraries is crucial for their modernization. The government and schools should invest in digital library resources, including e-books, online databases, and library automation tools. Such investments will not only help bring school libraries into the digital age but also align them with 21st-century learning needs, where access to digital resources is increasingly important for educational success. This will also ensure that students and teachers can access a wide range of up-to-date resources, improving the overall learning experience. Lastly, encouraging

public-private partnerships (PPP) can play a significant role in supporting school library development. The government should engage private sector companies and non-governmental organizations to contribute to school library development through funding, book donations, the provision of ICT tools, and infrastructure support. These partnerships can help bridge resource gaps and bring in expertise from outside the public sector, thereby enhancing the capacity of school libraries to meet the educational needs of students.

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Folkloric Storybooks to Cultivate Positive Reading Attitudes among Pupils in Ogun State, Nigeria

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Abstract

Positive reading attitudes among pupils are essential for developing strong literacy skills and fostering lifelong learning. Folkloric storybooks, rich in cultural heritage and engaging narratives, offer a unique opportunity to cultivate such attitudes in the classroom. This study investigates the impact of using folkloric storybooks on pupils' reading attitudes in primary schools in Ogun State, Nigeria. Employing a quasi-experimental design, the research compares an experimental group exposed to folkloric storybooks with a control group using standard textbooks. Data collected through validated attitude questionnaires before and after intervention reveal significant improvements in reading enjoyment, motivation, and frequency among pupils exposed to folklore-based materials. The study situates its findings within the socio-cultural learning framework, highlighting the importance of culturally relevant content in promoting pupil engagement. It also discusses practical implications for educators and curriculum developers aiming to enhance literacy outcomes through culturally responsive resources. The research concludes that integrating folkloric storybooks into classroom instruction represents an effective strategy for fostering positive reading attitudes, supporting academic achievement, and preserving cultural heritage. Future research should explore broader applications across diverse educational contexts to strengthen the evidence base.

Keywords: *Folkloric storybooks, reading attitudes, primary education, literacy, cultural relevance, socio-cultural learning.*

Introduction

Reading forms the foundation of academic achievement and lifelong learning, making the cultivation of positive reading attitudes among pupils a critical educational goal. Pupils' attitudes towards reading influence not only their immediate literacy performance but also their long-term engagement with texts, willingness to explore diverse knowledge domains, and academic resilience (Indriani, Kurniaman, & Syahrilfuddin, 2023). Unfortunately, in many educational settings, pupils view reading as a mechanical task rather than an enjoyable or

valuable activity. This perception contributes to diminished literacy skills and hampers broader cognitive development. Innovative approaches to reading instruction are necessary to transform pupils' reading experiences into culturally meaningful and motivating encounters. Folkloric storybooks represent a promising resource in this context. Folklore, encompassing myths, legends, folktales, and oral traditions passed down through generations, is embedded with cultural values, wisdom, and identity (Hasibuan, 2022). Incorporating such narratives into the classroom offers pupils a chance to connect with their cultural heritage while engaging in reading activities. Folkloric storybooks combine vivid storytelling, moral lessons, and imaginative plots that not only entertain but also develop language skills, critical thinking, and ethical awareness (Ugwuanyi, 2016). They serve as culturally responsive texts, aligning reading materials with pupils' lived experiences and socio-cultural backgrounds, which research shows enhances motivation and learning outcomes (Gay, 2010).

The socio-cultural theory of learning, advanced by Vygotsky (1978), asserts that learning is most effective when situated within the learner's cultural context and social interactions. Folkloric storybooks resonate with this perspective by placing pupils in familiar and meaningful narrative worlds where cultural symbols and communal knowledge are foregrounded. Such contextualisation supports comprehension, memory retention, and interpretive skills. Moreover, the participatory nature of folklore encourages dialogue, group reading, and collective reflection, enriching classroom interactions and fostering social cohesion.

Despite the theoretical and practical appeal, folkloric storybooks remain underutilised in many primary classrooms, often overshadowed by standardised, non-contextualised textbooks that lack cultural relevance. This gap results in missed opportunities to engage pupils in reading through materials that acknowledge their heritage and identity. As a result, pupils may experience alienation or disinterest, which undermines literacy development. Educators often face challenges in sourcing appropriate folkloric content, integrating it into curricula, or designing instruction that leverages folklore's potential to promote positive reading attitudes. Understanding how folkloric storybooks influence pupils' attitudes can inform pedagogical practices and policy initiatives aimed at improving literacy outcomes in culturally diverse settings.

This study investigates the impact of folkloric storybooks on pupils' reading attitudes in selected primary schools. It explores whether exposure to folklore-based reading materials enhances enjoyment, motivation, and frequency of reading activities. By employing a quasi-experimental design, the research compares outcomes between pupils exposed to folkloric storybooks and peers using conventional textbooks. The study also considers teachers' perceptions of folklore's role in nurturing reading interest. Ultimately, it seeks to contribute to the growing body of knowledge supporting culturally responsive pedagogy and to propose practical recommendations for integrating folklore into literacy instruction.

The significance of this study lies in its potential to offer evidence-based strategies that reconcile cultural preservation with academic advancement. Folklore not only enriches reading content but also fosters a sense of identity and community pride, crucial in multicultural education contexts. As literacy remains a global priority, especially in developing regions, this study provides insights into how culturally anchored resources can be harnessed to improve reading attitudes and, by extension, literacy proficiency. The findings aim to guide educators, curriculum planners, and policymakers in designing inclusive, engaging, and effective literacy programmes that recognise pupils as cultural beings, not just learners of generic skills.

Statement of the Problem

Reading proficiency and positive attitudes toward reading constitute essential pillars for academic success and lifelong learning. Despite efforts to improve literacy rates in many primary schools, pupils often exhibit a lack of interest and motivation to engage with reading materials. This disengagement manifests as low reading frequency, minimal enjoyment, and negative perceptions of reading tasks, all of which hamper literacy development and broader cognitive growth (Astuti & Nelisa, 2021). Conventional textbooks, typically used in classrooms, are often criticised for their lack of cultural relevance and monotonous content that fails to resonate with pupils' lived experiences. This disconnect alienates pupils and diminishes their intrinsic motivation to read, creating a persistent barrier to fostering positive reading attitudes.

Folkloric storybooks, with their rich storytelling traditions and cultural embeddedness, offer an alternative resource that might address these challenges. However, despite folklore's widespread presence in communities and its proven educational benefits, it remains significantly underutilised in many

classroom settings. There appears to be a gap between recognising folklore's potential and systematically incorporating it into literacy instruction (Indriani et al., 2023). This gap raises important questions about the effectiveness of folkloric storybooks in transforming pupils' reading attitudes and whether they can meaningfully complement or even enhance conventional teaching resources. Moreover, existing studies often focus narrowly on literacy performance metrics such as reading comprehension scores, with limited attention to the affective dimensions of reading, namely attitudes and motivation. Without fostering a positive emotional and cognitive relationship with reading itself, improvements in reading skills may be unsustainable or superficial. In addition, many research efforts lack consideration of pupils' socio-cultural contexts, which are critical in shaping engagement and learning outcomes (Gay, 2010). This underlines a need for comprehensive investigation into how culturally relevant materials like folkloric storybooks can influence attitudes towards reading in diverse educational environments.

This study addresses the problem of declining reading interest among pupils by examining the role folkloric storybooks can play in cultivating positive reading attitudes among primary school pupils in Ogun State, Nigeria. It aims to understand the extent to which exposure to folklore-based materials increases pupils' enjoyment, motivation, and frequency of reading activities. Additionally, the research seeks to identify obstacles and opportunities in integrating folklore into classroom literacy programmes. Insights derived from this investigation are expected to inform educators, curriculum developers, and policymakers about effective strategies for enhancing reading engagement through culturally responsive pedagogy.

Objectives of the Study

This study aims to investigate the influence of folkloric storybooks on cultivating positive reading attitudes among primary school pupils in Ogun State, Nigeria. The specific objectives guiding the research are to:

1. examine the effect of using folkloric storybooks on pupils' enjoyment of reading activities in the classroom in Ogun State, Nigeria.
2. determine the impact of folkloric storybooks on pupils' motivation to engage in reading outside of formal instructional time in Ogun State, Nigeria..
3. assess changes in the frequency of reading behaviours among pupils exposed to folklore-based reading materials compared with those using traditional textbooks in Ogun State, Nigeria.

4. explore teachers' perceptions regarding the integration of folkloric storybooks into literacy instruction and their influence on pupils' reading attitudes in Ogun State, Nigeria.
5. identify challenges and opportunities associated with the use of folkloric storybooks in primary education, including resource availability and pedagogical considerations in Ogun State, Nigeria.

Literature Review

Reading attitudes among pupils significantly impact their literacy development, academic achievement, and overall intellectual growth. Positive reading attitudes facilitate frequent reading, deeper comprehension, and sustained engagement with texts (Guthrie & Wigfield, 2020). Conversely, negative attitudes towards reading can lead to poor literacy outcomes and diminished motivation.

Researchers agree that cultural relevance in reading materials profoundly influences pupils' reading attitudes and motivation (Ladson-Billings, 2014). This review examines existing scholarship on reading attitudes, the role of culturally responsive pedagogy, and particularly the impact of folkloric storybooks in promoting positive reading attitudes in primary education settings. A foundational body of research emphasises that pupils' enjoyment of reading, their self-efficacy in reading tasks, and their intrinsic motivation are critical determinants of literacy success (Schiefele, 2017). Reading attitude encompasses both affective and behavioural components, including emotional responses to reading and patterns of reading engagement. Studies demonstrate that early positive experiences with reading lay the groundwork for academic resilience and lifelong learning habits (Guthrie et al., 2018). Accordingly, enhancing reading attitudes is a priority in literacy interventions and educational reforms worldwide (OECD, 2019).

Culturally responsive pedagogy (CRP), as conceptualised by Ladson-Billings (2014), stresses the importance of integrating learners' cultural backgrounds into instructional content to foster engagement and identity affirmation. CRP posits that pupils learn more effectively when educational materials reflect their language, history, and values. This approach challenges the "one-size-fits-all" model predominant in many education systems and aligns with Vygotsky's (1978) socio-cultural theory of learning, which underscores the social and cultural context of cognitive development. Empirical studies show that culturally relevant texts improve comprehension, motivation, and the feeling of belonging among diverse learners (Yosso et

al., 2020). Folklore comprises oral traditions including myths, legends, folktales, and fables that transmit cultural knowledge and ethical values across generations (Dorson, 1972). Within education, folklore has been recognised not only for its cultural significance but also for its pedagogical value in literacy development. Folkloric storybooks especially offer narratives that are familiar, meaningful, and engaging to pupils, providing a bridge between home and school learning environments (Rowe, 2010).

Research reveals that pupils exposed to folkloric materials exhibit higher levels of reading interest and motivation than peers using conventional textbooks (Indriani, Kurniaman, & Syahrilfuddin, 2023). Such storybooks stimulate imagination through vivid storytelling, reinforce cultural identity, and impart moral lessons, all of which contribute to positive affective responses towards reading. For instance, a study in Nigerian primary schools documented improved reading comprehension and enthusiasm following the introduction of local folktales in reading sessions (Ugwuanyi, 2016). Illustrations and interactive components in folkloric storybooks further enhance pupil engagement. Vygotsky's notion of the Zone of Proximal Development suggests that scaffolded support, such as visual aids, can facilitate comprehension and motivation (Vygotsky, 1978). Visual storytelling works hand in hand with oral tradition, making stories more accessible and memorable. Indriani et al. (2023) highlight that illustrated folklore helps pupils relate to stories, increasing both enjoyment and reading frequency.

Notwithstanding apparent benefits, challenges remain in integrating folkloric storybooks into classrooms. Issues include insufficient availability of quality folkloric materials aligned with curriculum standards, lack of teacher training on culturally responsive instructional strategies, and systemic preference for standardised textbooks (Hasibuan, 2022). Some educators express uncertainty on effectively linking folklore with literacy objectives, while assessment practices often prioritise standardised evaluations insensitive to cultural content (Nguyen, Tran, & Pham, 2021). While considerable research affirms folklore's potential in nurturing positive reading attitudes, there is a need for more rigorous, context-specific studies focusing on pupil attitudes rather than just reading proficiency. Much of the existing literature relies on qualitative or small-scale quantitative data, often conducted in isolated regions. Additionally, little attention has been given to educators' perceptions and practical experiences with folklore-based literacy interventions, which are critical to sustainable implementation. This study addresses these gaps by employing

a quasi-experimental design to quantify changes in reading attitudes among pupils exposed to folkloric storybooks, while also exploring teachers' insights regarding integration challenges and opportunities.

Research Methodology

This study employed a quasi-experimental design to investigate the impact of folkloric storybooks on primary school pupils' reading attitudes in Ogun State, Nigeria. The quasi-experimental approach was chosen to allow comparison between an experimental group, which received literacy instruction incorporating folkloric storybooks, and a control group, which continued using conventional textbooks. This design facilitates causal inferences regarding the effects of the intervention while accommodating the practical constraints of educational settings, where random assignment is often difficult. The study was conducted in three public primary schools located in a culturally diverse urban area in Ogun State, Nigeria. These schools were selected purposively based on their accessibility, readiness to participate, and demographic representativeness. The total sample comprised 120 pupils aged between 8 and 10 years, distributed equally across the experimental and control groups (60 pupils each). Additionally, six classroom teachers (three from each condition) participated, providing qualitative insights regarding instructional practices and perceptions of folkloric storybook use.

The folkloric storybooks used for the experimental group comprised carefully selected and adapted folktales originating from the local cultural context. These materials included illustrated stories with age-appropriate language and themes addressing moral values, community life, and traditional wisdom. The control group used standard literacy textbooks aligned with the national curriculum but devoid of explicit folktale content. Reading attitudes were assessed through a standardised and validated questionnaire adapted from the Reading Attitude Survey by McKenna & Kear (1990), measuring three constructs: reading enjoyment, motivation to read, and reading frequency. The instrument comprised 20 items rated on a 5-point Likert scale, with demonstrated reliability (Cronbach's $\alpha = .85$ in pilot testing). Data were collected at two points, prior to the intervention (pre-test) and immediately after the eight-week intervention period (post-test). Semi-structured interviews were conducted with participating teachers to gather qualitative data on their experiences integrating folkloric materials, perceived effects on pupils, and challenges faced during implementation. Interviews lasted approximately 30 minutes and were audio-recorded with consent.

Prior to the intervention, baseline data on pupils' reading attitudes were collected across both groups. The experimental group received weekly reading sessions featuring folkloric storybooks, supplemented by discussions, dramatization, and creative activities to reinforce comprehension and engagement. The control group continued with regular literacy lessons structured around the standard textbook content. Teacher training workshops were conducted before the intervention to prepare educators in the experimental group on using folkloric storybooks effectively and incorporating culturally responsive pedagogy principles. Regular monitoring ensured adherence to the intervention protocol.

Quantitative data were analysed using the Statistical Package for the Social Sciences (SPSS v27). Descriptive statistics summarised demographic characteristics and pre- and post-test scores. Paired sample t-tests assessed within-group changes in reading attitudes over time, while independent sample t-tests compared differences between the experimental and control groups at post-test. Qualitative data from teacher interviews were transcribed verbatim and analysed thematically using Braun and Clarke's (2006) six-phase approach. Coding was conducted iteratively to identify key themes relating to instructional practices, pupils' responses, and implementation challenges. Ethical approval was obtained from the relevant educational authorities and institutional review boards.

Participation was voluntary, with informed consent secured from parents or guardians. Data confidentiality and anonymity were maintained throughout, with pseudonyms used in reporting qualitative findings. While the quasi-experimental design strengthens causal inference, the absence of full randomisation may introduce selection biases. The study's duration (eight weeks) also limits insights into long-term effects. Future longitudinal research would enrich understanding of sustained impacts.

Results and Findings

Quantitative Results

This section presents quantitative and qualitative findings regarding the impact of folkloric storybooks on pupils' reading attitudes and insights from participating teachers. Analysis of pre-test scores revealed no significant difference between the experimental and control groups in overall reading attitudes, confirming baseline equivalence ($t(118) = 0.34, p = .73$). Following the eight-week intervention, pupils in the experimental group demonstrated significant improvement across all three dimensions of reading attitude. Reading

enjoyment: increased from a pre-test mean of 3.2 (SD = 0.6) to 4.1 (SD = 0.5), $t(59) = 8.92$, $p < .001$; "Motivation to read" rose from 3.0 (SD = 0.7) to 4.0 (SD = 0.6), $t(59) = 8.45$, $p < .001$; while Reading frequency improved from 2.8 (SD = 0.8) to 3.8 (SD = 0.7), $t(59) = 7.89$, $p < .001$. In contrast, the control group exhibited only marginal, non-significant changes across these measures.

The post test independent samples t-tests revealed statistically significant differences favouring the experimental group in reading enjoyment ($t(118) = 6.47$, $p < .001$), motivation ($t(118) = 6.30$, $p < .001$), and reading frequency ($t(118) = 6.12$, $p < .001$). Collectively, these findings indicate that exposure to folkloric storybooks positively influenced pupils' attitudes toward reading with medium to large effect sizes (Cohen's d ranging from 0.75 to 0.89).

Qualitative Findings: Teacher Perspectives

Thematic analysis of teacher interviews yielded several prominent themes. Enhanced Engagement and Enthusiasm: Teachers reported noticeable increases in pupils' eagerness to participate during reading sessions featuring folkloric storybooks. One teacher noted:

"The children were excited to listen and retell the stories. They brought their own experiences and built connections, which made reading lively and enjoyable."

Cultural Relevance and Identity Affirmation: Educators emphasised that folklore materials reinforced cultural identity and pride among pupils, which contributed to deeper emotional investment in reading activities:

"Using stories from their own culture made learning more meaningful. Pupils felt their heritage was valued in the classroom."

Pedagogical Benefits: Teachers observed that folklore facilitated the development of vocabulary, comprehension, and critical thinking through its storytelling nature and moral questions embedded in tales. Interactive activities such as dramatization were particularly effective.

Challenges and Limitations: Some teachers expressed concerns regarding the limited availability of high-quality folkloric storybooks that align with curriculum standards. Others highlighted the need for comprehensive professional development to maximise folklore's pedagogical potential.

Discussion

The findings of this study demonstrate the significant potential of folkloric storybooks to cultivate positive reading attitudes among primary school pupils. The quantitative results corroborated and extend existing research showing that culturally relevant reading materials enhance reading enjoyment, motivation, and engagement (Indriani, Kurniaman, & Syahrilfuddin, 2023; Ugwuanyi, 2016). Pupils exposed to folklore-based texts exhibited marked increases in all facets of reading attitude compared to their peers taught with conventional textbooks. These improvements are critical because positive reading attitudes underpin sustained literacy development and academic success (Guthrie & Wigfield, 2020). The significant improvement in reading enjoyment observed in the experimental group reflects folklore's inherent narrative appeal.

Folklore's familiar cultural themes and moral lessons provide pupils with meaningful content that resonates with their backgrounds, fostering emotional and cognitive connections to texts (Gay, 2010). This aligns with culturally responsive pedagogy, which emphasises learner identity and relevance as central to effective instruction (Ladson-Billings, 2014). The enthusiastic engagement reported by teachers further illustrates how folklore engages pupils beyond passive reading, encouraging active participation and social interaction through storytelling, dramatisation, and interpretation.

Motivation to read, which encompasses pupils' desire to choose reading as a leisure activity, also improved significantly. The result indicated that folklore does not merely comply with academic demands but stimulates intrinsic interest, a key factor in transforming reading from a task into a pleasurable habit (Schiefele, 2017). The increase in reading frequency reinforces this point, suggesting that pupils were more likely to read independently when introduced to relatable folklore texts. This pattern may have positive long-term implications for literacy trajectories, as early positive reading attitudes predict future educational attainment (Guthrie et al., 2018). Qualitative insights from teachers underscore the pedagogical affordances of folkloric storybooks. Teachers' perceptions reveal folklore's capacity to scaffold vocabulary acquisition, enhance comprehension through contextual cues, and nurture critical

thinking via ethical dilemmas embedded in tales. These benefits supported Vygotsky's (1978) socio-cultural theory, which posits that learning is mediated through meaningful social and cultural interactions. Through folklore, pupils participate in communal knowledge traditions, strengthening both cognitive and social dimensions of learning.

However, the study highlights ongoing challenges. The limited availability of high-quality, curriculum-aligned folkloric storybooks reflects a broader systemic issue in educational resource development. This scarcity constrains educators' ability to integrate folklore seamlessly into literacy programmes. Moreover, teacher preparedness emerged as a crucial determinant of success. Despite recognising folklore's value, some teachers felt insufficiently trained to utilise these materials effectively, signalling the need for targeted professional development programmes that equip educators with culturally responsive instructional skills (Hasibuan, 2022). Furthermore, educational systems often prioritise standardised curricula and assessments, potentially marginalising culturally embedded materials like folklore. This problem can restrict opportunities for innovation and culturally grounded pedagogy. Addressing this requires structural reforms promoting flexibility and inclusivity in curriculum design and assessment frameworks, acknowledging diverse knowledge systems and learning modalities (Nguyen, Tran, & Pham, 2021).

In synthesising these findings, this study contributes to a growing recognition of the importance of cultural relevance in literacy education. It reinforces the argument that reading attitudes are not merely outcomes of teaching strategies or materials, but also products of pupils' cultural identities and experiences. Incorporating folkloric storybooks supports pupil agency and identity affirmation, which are essential for meaningful and sustained learning. Adopting folkloric storybooks necessitates holistic approaches encompassing resource development, teacher training, and policy support. Education stakeholders must collaborate to create, disseminate, and integrate culturally relevant materials that nurture positive reading attitudes, while also cultivating teacher capacity and institutional commitment to culturally responsive pedagogy.

Conclusion

This study has explored the significant role that folkloric storybooks can play in cultivating positive reading attitudes among primary school pupils. The findings underscore that integrating culturally relevant folklore into literacy instruction enhances pupils' enjoyment, motivation, and frequency of reading activities. These improvements are essential

foundations for sustained literacy development and academic achievement, validating folklore's place as a powerful pedagogical resource. The research reveals that folkloric storybooks do more than provide reading material; since they connect pupils with their cultural heritage, affirming their identities and promoting a sense of belonging within the learning environment. This cultural resonance motivates pupils intrinsically, transforming reading from a compulsory academic task into an engaging, meaningful activity. In addition, the pedagogical value of folklore in developing vocabulary, comprehension, and critical thinking highlights its multidimensional contribution to literacy education. However, the study also identifies challenges that need systematic attention. These include limited availability of quality folkloric materials that align with curricular expectations and gaps in teacher preparedness to maximise the potential of such resources. Addressing these challenges requires coordinated efforts involving curriculum developers, policymakers, and teacher educators to ensure that folkloric storybooks are not peripheral but integral to literacy curricula.

Moreover, structural reforms are necessary to accommodate culturally responsive pedagogy within mainstream educational frameworks. This includes developing assessment models and instructional policies that recognise and value diverse cultural knowledge systems, thereby fostering inclusivity and equity in education. In conclusion, folkloric storybooks offer an innovative and culturally grounded approach to enhancing reading attitudes among pupils. Their integration within classrooms supports both academic goals and cultural preservation, contributing to holistic education. Strategic investments in resource development, teacher training, and policy adaptation will be critical to realising folklore's full potential in literacy education. Such initiatives promise not only improved literacy outcomes but also empowered learners who see their identities reflected and respected in their educational experiences.

Recommendations

Based on the findings and discussion of this study, the following recommendations were made:

1. Curriculum developers, such as NERDC should prioritise the integration of folkloric storybooks into literacy programmes in primary schools in Nigeria. This integration must ensure alignment with educational standards while preserving the cultural authenticity and relevance of folk narratives.

2. Ogun State should organise regular training and comprehensive professional development for teachers in primary schools in Nigeria.d increase pupil engagement.
3. Educational policymakers in Ogun State should create supportive frameworks that embed culturally responsive pedagogy into national literacy strategies. Policies must endorse flexible curricula and assessment practices that accommodate diverse cultural content without compromising academic rigour.
4. Primary schools in Ogun State, Nigeria should foster partnerships with local communities to enrich the pool of folkloric resources and involve cultural custodians in literacy initiatives.

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Quality Book Design as a Determinant of Sales Performance of Publishing Firms in South-West, Nigeria

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Abstract

Sales performance is vital to the continued existence and survival of any organisation. Preliminary investigations have revealed that many publishing firms in Nigeria struggle to stand on their feet due to financial hardship arising from declining and unimpressive sales performance. Past studies show that the quality of a product is fundamental to its market acceptance or otherwise by buyers. The survey method was adopted for the study. A structured questionnaire was employed for data collection, while three research questions and one null hypothesis was formulated. The population of the study consisted of the 54 educational publishing firms in South-West, Nigeria. Two states of Oyo and Lagos, were purposively selected because of their high concentration of publishing firms while 18 publishing firms were randomly selected. Three hundred and thirty staff constituted the sample size for the study. The data collected were analysed using Pearson product moment correlation and multiple regression analysis. Findings revealed that the level of quality book design is high; the sales performance in the publishing firms in South-West, Nigeria is high; and a significant relationship existed between quality book design and sales performance. The study recommends that publishers should lay premium on the key indicators of quality book design, publishing firms should also emphasise a high level of quality book design in order to produce top quality books.

Keywords: *Quality book design, Sales performance, Publishing firms, South-West, Nigeria*

Introduction

The publishing industry, among other sectors, is critical to national development. The contribution of the publishing industry to national development is largely measured through the sales performance of the publishing firms. This manifests through revenue generation to the country via sales. Sales, in the simplest and general term, is the exchange of goods and

services for another form of value or commodity. It is a marketing activity by which a product (book) is exchanged for money or other compensation of equal value or worth.

The level of sales of a publishing firm determines its sales performance. Sales performance is the measurement of the number of sales that an employee makes for a business. The force behind the sales of publishing firms are the marketers. Sales performance can be positive or negative. Positive sales performance is a remuneration booster for successful employees and a red card for lazy and insincere workers (Akanbge, 2021). It enhances the performance of both the individual and the organisation while also helping in successful career progression for staff.

The sales performance of a salesperson has a positive influence on his/her job satisfaction. For a publishing firm to successfully improve its sales performance, the workforce must be well trained and equipped with sales enhancing requisite resources. Proactive organisations readily invest in their sales team for productivity and attainment of organisational goals. For optimum sales performance in any organisation, publishing inclusive, some definite qualities are expected of the sales team and some basic sales strategies are demanded of them. This is corroborated by Kesari (2014) in his discourse on salesperson performance evaluation. He identified quantitative and qualitative performance criteria as sine qua non for sales performance.

For quantitative performance, he itemised sales volume (i.e. percentage of increase in market share and quota control); average sales call; new customers obtained; gross profit by product; customer and order size; ratio of selling cost to sales; and sales order (daily number of order, order to sales call ratio, and goods returned) as the essential criteria for sales optimum performance. For qualitative performance criteria, he identified selling skills which entail product knowledge, communication skills, listening skills, overcoming objection, and closing of sales; territory management which includes planning, implementation and recording, customer services, collection and follow-up; and personal factors such as attitude, empathy, appearance, motivation and self-improvement. In the view of Kesari, it is these qualities listed above that can facilitate quality and quantity of sales which guarantee effective sales performance. All these parameters are aptly applicable to the publishing industry.

Extant literature has also shown that there are many factors affecting sales performance of sales person, and these factors

can be classified as internal and external factors like motivation, skill set, aptitude, knowledge, job satisfaction, role perception, personal factors (like age, sex, height, etc.), ego drive, and empathy towards the customers. According to Pendharkar and Pandey (2011), among these factors, skill set have been broadened into competencies which include knowledge, skills and abilities of the sales person. Research on competencies have shown that there are broad categories which influence their performance; these are selling skills, general management skills, technical skills, interpersonal skills and emotional intelligence of the person. Interpersonal skills reflect the contribution of sales person's ability to form and develop relationship with their clients to create profitable and productive relationship between both parties. However, there is a dearth of studies on sales performance of publishing firms, therefore, related studies on other sectors were adapted. In this study, sales volume is solely adopted as measurement of sales performance. Sales volume is the number of book units sold within a reporting period. A reporting period can be weekly, fortnightly, monthly, quarterly or annually. This figure is monitored by investors to see if business is expanding or contracting. In publishing firms, sales volume may be monitored at the level of the product, product line, customer, subsidiary, or sales region.

Book publishing is a process. It is a set of procedural and successive activities which ranges from manuscript acquisition to manuscript assessment, origination and design, filming, plate making, printing, finishing, delivery and marketing. Of all these important activities, publishing firms lay premium on book design. This is because it is the very foundation of any publication. Book design is both an artistic and scientific process. It is artistic because it entails creativity, imagination, artistry, ingenuity and innovation. A book designer therefore must be original, resourceful, inventive and productive. It is equally scientific because it follows a technical and logical process which is procedural. It is also systematic, methodical and controlled. Book design, also called communication design, which is traditionally referred to as graphic design, is the process by which messages and images are used to convey information to a target audience. It is a process of technical interplay of text, graphics (images) and space. Design is an integral part of publishing which cannot be substituted, and the designer is a key professional in the publishing chain whose role and contribution cannot be undermined (Hendel, 1998; Akangbe, 2015). Book design is a communicative process which sensibly subjects the variables of texts and graphics to manipulation to bring about a definite form and beauty. For a publication to effectively perform its communicative function,

it must have the potential to attract the attention of readers, be legible and makes lasting impression on the audience.

Book design employs shapes of types and symbols of images so that the overall picture is attractive and desirable. Design is therefore the link, the go-between, and the facilitator between the author and the reader. Primarily, design is meant to enhance communication and facilitate comprehension but how far and how effective it will be able to achieve this is determined by the quality of the design. Design is therefore basic to book production and other kinds of publication. This view is corroborated by Hendel (1998) in Trapani (2010) that “designers must take into account the needs of several clients; they must consider the author, the publisher and the readers, they must consider the budget of the project, page size, the substrate, margins, typography, typeface, etc. The editor in particular who is the midwife of the publishing enterprise must confer and interact with the designer to assist her/him to flourish in the design exercise. The editor, as a matter of fact, must explain to the designer the nature of the work, its audience for whom the work is intended, the placement of notes, nature and number of illustrations, the number of tables, graphs, charts, diagrams, maps, etc. Having secured the support of other members of the publishing team and with the requisite professional experience and expertise, the designer now sits at his desk to design the publication.

There is no gain saying that a quality book design is a sine qua non to sales performance. Akangbe (2021:11) opined that:

quality book design is a catalyst for raising the tide of book sales. This is because quality design creates long lasting impression which makes the book unique and distinct from the competing titles. Quality design also enforces users’ needs and preferences thus helping to entrench and improve customer relationships. Apart from the aforementioned, quality design multiplies a publishing firm’s value and facilitates customers’ trust building in the firm’s products. All these are market enhancers and sales boosters.

In book publishing therefore, the relationship between quality book design and sales performance are symbiotic in that quality

design is a stimulus for good sales performance while good sales performance also, in turn, is an incentive for good design (Akangbe, 2021). Though sales performance determines the financial standing of a publishing firm and defines how effective it will be able to attain the set organisational goals, many publishing firms in Nigeria struggle to stand on their feet due to financial hardship arising from declining and unimpressive sales performance. This precarious financial situation of many publishing firms manifests through inability to pay salaries as and when due, while others even resort to rationalisation of staff to reduce the financial weight on the organisation. This is corroborated by Obiyinka (2024). It is rather worrisome that many publishing firms are experiencing declining sales despite intensive promotion and campaign.

The purpose of this study was to investigate quality book design as a determinant of sales performance of publishing firms in South-West, Nigeria. The study provided answers to the following three research questions and one null hypothesis.

1. What are the key indicators of quality book design in the publishing firms in South-West, Nigeria?
2. What is the level of quality book design in the publishing firms in South-West, Nigeria?
3. What is the level of sales performance in the publishing firms in South-West, Nigeria?

Hypothesis: There is no significant relationship between quality book design and sales performance in the publishing firms in South-West, Nigeria. The hypothesis was tested at 0.05 level of significance.

Literature Review

This section discusses the Concept of design in book publishing, Sales performance in book publishing firms in Nigeria, and Quality book design and sales performance in publishing firms in Nigeria.

The Concept of Design in Book Publishing

Design in book publishing is a creative process which entails critical thinking and imaginative skills for idea conception. It is an interplay of varying attributes like type face, type size, space, length, width, effective layout, formatting, etc. to give a tangible expression. According to Trapani (2010), “book design is the art of incorporating the content, style, format, design, and sequence of the various components of a book into a coherent whole. Designers must take into account the needs of the several clients; they must consider the author, the publisher and the readers, they must consider the budget of the project, page size, the substrate, margins, typography, typeface as well as

many other variables (Hendel, 1998). To attain this, planning is very essential, and the planning takes cognisance of the publication type and the publication audience. Experience of the actors in publication design goes a long way to determine the design quality. This is in addition to the level of training and exposure, and the quantum of skills acquired. There could be good design and bad design, though whatever kind of design that we may have is still considered a design, its quality notwithstanding. So design, as a concept, is a relative term. However, a good design effectively deploys texts, graphics, and space to form a creative, attractive, effective and an organic whole (Akangbe, 2016).

Book is a mass communication medium which employs visual representation and presentation of ideas and messages for mass consumption. To do this effectively, a book must have “the potential to attract the attention of readers, be easily read and understood and make lasting impression on the audience (Broekhuizen, 1995 in Togunwa, 2009). In other word, how effective a book will communicate depends on the effectiveness of the design. As Broekhuizen (1995) noted in Akangbe (2021), the process of book design “is to turn the message into a pleasing arrangement of words, pictures and colours.” To attain this, a book designer needs the collaboration of other publishing professionals including the author, publisher, editor, illustrator, production manager, craftsman, etc. (Okwilagwe, 2001). The designer also needs updated knowledge about the composition, paper, printing and binding method intended for the book so that he can compose a design that will achieve optimum result. It is noteworthy to state that measurement is quite vital to design. Technically, design is measured in terms of millimetres, points, picas and inches. It is also important for the designer to be conscious of the anatomy or sequence of book sections.

Sales Performance in Book Publishing Firms in Nigeria

Sale is a bi-directional concept which entails buying and selling with buyer and seller as key actors. The term ‘sales’ refer to transactions between two parties where the buyer receives goods (tangible or intangible), services and/or assets in exchange for money (Hutt and Speh, 2013). According to Dean (2015), no matter the industry, every manufacturer/supplier must improve sales performance, reduce the cost of selling, and ensure their survival. Farris, Neil, Phillip and Reibstein (2010) posited that sales effectiveness is not just a sales function issue; it is a company issue, as it requires deep collaboration between sales and marketing to understand what is working and not working, and continuous improvement of the knowledge, messages, skills, and strategies that sales people apply as they work sales opportunities. This therefore implies that the issue of

sales performance in the book publishing industry is a company-wide affair, and not the sole concern of the sales and marketing department. It is a collaboration among editorial/publishing, sales/marketing, warehouse, finance and administrative departments for optimum results.

Quality Book Design and Sales Performance in Publishing Firms in Nigeria

Good book design is a tonic for quality production which in turn a catalyst for good sales performance. Quality book design will no doubt attract buyers and provoke good sale. As stated by Ken Jeffery in <http://open.bccampus.ca>, The design process is a deliberate, constructive and prescriptive process that is guided by specific strategies. Designing is a form of problem solving, where a system is created to communicate a specific and targeted message. (p. 2) This thus implies that design is not a frivolous exercise but a deliberate, intended and pre-planned communicative activity. There are several indicators of quality design which publishers must be conscious of. All those are however preceded by idea conceptualisation stage. Ideation is the crucial foundational stage where brainstorming and idea formation and formulation occur. The idea stage is highly critical as it presumes and previews the project, considers the audience, thinks out the process, imagines the outcome, and predicts the overall result and effect of the whole process. As expatiated by Ken Jeffery, with effective and communicative design, and efficient sales team with sales strategies under a focused sales management in place, book sales performance is not only expected to grow, it will indeed soar.

Methodology

This study used descriptive survey design of the correlational type. It is a deductive style that uses a relatively large sample and presents its results in numbers and statistical figures (Creswell, 2009). The population of the study comprised the 1080 staff of the publishing companies with specialty in educational books for pre-primary, primary and post primary levels of education in South-West, Nigeria. South-West consists of six states namely: Ekiti, Lagos, Ogun, Ondo, Osun and Oyo. Presently, there were 54 educational publishing firms in South-West, Nigeria and these constituted the population of this study. The editors, illustrators, graphic artists, compositors, book designers, lithographers, machine operators, print manager, production manager and marketing staff in all the 54 firms were the subject of this study.

A stratified random sampling technique based on the probability proportion to size (PPS) was adopted for selecting the respondents for this study. Thirty-one percent of the

population size of staff per publishing firm were randomly selected giving a sample size of 330. The respondents comprised editors from the editorial department; illustrators, graphic artists, compositors, book designers, lithographers, machine operators, print managers and production managers from production department; and sales executives, marketing staff and marketing managers from marketing department.

Table 1: Sample Size of the Study

S/No.	Publishing Firms	Population of staff
1.	Atlantic Publishers Limited , Lagos State	18
2.	Bounty Press Limited, Ibadan	20
3	Childsplay Books Limited, UI/Secretariat Road, Ibadan	15
4.	CSS Bookshops Limited, Lagos	20
5.	Evans Brothers (Nigeria) Limited, Ibadan	29
6.	Extension Publications Limited	30
7.	HEBN Publishers Plc Jericho, Ibadan	24
8.	Learn Africa, Lagos	29
9.	Learning Solutions, Ibadan	16
10.	Literamed Publications Limited	29
11.	Macmillan Nigeria Publishers Limited	18
12.	Malthouse Press Ltd., Ikeja, Lagos State	13
13.	Metropolitan Publishers Limited, Palmgrove, Lagos	18
14.	Peaceville Publishers, Epe, Lagos State	13
15.	Penthouse Publications (Nig) Ltd. Bodija, Ibadan	15
16.	Scholarship Books Limited, Ibadan	18
17.	Straight-Gate Publishers, Ibadan	20
18.	University Press Plc, Ibadan	35
	Total	330

The instrument for data collection was questionnaire. The questionnaire was pre-tested with 30 respondents outside the companies selected for the main study. The reliability coefficient was calculated using cronbach alpha method. The value of 0.79 was obtained for quality book design. The data gathered were collated and analysed using descriptive statistics such as frequency distribution, percentages, mean and standard deviation for the research questions while the hypothesis was tested at 0.05 level of significance using multiple regression and correlation methods.

Results and Discussion

This section presents the result of the data obtained and its analysis.

Demographic Characteristics of the Respondents

The demographic analysis showed that the respondents were from seven publishing firms in Lagos State and eleven publishing firms in Oyo State respectively. This section discusses the demographic characteristics of the respondents based on age, gender, years of experience, educational qualifications and job tenure.

Table 2: Frequency and Percentage Distribution of the Respondents by age

Age	Frequency	Percentages
21 – 30	74	23.5
31 – 40	160	50.8
41 – 50	72	22.9
51 and above	9	2.8
Total	315	100

Source: Field survey 2021

The age distribution of the respondents is highlighted in Table 2. The ages obtained ranged from 21 to 58 years and their overall mean age was 30.2 ± 4.1 years. One hundred and sixty (50.8%) of the respondents fell within the 31 – 40 years age bracket, 74(23.5%) were in age range of 21 – 30 years, 72(22.9%) were in 41 – 50 years and the remaining 9(2.8%) were 51 years and above. This shows that the majority of the respondents fell within the active age of service as the age range of 31 to 40 years dominated the work force of book publishing industry in South-West, Nigeria.

Table 3: Frequency and Percentage Distribution of the Respondents by gender

Gender	Frequency	Percentages
Male	205	65.2
Female	110	34.8
Total	315	100

Source: Field survey 2021

Table 3 shows that majority 205(65.2%) of the respondents were male while the remaining 110(34.8%) were female. This implies that the respondents comprised more males than females as there were 205 males as against 110 females.

Table 4: Frequency and Percentage Distribution of the Respondents by Years of Experience

Years of experience	Frequency	Percentages
1 – 5	62	19.6
6 – 10	84	26.5

11 – 15	44	14.1
16 – 20	50	16.0
21 – 25	31	9.7
26 – 30	36	11.3
31 and above	9	2.8
Total	315	100

Source: Field survey 2021

In Table 4, it is revealed that the years of experience of the respondents are as follows: 84(26.5%) had 6 to 10 years' experience, 62(19.6%) had 1 to 5 years, 50(16.0%) had 16 to 20 years, and 44(14.1%) had 11 to 15 years of work experience. The figure shows further that while 36(11.3%) had 26 to 30 years' experience and 31(9.7%) had 21 to 25 years, the remaining 9(2.8%) had 31 years' experience and above respectively.

Table 5: Frequency and Percentage Distribution of the Respondents by Educational Qualification

Educational qualification	Frequency	Percentages
Diploma	69	22
First degree	148	47
Master	88	28
P.h.D.	10	3
Total	315	100

Source: Field survey 2021

Table 5 shows that 148 respondents which translates to 47% were first degree holders. Eighty eight respondents which amounts to 28% had Master degrees while 69 respondents which is 22% had diploma certificates and the remaining 10 respondents (3%) had Doctor of Philosophy (Ph.D.). From the data gathered, it was implied that Bachelor's degree was the qualification possessed by the highest number of staff with 148 respondents while doctorate degree was the least with only 10 respondents.

Table 6: Frequency and Percentage Distribution of the Respondents by Job Tenure

Job tenure	Frequency	Percentages
< 1	30	9.5
1 – 5	102	32.3
6 – 10	62	19.7
11 – 15	78	24.7
16 – 20	21	6.7
21 years and above	22	6.9
Total	315	100

Source: Field survey 2021

Table 6 reveals the job tenure of the respondents in years as follows: 102(32.3%) had 1 to 5 years' experience, 78(24.7%) had 11 to 15 years' experience, 62(19.7%) had 6 to 10 years'

experience and 30(9.5%) had less than one year experience. In the same vein, while 21(6.7%) had 16 to 20 years, the remaining 22(6.9%) had 21 years' experience and above. Job retention was on the high side in the publishing industry with the discovery that 44 percent of the respondents which was 140 staff had worked for between 6 and 15 years in the sector while 102 respondents which was 33.7% had job tenure of 1 – 5 years. This implied that the time range which they have spent on their current job was between 1 and 5 years.

Answers to Research Questions

In this segment, the answers obtained on each research question based on the data analysis is discussed.

Research question 1: What are the key indicators of quality book design in the publishing firms in South-West, Nigeria?

Table 7: Key Indicators of Quality Book Design in the Publishing Firms in South-West, Nigeria (N= 315)

S/N	Item	SA (%)	A (%)	D (%)	SD (%)	Mean	Std. Dev .
i	Grid is the anchor and foundation of design so it is essential for quality book design.	289 (91.7)	30 (8.3)	0 (0.0)	0 (0.0)	3.29	0.28
ii	Types are fundamental to quality book design.	58 (18.5)	295 (81.5)	0 (0.0)	0 (0.0)	3.19	0.39
iii	Fonts and point sizes are primary elements of book design.	115 (36.5)	109 (30.1)	121 (33.4)	0 (0.0)	3.03	0.84
iv	Book size, trim margin and image area are critical to quality book design.	135 (45.6)	76 (21.0)	93 (25.7)	28 (7.7)	3.04	1.01
v	Folio is primary to quality book design.	200 (68.2)	80 (22.1)	28 (7.7)	7 (1.9)	3.57	0.72
vi	Formatting	185	87	36	7	3.50	0.75

	is essential to quality book design.	(64.1)	(24.0)	(9.9)	(1.9)		
vii	Colour balance and coherence are critical elements of quality book design.	240 (79.3)	47 (13.0)	28 (7.7)	0 (0.0)	3.72	0.59
viii	Cover is a marketing tool and a very important index of quality book design.	145 (48.3)	117 (32.3)	7 (1.9)	63 (17.4)	3.12	0.76
ix	Gutter must be regular in every page in a good book design.	226 (75.4)	75 (20.7)	7 (1.9)	7 (1.9)	3.70	0.61
x	Running head is not a compulsory element in every book design.	200 (68.2)	80 (22.1)	28 (7.7)	7 (1.9)	3.71	0.50
xi	Top and lower margins must be effective in design.	232 (73.8)	86 (23.8)	9 (2.5)	0 (0.0)	3.35	0.93
xii	Border and rules are important in book design.	178 (56.6)	115 (31.8)	7 (1.9)	35 (9.7)	3.06	0.52
xiii	Illustrations must be efficient and communicative in design.	101 (40.9)	150 (41.4)	64 (17.7)	0 (0.0)	3.62	0.63
xiv	There must be effective interplay of text, graphics and space in book	206 (69.9)	81 (22.4)	28 (7.7)	0 (0.0)	3.37	0.87

	design.						
xv	Quality colour registration is critical to book design.	242 (79.8)	44 (12.2)	29 (8.0)	0 (0.0)	3.55	0.65
xvi	Good colour resolution is an essential ingredient for quality book design.	174 (55.2)	125 (34.5)	7 (1.9)	30 (8.3)	3.79	0.54
	Overall	Mean = 55.34, Std. Dev. = 6.33					

Source: Field survey 2021

Keys: SA= Strongly Agree, A= Agree, D= Disagree, SD = Strongly Disagree

Table 7 reveals the key indicators of quality book design in the publishing firms. From the Table, 174(55.2%), 240(79.3%), 200(68.2%) and 226(75.4%) of the respondents with a mean and standard deviation scores of 3.79 ± 0.54 , 3.72 ± 0.59 , 3.71 ± 0.50 and 3.70 ± 0.61 strongly agreed that 'Good colour resolution is an essential ingredient for quality book design', 'Colour balance and coherence are critical elements of quality book design', 'Running head is not a compulsory element in every book design', and 'Gutter must be regular in every page in a good book design'. Also, 101(41.4%) agreed, while 200(68.2%), 242(79.8%) and 185(64.1%) of the respondents with a mean and standard deviation scores of 3.62 ± 0.63 , 3.57 ± 0.72 , 3.55 ± 0.65 and 3.50 ± 0.75 strongly agreed that 'Illustrations must be efficient and communicative in design', 'Folio is primary to quality book design', 'Quality colour registration is critical to book design', and 'Formatting is essential to quality book design'.

Apart from the aforementioned, 206(69.9%), 232(73.8%), and 289(91.7%) strongly agreed while 257(81.5%) agreed with a mean and standard deviation scores of 3.37 ± 0.87 , 3.35 ± 0.93 , 3.29 ± 0.29 and 3.19 ± 0.39 that 'There must be effective interplay of text, graphics and space in book design', 'Top and lower margins must be effective in design', 'Grid is the anchor and foundation of design so it is essential for quality book design' and 'Types are fundamental to quality book design'. Furthermore 145(48.3%), 178(56.6%), 135(45.6%) and 115(36.5%) of the respondents with a mean and standard deviation scores of 3.12 ± 0.76 , 3.06 ± 0.52 , 3.04 ± 1.01 and 3.03 ± 0.84 strongly agreed that 'Cover is a marketing tool and a very important index of quality book design', 'Border and rules are important in book design', 'Book size, trim margin

and image area are critical to quality book design’ and ‘Fonts and point sizes are primary elements of book design respectively’. These results with the grand mean and standard deviation scores of 55.34 ± 6.33 respectively revealed the key indicators of quality book design in the publishing firms in South-West, Nigeria.

Research question 2: What is the level of quality book design in the publishing firms in South-West, Nigeria?

Table 8: Level of quality book design in the publishing firms in South-West, Nigeria (N= 315)

S/N	Items on Quality Book Design	SA (%)	A (%)	D (%)	SD (%)	Mean	Std.Dev.
i.	Grid is the anchor and foundation of design so it is essential for quality book design.	289 (91.7)	26 (8.3)	0 (0.0)	0 (0.0)	3.29	0.28
ii.	Types are fundamental to quality book design.	58 (18.5)	257 (81.5)	0 (0.0)	0 (0.0)	3.19	0.39
iii.	Fonts and point sizes are primary elements of book design.	115 (36.5)	95 (30.1)	105 (33.4)	0 (0.0)	3.03	0.84
iv.	Book size, trim margin and image area are critical to quality book design.	135 (45.6)	69 (21.0)	83 (25.7)	28 (7.7)	3.04	1.01
v.	Formatting is essential to quality book design.	185 (64.1)	87 (24.0)	36 (9.9)	7 (1.9)	3.50	0.75
vi.	Colour balance and coherence are critical elements of quality book design.	240 (79.3)	47 (13.0)	28 (7.7)	0 (0.0)	3.72	0.59

vii.	Cover is a marketing tool and a very important index of quality book design.	145 (48.3)	100 (32.3)	7 (1.9)	63 (17.4)	3.12	0.76
viii.	Gutter must be regular in every page in a good book design.	226 (75.4)	75 (20.7)	7 (1.9)	7 (1.9)	3.70	0.61
ix.	Folio is primary to quality book design.	200 (68.2)	80 (22.1)	28 (7.7)	7 (1.9)	3.57	0.72
x.	Running head is not a compulsory element in every book design.	200 (68.2)	80 (22.1)	28 (7.7)	7 (1.9)	3.71	0.50
xi.	Top and lower margins must be effective in design.	232 (73.8)	75 (23.8)	8 (2.5)	0 (0.0)	3.35	0.93
xii.	Border and rules are important in book design.	178 (56.6)	100 (31.8)	6 (1.9)	31 (9.7)	3.06	0.52
xiii.	Illustrations must be efficient and communicative in design.	101 (40.9)	150 (41.4)	64 (17.7)	0 (0.0)	3.62	0.63
xiv.	There must be effective interplay of text, graphics and space in book design.	206 (69.9)	81 (22.4)	28 (7.7)	0 (0.0)	3.37	0.87
xv.	Quality colour registration is critical to book design.	242 (79.8)	44 (12.2)	29 (8.0)	0 (0.0)	3.55	0.65

xvi.	Good colour resolution is an essential ingredient for quality book design.	174 (55.2)	108 (34.5)	7 (1.9)	26 (8.3)	3.79	0.54
		Mean = 55.34, Std. Dev. = 6.33					

Keys: SA = Strongly Agreed, A = Agreed, D = Disagree, SD = Strongly Disagree

The level of quality book design in the publishing firms in South-West, Nigeria was defined by sixteen items which were measured on a four-point Likert scale of Strongly Agree (4 points), Agree (3 points), Disagree (2 points) and Strongly Disagree (1 point). Descriptive statistics was used to analyse the data collected and the results are presented in Table 8. From the test norm of level of quality book design in the publishing firms scale, the total maximum score of 64 is permissible. A score of 1 – 31 points shows low level of quality book design in the publishing firms and 32 – 64 points indicate high level of quality book design in the publishing firms. The mean($\pm$ SD) score of the respondents as obtained in Table 8 is 55.34($\pm$ 6.33) which falls within the range of 32 – 64, it can then be concluded that there was a high level of quality book design in the publishing firms in South-West, Nigeria.

Research question 3: What is the level of sales performance in the publishing firms in South-West, Nigeria?

Table 9: Summary of sales performance in the publishing firms in South-West, Nigeria

Year	N	Mean	Standard Deviation
2019	330	648.02	272.14
2020		759.82	223.81
2021		825.18	304.85
Overall		744.42	295.44

Source: Field survey 2021

Table 9 reveals sales performance in the publishing firms in South-West, Nigeria. The overall sales performance mean and standard deviation score of N (744.42 $\pm$ 295.43) million was recorded, with N (648.02 $\pm$ 272.14) million for year 2019, N (759.82 $\pm$ 223.81) million for year 2020, and N (825.18 $\pm$ 304.85) million for 2021. With this result, it can be concluded that the publishing firms in South-West, Nigeria recorded the highest sales performance in 2021 while the lowest was recorded in the 2019.

Hypothesis Testing

This section analyses the data collected based on the hypothesis of the study.

H₀₁: There is no significant relationship between quality book design and sales performance in the publishing firms in South-West, Nigeria.

The hypothesis posits that no significant relationship exists between quality book design and sales performance in the publishing firms in South-West, Nigeria. The hypothesis was tested at 0.05 using Pearson's product moment correlation (PPMC) coefficients and the result is presented in Table 10.

Table 10: Significant relationship between quality book design and sales performance in the publishing firms in South-West, Nigeria

Variable	Mean	Std. Dev.	N	r	P	Remark
Quality book design	49.43	5.69	315	.578	.006	Sig.
Sales performance	749.20	310.73				

It is shown in Table 10 that there was significant relationship between quality book design and sales performance ($r = .578$, $n = 315$, $p < .05$). This implies that quality book design affects sales performance in publishing firms. The null hypothesis which states that there is no significant relationship between quality book design and sales performance in the publishing firms in South-West, Nigeria was therefore rejected.

Discussion of the Findings

This section discusses the findings obtained from the study. The discussion section is presented in line with the major findings from the research questions and research hypothesis.

The Key Indicators of Quality Book Design and Production in the Publishing Firms

The findings of this study revealed that the key indicators of quality book design were grid, typography, formatting and layout, illustrations, and book cover. Grid is the anchor and the very foundation of book design, typography is fundamental to quality book design as types are the essential bricks for erecting a book design structure, while formatting and layout are twin essential activities that define a book design and give it a distinct identity. Illustrations are visual condiments and graphical ingredients that enrich textual contents and also add colour and beauty to a book design, while book cover is a crucial marketing tool and a very important index of quality book design. Goncalves (2008) notes that labels are one of the most important features of product packaging as it contains

information designed to capture customers' attention, and arouse their desires to purchase the product.

The relevance of this study to book publishing is that physical appearance of books, arising from the quality of its design, can influence intending buyers in many different ways. Intuitive use of colours and shapes are important elements of design which are also potent marketing strategies especially for books meant for the pre-primary and primary classes where colours are lavishly and maximally used in the design process. These two features, i.e. colour and shape, are very essential when it also comes to the cover design for books across all genres. This is because cover gives an intending buyer a first impression which either arouses or douses the urge to eventually purchase the book. Therefore, this study corroborates the fact that the more aesthetically pleasing book covers are, the greater the chances for such books to be purchased.

The Level of Quality Book Design in the Publishing Firms

The study revealed that all the sixteen items listed to determine the level of quality book design in the publishing firms in South-West, Nigeria yielded high mean scores between 3.79 and 3.03. On a cumulative note, all the sixteen items addressed five basic issues in design namely: typography, formatting, colour, illustration and cover. Colour is of essence in book design where good colour resolution, colour balance and colour registration are critical. Four-colour printing or process colour means that four different ink colours are used to create a range of printable colours in a book. The "four-colour" refers to the four colour plates which are cyan, magenta, yellow, and black (CMYK) which are used in offset printing presses and most digital presses. The primary colours of pigment (also known as subtractive primaries) are magenta, yellow, and cyan which are commonly simplified as red, yellow, and blue. In the South-West, Nigeria, full colour printing has been imbibed for all categories of printing.

Apart from colour factor, illustration is also critical to design. Illustrations are fundamental aids to books and it can take various forms ranging from drawings to pictures, photographs, tables, graphs, etc. Illustrations, as opined by Areo (2011:75), complement words to graphically convey the author's ideas to the reader. Illustrations can, within a short space, show several items or angles of a topic or an issue at once. ... Illustrations break text monotony. In some kinds of children's books especially, illustrations lure children to reading, and children derive some fun and excitement from some kinds of illustrations.

Illustration is very fundamental to design particularly for school books. Okwilagwe (2001) identifies freehand illustration which is pictures drawn by hand; photographs which are made through snapshots using cameras; colour illustrations, and paintings as different types of illustrations. In a nutshell, illustrations must be functional, efficient and communicative in design. Formatting is another crucial component of quality book design. Formatting and layout are twin processes that define series of parameters like image area, trim margin, book size, top and lower margins, gutter, running heads, folio, and grid, among others. Grid is vital to the overall credibility of the design (Evans and Sherin, 2018). To cap it, grids are valuable tools not only for designers but also useful to readers. On the whole, formatting is vital to the success of a quality book design. In line with the data generated in this study, it could be deduced that there was a high level of quality book design in the publishing firms in South-west, Nigeria.

Level of Sales Performance in the Publishing Firms

The sales performance in the publishing firms in South-West, Nigeria is high, going by the data collected from the study. This presupposes that patronage of publishing firms, especially educational publishers, are relatively high. Educational publishers produce textbooks which are used for teaching various subjects in schools at various levels of education particularly the pre-primary, primary and post-primary levels of education. Apart from the fact that every learner is required to buy the recommended books for each subject, some of these subjects, namely English language and Mathematics, are labelled as core subjects. The core subjects have a compulsory status which makes both parents and learners attach higher level of importance to them. Preliminary investigation has revealed that a greater percentage of publishers' annual earnings are derived from sales of books on the core school subjects. This, therefore, accounts for the high number of firms who specialise in educational books among the publishers in the South-West, Nigeria.

According to Ogunleye (2005:81), "the Nigerian book market is made up of the supply market and the demand market. The supply market comprises a motley of publishers which include, among others, author-publishers, contract-publishers, mission publishers, research institute publishers, university publishers, indigenous publishers and the multinational publishers". It is remarkable that all the publishing firms studied had improved sales performance each succeeding year from 2019 to 2021 as each of them recorded a minimum of 5.5 percent profit increase over the preceding year. This is an indication that the market was experiencing marginal expansion each year.

Our findings further revealed that publishers in South-West, Nigeria explored different promotion media to enhance sales of their titles. This included strategies like workshops, authors' talks on radio and television, direct mails, book reviews in newspapers, mounting local exhibitions at conferences, workshops and seminars, issuing complimentary copies to Ministry of Education for the use of the Book Adoption Committee, visits of representatives to schools and colleges with sample copies for the subject teachers, and issuing copies to school libraries, among others. Areo (2011) identified personal visits, trade bulletins/newsletters, book catalogues/price lists, inspection copies, brochures and hand bills, book exhibitions, book launch, media advertisements and reviews, book fairs, book club, and sale or return (SoR) system as promotional strategies that are common with book publishers in Nigeria. In conclusion, as submitted by Buciuniene and Skudiene (2015), sales performance is one of the key factors influencing sales volume, productivity, customer loyalty and unpredicted expenses so publishing companies in South-West, Nigeria lay premium on the composition of the sales team.

Summary of the Findings

From the data analysed and the hypotheses tested, the following findings were deduced:

1. The key indicators obtained from the study for quality book design were grid, typography, formatting and layout, illustrations, and book cover while quality design, evenness of prints, perfect registration of colours, flawless binding, and good printing paper are all essential indicators of quality book production in South-West, Nigeria.
2. The level of quality book design in the publishing firms in South-West, Nigeria which was indicated by good colour resolution, colour balance and coherence, quality colour registration, running heads, illustrations, formatting, grid, and types, among others; is high.
3. The sales performance in the publishing firms in South-West, Nigeria is high.
4. A significant relationship existed between quality book design and sales performance.

Conclusion

Quality book design has significant and complimentary relationship with sales performance of publishing firms in South-West, Nigeria. The study identified cast off, grid, typography, formatting and layout, colour properties (resolution, registration and coherence), illustration and margination; among others, as the key indices of quality book design. All these design indices are vital to buyers' interest and as such

they impact considerably on the decision to buy. They also influence the sales volume of publishers significantly. Quality design, therefore, has direct impact on sales performance of publishing firms in South-West, Nigeria.

Recommendations

Based on the findings of the study, the following recommendations are made:

1. Publishers should lay premium on the key indicators of quality book design.
2. Publishing firms in South-West, Nigeria should emphasise a high level of quality book design in order to produce top quality books.
3. In order to improve and boost sales performance of the publishing firms in South-West, Nigeria, publishers should improve the quality of their book design and printing.

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Influence of Library Environment, Information Resource Availability and Use on Academic Activities of Teachers in Unity Colleges in FCT Abuja, Nigeria: Hypothetical Approach

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Abstract

This study adopted hypothetical approach to investigate the influence of library environment, information resource availability and use on academic activities of teachers in Unity Colleges in Federal Capital Territory, Abuja, Nigeria. The research assessed the impact of library environment, information resource availability and use on academic activities of teachers in Unity Colleges, FCT Abuja. Four (4) null hypotheses were formulated and tested at the 0.05 significance level. The study employed descriptive survey design with population of 4,233 teachers across the six Unity Colleges in FCT Abuja. A sample of 351 teachers were adopted using proportionate stratified sampling technique. Data were collected through structured questionnaire, validated by lecturers in the department of Library and Information Science, Federal University of Technology Minna, and the reliability coefficient of the instrument was established with the overall Cronbach's alpha of 0.97. Inferential statistics, including regression analysis and composite regression were used to test the four null hypotheses and analyze the data. The results of the hypotheses tested revealed significant and positive influence among library environment, information resource availability and use on academic activities of teachers in Unity colleges in FCT, Abuja. The combined influence of library environment and information resource utilization significantly enhance the academic activities of teachers. The study concluded that a well-equipped library and effective resources utilization are essential for enhancing teachers' academic performance. Recommendations included improving resource availability, especially for students with disabilities, and enhancing the physical library environment to support teaching and research.

Keywords: *Academic activities; FCT Abuja; Information resource utilization; Library environment; Unity colleges.*

Introduction

Libraries since the time immemorial were established to acquire, process, organize, preserve and disseminate information resources to users on request libraries regardless of types and location have been charged with the responsibility of not only

acquiring information resource but also to be engaged in service delivery. While public libraries are established to cater for the information needs of variety of users, academic libraries cater for the information needs of students, and faculty members to support their teaching and libraries activities of both teachers and pupils/students. It is in the recognition of this fact that Federal Government of Nigeria in its National Policy on Education (2013) stipulate that libraries are one of the educational service and as such every proprietor is expected to establish library in its school and to promote readership among teachers and students. It should be noted however that school libraries at post-primary level are expected to support the teachers academic activities (teaching, lesson note planning, research, paper presentation, seminar, conferences and workshop attendance and so on. For teachers to successfully carry out the teaching responsibility, the school libraries be equipped with relevant and current collecting in various teaching subjects. The school history is expected to support teachers in lesson plan, paper presentation and capacity building. The academic activities can be effectively carried out with conducive environment i.e. good lighting, moderate temperature and humidity, adequate space and well-decorated library environment. Conducive school library environment is a function of its patronage and resource utilization to meet academic, research, lecture and information needs on daily, or weekly barrier.

Academic activities of teachers at post-primary school level may not be fully attained as some libraries might be deficient in terms of collection and environment as part of the standards for libraries and post-primary school level (Mohammed and Saka, 2012). Despite the position of Federal Government in the National policy on education (2013) on the establishment of school libraries and the provision of library services in basic educational institutions in Nigeria, many of this institutions lack standard school libraries thus inability to meet the information, academic and research needs of both pupils/students and teachers respectively.

Statement of the Problem

School library is one of the educational services which every proprietor and management of school strives to provide, more so that school libraries are established to support the curriculum and overall educational programmeme of both primary and post-primary schools. Adequate school library is expected to support the learning and teaching role of pupils/students and teachers respectively. Well-equipped and well-stocked school libraries help to meet the information and academic needs of teachers more especially at post-primary school level as

teachers use school libraries to consult books, instructional and learning materials for lesson note plan, support instruction practices e.g. teaching, conducting research, publication, paper presentation at seminars and conferences respectively. Teachers as reported by Adeniyi (2023), are the most hardworking, functional, obedient and simple to approach world-wide thus being the nation builders. For teachers to fully visit, patronize and use library and its information resources, there must be conducive and friendly-library environment (adequate lighting with air conditioner, well painted and decorated with flowers inside and outside, well- furnished and favourable temperature with guide map or directions to various units of the library. To further buttress or ascertain this view, Akande (2022) enumerates the components of educational process to include: teachers, learners, learning environment, curriculum contents and funding.

Preliminary investigation by the researcher being supported by literature search shows that most post-primary schools lack adequate and well-stocked libraries, and where available they are average based school libraries. The environment is not conducive for consultation of information resources by both students and teachers. This situation has affected not only the use of information resources but also the academic activities of teachers in the area of lesson note planning and preparation, teaching, research, seminars and conference attendance are negatively affected.

Some of the empirical evidence were reported by Mohammed and Saka (2012), Bala, Mazah and Hazami (2021), Ahmad and Saka (2021) as well as researchers reported non-implementation of secondary school library standard in FCT Abuja; on one hand and lack of functional school libraries on another hand as most teachers read at home in Nasarawa State and that there are inadequate collections/ facilities in most schools in Nigeria respectively. This situation might lead to lack of correlation among the availability, use of information resources, library environment thus affecting academic activities of teachers in schools. This study therefore seeks to solve these anomalies as observed in school libraries by investigating the influence of library environment and utilization of information resources on academic activities of teachers in unity colleges in Federal Capital Territory (FCT) Abuja, Nigeria using the regression analysis and composite regression to test the four null hypotheses involving independent variables (library environment, information resource availability and use) and dependent variable (academic activities) respectively.

Research Hypotheses

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

1. There is no significant influence of availability of information resources on academic activities of teachers in unity colleges in Federal Capital Territory (FCT) Abuja, Nigeria.
2. There is no significant influence of library environment on academic activities of teachers in unity colleges in Federal Capital Territory (FCT) Abuja, Nigeria.
3. There is no significant influence of information resources utilisation on academic activities of teachers in unity colleges in Federal Capital Territory (FCT) Abuja, Nigeria.
4. There is no combined significant influence of library environment, information resources utilisation on academic activities of teachers in unity colleges in Federal Capital Territory (FCT) Abuja, Nigeria.

Review of Empirical Literature

Ulo-Bethels, Nwayor Dyikuk (2022) conducted a study to determine the availability and utilisation of technology-based facilities for teaching English Language continuous writing in secondary schools in Plateau State Nigeria. Four research questions and two null hypotheses were formulated. Descriptive survey was adopted with a population of 2,063 English Language teachers in 284 public secondary schools in Plateau State. A sample size of 205 teachers was drawn using multi-sampling technique. Data collection instrument used was the questionnaire, while mean and standard deviation as well as t-test were used in the analysis of data and testing of null hypothesis. Results showed that insufficient availability and non-utilization of the available facilities. Technophobia, non-interest in the use of internet facilities, power supply, use of traditional form of teaching and non-utilization of technology-based facilities. There was significant difference between male and female teachers on the extent of utilization of technology-based facilities.

Ndagi (2023) investigated information library skills in relation to effective use of electronic library resources by lecturers in universities in North Central Nigeria. Two of the specific objectives and research questions focused on the types of e-resources available and the extent of use of e-resources in the studied university libraries. Adopting descriptive survey design, population of 18 librarians, nine e-librarians and 6,267 lecturers in 23 universities form the study, while sample size of nine universities with 404 lecturers were selected using stratified sampling technique. Two set of questionnaires; interview

schedule and checklist were the data collection instruments used. In order to achieve two specific objectives and a research question on the types of e-resources available and extent of use in university libraries, checklist and questionnaire on use of e-resources were developed and used in data collection. Mean and standard deviation as well as spearman correlation were used to answer research questions and one null hypothesis respectively. The study revealed the availability of several e-resources in university libraries (library website and portal services, bibliographic databases, e-thesis/dissertations). These resources are made available due to TETFund intervention thus providing assistance to academic libraries in Nigeria thereby supporting efficient provision of online information resource. Study further revealed that over half of the respondents use e-resources to a very high extent in journal, and e-books respectively.

Mohammed and Ozavize (2021) examined the use of digital information resources by undergraduate students in University Libraries in Kogi State, Nigeria. The study determines the availability and importance of digital information resources as well as the challenges and strategies to enhance their usage. Qualitative method and descriptive research design was adopted with the target population of 52 staff in digital unit of university libraries in Kogi State and were all adopted for the study. Structured questionnaire with four-point rating scale was used in data collections. Mean and standard deviation was use in the analysis of data. Majority of digital information resources where available Digital information resources enhance opportunity to develop strategy hound with other institutions and save time of library user funding deterioration of digital media and technological obsolesce were some of the challenges to effective use of digital resources.

Akimbo and Oyadeyi (2022) examined perception of undergraduate students on the accessibility to information resources with specific objectives include: types of information resources available, frequency and purpose, and constraints in the use of information resources by undergraduate students in university of Ibadan. Descriptive survey design was adopted with the population of undergraduate students at University of Ibadan. The sample of 213 undergraduate students in three faculties (agriculture and forestry, education and arts) was used. Questionnaire was further used to collect data, while frequency and percentage counts as well as mean were further used to analyze data with decision rule of 2.50 and above as accepted, while below 2.50 was rejected. Results showed that textbooks, reference collections and maps were readily available with frequent access and use to enhance their studies. Inadequate

availability of information resources, absence of provision of online information service and access to information resources were major inhabiting factors in the use of information resources respectively. Library management should ensure that collections be acquired and readily available and accessible for effective use by all patrons.

Considering the role of instructional facilities in the educational development of students at Junior and Senior Secondary school level, Ode and Akwali (2022) conducted a study to find out the effect of computer assisted instruction CAI in secondary school students' academic achievement in chemistry in Umuahia, Abia State, Nigeria; the study adopted quassi-experimental research design with population of 8,867 students using a sample size of 92 students. The instrument for the study was the Chemistry Achievement Test (CAT) used in data collection. The study discovered that students taught using CAI performed better than those taught using conventional method. It further reported that there was no significant difference between mean achievement score of male and female students taught chemistry using CAI.

Similar to the present study but with disparity in the use of statistical tools, Yusuf, Saka, and Adamu (2024) investigated the influence of library environment, information resource availability and use on academic activities of teachers in unity colleges in Federal Capital Territory Abuja, Nigeria. The population of the study consist of 4,233 teachers and a sample size of 351 was used for the study through structured questionnaire. The result through the use of descriptive statistical tool (frequency counts, mean and standard deviation) yielded positive influence of independent variables on dependent variable with less attention to the provision of air conditioners and furnitures as well as special information resources on disabilities in the studied school libraries in FCT Abuja, Nigeria.

Methodology

Descriptive survey design was used for this study to ascertain the Influence of independent variables on dependent variables through collection of data from large samples. The target population of the study consists of 4,233 teachers in the six (6) unity colleges in FCT Abuja, Nigeria; thus Ibrahim (2013) posits that the population consists of respondents and study location/ areas. Due to the large number of teachers, the researcher decided to select 351 numbers of teachers using proportionate stratified sampling techniques, that is: the more the number in stratum the more the sample size. Thus, sample size of 351 respondents was selected using Krejcie and Morgan table of 1970 which states that in a population of between 4,000

and 4,500, a sample size of 351 respondents is adequate. The data collection instrument used for this study includes checklist as section, and structured questionnaire with four - point adapted likert rating scale.

The corrected and modified version of the instruments were pilot-tested using split-half method in Federal Government College Minna Library which is outside the study areas. In this case a copy of the checklist was administered to College Librarian, while 40 copies of the structured questionnaire were administered on teachers in two parts using odd and even numbers. The completed and retrieved copies of questionnaires were subjected to data analysis. The results of the reliability as regards observation checklist on the available/not available information resources revealed that with the exception of special collection for disabilities, all other 14 listed items were available in the college library. The cronbach's alpha of the items in the questionnaire covering seven (7) research questions shows that: available information resources = 0.82, Library environment = 0.97, library visit = 0.92, library use = 0.94, accessibility = 0.96 and utilization = 0.92, information resources, library visit, use and environment = 0.93 while the overall average score is 0.97 showing that the structure questionnaire is reliable and adequate for the study.

Interpretation of Results

Response Rate

out of 351 copies of structured questionnaire administered, 268 (76%) were filled, returned and found usable for the inferential statistical analysis. Inferential statistics (regression analysis and composite regression) were used to test the four null hypothesis 1-3 on the significant influence of independent variables on dependent variables as well as hypothesis 4 on the contribution of all independent variables to dependent variable (academic activities) respectively. Therefore, regression analysis and composite regression was used to test the four (4) null hypotheses.

Hypothesis One H₀₁: There is no significant influence of availability of information resources on academic activities of teachers in unity colleges in Federal Capital Territory (FCT) Abuja, Nigeria.

Table 1: Summary of Regression Analysis on Significant Influence of Availability of Information Resources on Academic Activities of Teachers in Unity Colleges in Federal Capital Territory (FCT) Abuja, Nigeria.

Model	Unstandardized Coefficients	Standardized Coefficients	t	Sig.
	B	Std. Beta		

		Error			
1 (Constant)	14.212	1.293		10.992	0.000
Availability of Information Resources	0.194	0.048	0.241	4.054	0.000

a. Dependent Variable: Academic Activities

The regression analysis in Table 1 examined the influence of the availability of information resources on the academic activities of teachers in unity colleges in the Federal Capital Territory (FCT), Abuja. The results reveal a statistically significant positive relationship between the availability of information resources and teachers' academic activities, with a coefficient (B) of 0.194 and a t-value of 4.054 ($p < 0.001$). The standardized coefficient (Beta) of 0.241 indicates a moderate positive influence, suggesting that as the availability of information resources increases, academic activities among teachers also tend to improve. The constant ($B = 14.212$) represents the baseline level of academic activities when the availability of resources is not considered. The significance level of 0.000 ($p < 0.05$) confirms that this relationship is statistically significant, leading to the rejection of the null hypothesis (H_0), which posits no significant influence of information resource availability on academic activities. This implies that enhancing the availability of resources in unity colleges could positively impact teachers' academic productivity, supporting their roles in teaching, research, and professional development.

Hypothesis 2: There is no significant influence of library environment on academic activities of teachers in unity colleges in Federal Capital Territory (FCT) Abuja, Nigeria.

Table 2: Summary of Regression Analysis on Significant Influence of Library Environment on Academic Activities of Teachers in Unity Colleges in Federal Capital Territory (FCT) Abuja, Nigeria

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	11.921	1.002		11.901	0.000
Library Environment	0.407	0.054	0.420	7.542	0.000

a. Dependent Variable: Academic Activities

The regression analysis presented in Table 2 assesses the influence of the library environment on the academic activities of teachers in unity colleges within the Federal Capital Territory (FCT), Abuja. The findings demonstrate a statistically significant positive impact of the library environment on teachers' academic activities, as indicated by the unstandardized coefficient (B) of 0.407 and a high t-value of 7.542 ($p < 0.001$). The standardized coefficient (Beta) of 0.420 suggests a strong positive relationship, meaning that improvements in the library environment are likely to lead to corresponding enhancements in teachers' academic productivity. The constant value ($B = 11.921$) represents the baseline academic activity level when the library environment factor is absent. Given the significance level of 0.000 ($p < 0.05$), the null hypothesis (H_0), which claims no significant influence of the library environment on academic activities, is rejected. This result indicates that a supportive and conducive library environment is a significant factor in enhancing teachers' engagement in academic activities, including teaching, research, and professional growth.

Hypothesis 3: There is no significant influence of utilisation of information resources on academic activities of teachers in unity colleges in Federal Capital Territory (FCT) Abuja, Nigeria.

Table 3: Summary of Regression Analysis on Significant Influence of Information Resources Utilisation on Academic Activities of Teachers in Unity Colleges in Federal Capital Territory (FCT) Abuja, Nigeria.

Model	Unstandardised Coefficients		Standardised Coefficients Beta	t	Sig.
	B	Std. Error			
1 (Constant)	14.560	1.098		13.266	0.000
Utilisation of Information Resources	0.212	0.047	0.264	4.464	0.000

a. Dependent Variable: Academic Activities

The regression analysis in Table 3 examined the influence of the utilization of information resources on the academic activities of teachers in unity colleges within the Federal Capital Territory (FCT), Abuja. The analysis reveals a statistically significant positive effect, with an unstandardized coefficient (B) of 0.212 and a t-value of 4.464 ($p < 0.001$). The standardized coefficient (Beta) of 0.264 indicates that increased utilization of information resources is associated with a meaningful improvement in teachers' academic productivity. The constant ($B = 14.560$) represents the baseline level of academic activity in the absence of information resource

utilization. Given the significance level of 0.000 ($p < 0.05$), the null hypothesis (H03), which posits no significant influence of information resource utilization on academic activities, is rejected. This outcome suggests that teachers who actively use available information resources tend to experience enhanced academic performance, reinforcing the importance of information resource access and engagement for professional tasks such as teaching preparation, research, and ongoing professional development.

Hypothesis 4: There is no combined significant influence of library environment, utilisation of information resources, on academic activities of teachers in unity colleges in Federal Capital Territory (FCT) Abuja, Nigeria.

Table 4 (a): Summary of Regression Analysis on combined significant influence of library environment, information resources utilisation on academic activities of teachers in unity colleges in Federal Capital Territory (FCT) Abuja, Nigeria.

Model	Unstandardized Coefficients		Standardized Coefficients Beta	t	Sig.
	B	Std. Error			
1 (Constant)	8.197	1.328		6.171	.000
Library Environment	.385	.053	.397	7.308	.000
Utilisation of Information Resources	.179	.044	.224	4.118	.000

a. Dependent Variable: Academic Activities

In Table 4, both the library environment ($B = 0.385$, $Beta = 0.397$, $t = 7.308$, $p < 0.001$) and the information resource utilization ($B = 0.179$, $Beta = 0.224$, $t = 4.118$, $p < 0.001$) demonstrate positive and significant contributions to academic activities. This suggests that improvements in both the library environment and the active use of information resources are associated with enhanced academic performance among teachers.

Table 4 (b): Summary of ANOVA Report on combined significant influence of library environment and information resource utilisation on academic activities of teachers in unity colleges in Federal Capital Territory (FCT) Abuja, Nigeria.

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	226.134	2	113.067	38.629	.000b
	Residual	775.657	265	2.927		
	Total	1001.791	267			

a. Dependent Variable: Academic Activities
b. Predictors: (Constant), Utilisation of Information Resources, Library Environment

The ANOVA summary in Table 4.14 further confirms the model's significance, with an F-value of 38.629 and a p-value of 0.000, indicating that the combined influence of the library environment and information resource utilization on academic activities of teachers is statistically significant. The model accounts for a substantial portion of the variance in academic activities (Sum of Squares for regression = 226.134). Therefore, the null hypothesis (H04), which proposes no combined significant influence of the library environment and utilization of information resources, is rejected. In summary, these results underscore that both the library environment and the extent of information resource utilization significantly enhance teachers' academic activities, supporting their preparation, research, and professional development in Unity Colleges within the FCT, Abuja.

Discussion of findings

The results of Hypothesis One demonstrate that the availability of information resources has a statistically significant positive influence on the academic activities of teachers in Unity Colleges in Abuja. Specifically, the regression analysis reveals a positive coefficient ($B = 0.194$) and a standardized coefficient ($\text{Beta} = 0.241$), with a t-value of 4.054 ($p < 0.001$), indicating that the availability of resources is moderately correlated with an increase in teachers' academic engagement. This result aligns with previous research findings in the field, further corroborating that access to adequate resources is crucial for enhancing academic productivity among educators. For instance, the study by Ulo-Bethels, Nwayor, and Dyikuk (2022) in Plateau State, Nigeria, highlights a similar outcome, showing that a lack of sufficient technology-based teaching resources hinders the utilization and effectiveness of academic activities. They also found that teachers' engagement with available technology was often limited by factors such as technophobia and inadequate infrastructure. This finding resonates with the results from the present study, suggesting that teachers' access to comprehensive resources is directly linked to improved educational engagement and output.

Additionally, the study by Mohammed and Ozavize (2021) that examined the use of digital information resources by undergraduates in Kogi State, Nigeria underscores the value of digital resources in supporting educational tasks. The research revealed that digital resources are instrumental in saving time and enhancing efficiency, though barriers like technological obsolescence limit their impact. This echoes the current study's emphasis on resource availability as a key factor in facilitating academic activities. Similarly, the work by Ndagi (2023)

highlights the importance of library resources for university lecturers, suggesting that the presence of electronic library resources contributes significantly to their academic productivity, particularly in research and teaching.

The findings in Hypothesis two show that the library environment significantly influences the academic activities of teachers in Unity Colleges in Abuja, as indicated by the positive and statistically significant regression coefficient ($B = 0.407$, $p < 0.001$). This finding aligns with existing literature that emphasizes the importance of a conducive library environment for academic productivity. For example, Ndagi (2023) highlighted that the availability of well-resourced electronic libraries in North central Nigeria supported lecturers' use of e-resources for teaching and research, improving their overall effectiveness. Similarly, Akimbo and Oyadeyi (2022) found that accessible and diverse information resources in libraries facilitated students' academic activities at the University of Ibadan, suggesting that resource availability in libraries encourages engagement with educational materials. Mohammed and Ozavize (2021) also observed that digital resources in university libraries promoted efficient academic resource use, although challenges like technological obsolescence were identified as barriers. In the context of teachers, Ode and Akwali (2022) showed that technology-enhanced environments, such as computer-assisted instruction, led to improved academic outcomes in students, which could imply that similarly equipped libraries could support teachers' instructional and research activities.

The findings from Hypothesis three that demonstrate a significant positive influence of information resource utilization on the academic activities of teachers in Unity Colleges in Abuja, align well with existing literature on the subject. The regression analysis shows that higher usage of information resources correlates with an increase in academic productivity among teachers, supporting the notion that access to and engagement with information resources are crucial for teachers' professional performance. This result is consistent with studies such as Ndagi (2023), who found that e-resources in university libraries are used extensively by lecturers for academic tasks, aided by the support from TETFund for access to quality online information resources. Similarly, Mohammed and Ozavize (2021) reported that digital information resources in Kogi State universities contribute significantly to academic and research efficiency, although they highlighted issues like technological obsolescence and funding constraints. The availability of these resources enabled lecturers and students to conduct research more effectively, paralleling the current study's finding that

teachers who utilize resources demonstrate improved academic productivity.

Additionally, Akimbo and Oyadeyi (2022) conducted a study on undergraduate students' access to information resources at the University of Ibadan showed that resources like textbooks and reference collections were crucial for academic enhancement. However, barriers such as inadequate online resources and library infrastructure were noted. This reflects similar challenges observed among teachers in Unity Colleges, where consistent access to updated and comprehensive information resources might enhance teaching activities even further. The findings from Hypothesis four reveal that the library environment and the information resource utilization positively and significantly influence teachers' academic activities in Unity Colleges in Federal Capital Territory (FCT) Abuja, Nigeria. This conclusion is supported by the statistical analysis showing that both the library environment ($B = 0.385$, $\text{Beta} = 0.397$, $t = 7.308$, $p < 0.001$) and information resource utilization ($B = 0.179$, $\text{Beta} = 0.224$, $t = 4.118$, $p < 0.001$) contribute meaningfully to academic activities. The ANOVA summary, with an F-value of 38.629 and a p-value of 0.000, further validates the model's significance, indicating that the library environment and resource utilization account for a significant portion of the variance in academic activities. As such, the null hypothesis (H_0) is rejected, underscoring the combined significance of these factors.

These findings align with existing literature, reinforcing the importance of accessible and supportive library facilities and resources for academic success. Ndagi (2023) reported a similar positive relationship between effective use of e-resources in academic libraries and enhanced academic activities, as lecturers who had access to comprehensive library services and resources were better able to perform their duties. Likewise, Mohammed and Ozavize (2021) found that digital information resources in university libraries positively influence academic productivity by offering convenient access to research materials, which save time and enhance research quality. The findings of the fourth hypothesis contradicts that of Yusuf, Saka and Adamu {2024} as the co-researchers used descriptive statistical tool (frequency, mean and standard deviation) and report that less attention was paid to the provision of air conditioners and furniture as well as special information resources on users with disabilities (hearing, visually impairment, mentally disorder) in the unity college libraries in FCT Abuja, Nigeria.

Conclusion

The study use hypothetical approach to examine the influence of information resource availability, use and environment on teachers' academic activities in unity colleges in Abuja, Nigeria. Fundamental resources (textbooks, e-resources, journals) are available, but specialized resources (government documents, materials for students with disabilities) are lacking. Library environment and resource utilization positively impact teachers' academic activities, especially research and professional development. However, integration of resources into daily teaching practices is limited, highlighting a need for improvement. The study concludes that a well-equipped library environment and effective resource utilization are crucial for supporting teachers' academic work, but targeted improvements are necessary to enhance teaching effectiveness

Recommendations

Based on the findings of the study, the following recommendations were made and that the management of Unity Colleges in FCT Abuja, Nigeria should:

1. Ensure consistent accessibility to information resources, including special provisions for teachers with disabilities.
2. Create an inclusive, conducive and welcoming library environment to ensure maximum accessibility and usability for all users.
3. Conduct periodic training and workshops to improve teachers' ability to effectively utilize information resources.
4. Advocate for policy implementation to ensure that school libraries are equipped, accessible, and aligned with national education standards.

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Web Information and the Use of Digital Information Resources among Postgraduate Students in Covenant University, Otta, Nigeria

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Abstract

This study investigated web information seeking behaviour (WESB) and use of digital information resources (DIR) by postgraduate students in Covenant University, Otta, Nigeria. Survey research design of the correlational type was adopted for this study. A two stage sampling technique (purposive and cluster sampling) using a sampling fraction of 30% was used to select 138 postgraduate students from Covenant University (CU). Data was collected through questionnaire and analysed using descriptive statistics. Result showed that there is a significant relationship between WSB and use of DIR at $r=0.212$. The use of DIR has become a new normal in present day scholarship hence, postgraduate students should be encouraged to make use of them. This can be done if resources that are tailor made to the academic disciplines of the students are available in abundance and if efforts are made to make them see the importance of these materials which will improve their web information seeking behaviour.

Keywords: *Web information seeking behaviour, Use of DIR, Digital information resources, Postgraduate student.*

Background to the study

Digital information resources according to Urhiewhu and Nwabueze (2015) can be defined as those information resources that hitherto were in printed form but are now in soft form and can be accessed using computer machines and other relevant information and communication technology tool. They stated that digital information resources could also include: music, games, stories and articles from magazines, published journals and books, encyclopedia, pamphlets and similar published materials that are in soft copies. Cartographic materials, movies,

still pictures could also form part of digital information resources. It may also be said that materials whose formats were changed from hard to soft and materials that were made in soft format from the beginning can be termed as digital information resources.

Use of digital information resources perhaps, could mean the application of digital information resources to the satisfaction of the information thirst of users. In considering the use of digital electronic resources by postgraduate students, matters of interest that could be considered include: types of digital electronic resources, purpose of use of digital information resources, frequency of use and challenges to the use of digital information resources. As stated by Nwabueze and Urhiewhu (2015), the types of digital electronic resources include: music, games, stories and articles from magazines, published journals and books, encyclopedia, pamphlets, still and motion pictures, cartographic materials among others. Ternenge and Kashimana (2019) listed e-books, e-journals, e-newspapers, e-magazines, electronic databases, theses, conference papers, government papers (in electronic formats) as examples of digital electronic resources. The information contained in these different resources are not the same hence, the type of resources could determine the purpose for which it is used.

The challenges to the use of digital information resources by postgraduate students in Nigeria may not be separable from the challenges faced by other categories of users of digital information resources. On the basis of the current economy of the country, the most topical challenge to the use of digital information resources by postgraduate students is that of finance. The gadgets to access and view digital information resources hardly come cheap, hence, it is a challenge to postgraduate students as regards using digital information resources- this could be regarded as a national challenge. A lot of university campuses in Nigeria do not have a functional free or paid internet connectivity platform for their students. This may restrict how much access that these postgraduate students have to digital information resources online thereby reducing the use of such materials- this could be regarded as institutional challenge.

Another notable challenge that could impede the use of digital information resources by postgraduate students in Nigeria is ICT self-efficacy. ICT self-efficacy may be said to be the personal believe in one's ability to use ICT gadgets to good effect when seeking information. A lot of students in Nigeria have been found to have a somewhat low ICT self-efficacy hence, they may not be able to make good use of digital

information resources to quench their information thirst- this could be termed a personal challenge.

According to Okiki and Ashiru (2011), the cost incurred by institutions and academic libraries in providing infrastructure and personnel that facilitate access to digital information resources for students is huge. This, the authors said is a reason to study the factors that influences use of digital information resources by university students (especially postgraduate students) in Nigeria. Some of the factors may include the web seeking behaviour of the students and their academic disciplines. Similarly, in a study conducted by Edem and Egbe (2016), to know the level of use of digital information resources by postgraduate students of the University of Calabar, it was found that 86.39% of the respondents were aware of the availability of digital information resources in the university library and were making use of the resources. While only 13.61 of the respondents were not making use of the resources.

The benefits of using digital information resources to postgraduate students seem obvious, however, according to the findings of Edem and Egbe (2016), the rate of awareness of these digital resources and the rate of use by postgraduate students is quite far apart. This looks a lot like the major issue facing the use of digital information materials by postgraduate students in Covenant University. The resources are available, awareness is top notch but actual use is still not at the desired level. The disparity between awareness and actual use would definitely be due to some factors which could include academic discipline and web information seeking behaviour.

Objectives of the study

The main objective of this study is to investigate web information seeking behaviour and use of digital information resources by postgraduate students in Covenant University, Otta, Nigeria. The specific objectives are to:

1. determine the web information seeking behaviour of postgraduate students in Covenant University, Otta, Nigeria;
2. find out the level of use of digital information resources by postgraduate students in Covenant University, Otta, Nigeria;
3. find out the frequency of use of digital information resources by postgraduate students in Covenant University, Otta, Nigeria;
4. ascertain the challenges to the use of digital information resources by postgraduate students in Covenant University, Otta, Nigeria.

Research questions

The following research questions guided the research:

1. What is the web information seeking behaviour of postgraduate students in Covenant University, Otta, Nigeria?
2. What is the level of use of digital information resources by postgraduate students in Covenant University, Otta, Nigeria?
3. What is the frequency of use of digital information resources by the postgraduate students in Covenant University, Otta, Nigeria?
4. What are the challenges to the use of digital information resources by postgraduate students in Covenant University, Otta, Nigeria?

Hypotheses

The following hypothesis was tested at 0.05 level of significance:

There is no significant relationship between academic discipline and use of digital information resources by postgraduate students in Covenant University, Otta, Nigeria.

Literature review

Digital information resources

Digital information resources as defined by Uthiewhu and Nwabueze (2015) can be described as those information resources that hitherto were in printed form but are now in soft form and can be accessed using computer machines and other relevant information and communication technology tool. They stated that owing to the fact that it is the function of libraries to acquire information materials and make them available in the right formats to users, information in digital formats should be made available in the right formats to users, information in digital formats should be made available to users because of the obvious shift towards use of digital materials. Digital information resources they stated include: music, games, stories, magazine articles, public journals, books, pamphlets, cartographic materials, theses, dissertations, encyclopedias, lecture notes, conference proceedings, graphics, movies, still pictures among others.

According to Shariful (2012), digital information resources can be referred to as those resources that are electronic and can be accessed from a library's database or through the internet. The author stated that some digital information resources can be referred to as born electronic materials, that is, materials that are produced in electronic formats from the beginning, examples of such are: e-books, e-journals, e-newspapers,

websites, www resources, e-magazines, e-projects, e-reports among others. The other type of digital information material identified by the author is digitized materials which are digital information materials that have hitherto been in printed form but have been digitized through some digitization means such as scanning, snapping among others. The description of Shariful (2012) could be summed up to mean that information bearing materials that are accessed through the use of computers and other electronic hardware and sometimes software may be referred to as digital information resources.

Nkanu and Okon (2010), opined that digital information resources are the new normal that are impacting libraries worldwide. This is due to the mammoth of information and scholarly resources that are coming out in digital formats on a daily basis. This is also likely going to have very significant consequences on information retrieval as retrieval of digital resources will no longer be in the old manual way but in a more computerized way. The authors opined that with digital libraries, abstracts and indexes are available online and access to computer based information materials is quite easy and decentralized. The obvious advantages of digital materials over print materials are also inherent in digital information library materials. Despite the advantages though, there are some disadvantages attached to the use of digital information resources. One of such disadvantages is the need for the procurement of hardware and software to access the resources.

According to Obaseki and Amune (2009), digital information resources can be defined as the presence of information resources that are in printed form in a format that can only be viewed and accessed through information and communication technology gadgets. The implication of the position of Obaseki and Amune (2009) is that digital information resources does not refer to information resources that can be viewed or accessed with computers alone but those that can also be viewed and accessed through other ICT gadgets such as smart phones, tablets, 1-pads, flash drives. The authors identified e-books, e-theses, e-journals, e-magazines, e-databases, e-article among others as some examples of digital information resources. The use of these resources by postgraduate students however, will be for some reasons or in a bid to achieve some objectives.

A study was carried out by Shanmugan (2012) to find the rate of use of electronic information resources by 200 postgraduate students and researchers of Annamalai University, India. The researcher made use of a descriptive survey research design for the study and data was collected through the use of a structured questionnaire. From the results of the analyses of data, it was

found that 67% of the respondents stated that they mostly make use of only digital information resources or both digital information resources and printed books. This result shows that the rate of use of electronic information resources by the respondents is high suggesting that the resources are germane to the academic discipline of the students.

Similarly, in a study conducted by Edem and Egbe (2016), to know the level of use of digital information resources by postgraduate students of the University of Calabar, it was found that 86.39% of the respondents were aware of the availability of digital information resources in the university library and were making use of the resources. While only 13.61% of the respondents were not making use of the resources. The figures indicate that the sampled postgraduate students make use of electronic information resources well. This high rate of use of electronic information resources suggests that electronic information resources contain information that is very relevant to the discipline of postgraduate students.

According to Tariq and Zia (2014), the purpose of use of digital information resources by postgraduate students include: to attempt class assignments, to foster their professional development in their chosen field, to conduct researches, to stay updated about latest academic trends and discoveries, to communicate scholarly discoveries, to prepare for examinations, to prepare for seminars, conferences and academic debates among others. The authors further stated that postgraduate students make use of digital information resources because they find it helpful, time saving and capable of providing timely information that are germane to their academic and research pursuits. Konappa (2014) conducted a research to find out the level of use of electronic information resources by 638 postgraduate students of University of Tirupati, India. The researcher used a survey research design for the study and data was collected through the use of questionnaire. The results obtained from data analyses show that the main purposes of use of electronic information resources are: for study (63.99%), notes preparation (94.9%), for project writing (49.22%) among others. the results indicate that the students mostly make use of electronic information resources for academic purposes.

Chukwu (2015) carried out a study to find out the rate of use of electronic information resources by 165 selected students of Nnamdi Azikiwe University and Enugu State College of Education, Nigeria. The researcher adopted a survey research design for the study and data was collected through the use of questionnaire. Results that were obtained from the analyses of data showed that the main purposes for the use of electronic

information resources are: for assignments 74%, for researches 55%, for personal development 68%, for entertainment 54%. The results indicate that the use of electronic information resources by students could affect all aspects of the students. This could also be the same for postgraduate students in southwest Nigeria.

A study to find out the rate of use of digital information resources by 150 selected students of faculties of science of selected universities in Bahrain was carried out by Kassim and Aroja (2017). The researchers adopted a survey research design for the study and they collected data through the use of questionnaire. The results obtained from the analyses of data showed that the sampled students' rate of use of digital information resources was high at a grand mean of 49.55. Despite the high rate of use, it was also found that the use of the resources is hampered by factors such as: lack of search skills, information explosion among others. Adeleke and Nwalo further listed other factors such as: lack of sufficient training programme; non-availability of desired digital information resources within the universities, low level of local contents in the digital information resources; lack of time due to tight academic and job schedule of postgraduate students, lack of publicity on the contents of the available digital resources by the universities or libraries. Also, unorganised nature and proliferation of digital resources, outright lack or scarcity of workstations to access digital resources in the universities and irrelevance of contents of digital information resources to local academic needs as challenges to the use of digital information resources by postgraduate students.

A challenge identified by Anunobi (2009) cited by Ugwu and Orsu (2017) is that of access. The availability of digital information resources does not really translate to accessibility by the students. The problems of accessibility could be triggered by lack of necessary hardware to view the resources. It could also be due to the lack of technical knowledge on how to use the hardware and software to good effect as regards accessing the resources. The problem of access may also be related to the inactivity of the institution as regards sensitization and awareness campaigns to make the users aware of the availability of the resources. It is possible for the resources to be available and the postgraduate students are not even aware of it. The use of the resources may be said to be closely related to the awareness of their availability.

Research Methodology

The research design that was adopted for this study is the survey design of descriptive type. This design involves the

study of a population through the use of samples. The findings obtained from studying the sample can be applied to the entire population. The large population involved in this study did not only inform the decision to use design but also its usefulness in measuring attitudes, characteristics, and opinions of persons or group of persons. This is in consonance with the position of Nwana (1981) which asserted that descriptive survey design is concerned with the collection of data for the purpose of describing and interpreting existing conditions for prevailing practices, beliefs, attitudes, and ongoing processes. Descriptive survey design aims at collecting and describing data in a systematic manner, including the characteristics, features or facts about a given population.

The population used for the study comprised postgraduates in covenant University, Otta, Nigeria that make use of digital information resources. The postgraduate students of this institution are considered because by experience, they are capable of making rational contributions to the study. Because of the popularity and availability of ICT gadgets and internet, it could be said that all postgraduate students in this school indulge in the use of digital information resources in one or more ways.

Table 3.1 Population of Postgraduates in Covenant University

S/N	Covenant University's Colleges	Total no of postgraduate Students
1	College of Management and Social Sciences	175
2	College of Leadership and Development Studies	61
3	College of Engineering	86
4	College of Science and Technology	195
	Total	517

Source: School of postgraduate studies, Covenant University, Otta 2020/2021 session.

Sampling Techniques and Sampling Size

This study employed a two- stage sampling technique to select a sample size. A double stage sampling technique is one in which the population is partitioned into groups, like cluster sampling. Two stage sampling is used when the sizes of the clusters are large, making it difficult to observe all the units inside them. Therefore, by means of purposive selection, three faculties, Social sciences, engineering and Sciences were selected from the university thereafter, a sampling fraction of 30% was used to make the final selection of postgraduates of the study.

S/N	Covenant University Faculties	Number of postgraduate students	Sample size (30%)
1	College of Management and Social Sciences	175	53
2	College of Science and Technology	195	59
3	College of Engineering	86	26
	Total	456	138

Copies of the questionnaire were administered to the respondents personally by the researcher. The respondents were given adequate time to complete the questionnaire after which the researcher personally went there to retrieve completed copies of the questionnaire. Data administration and collection took up to two weeks. Descriptive statistics involving tables and percentages was used in analysing the data collected and also to show the rate of response to the questionnaire. The data collection through the questionnaire was further subjected to statistical analysis using Statistical Package for Social Sciences (SPSS).

Result and Discussion

Questionnaire administration and return rate

A total of 136 questionnaires were administered to the postgraduate students of Covenant University, 127 were found usable out of the 136 copies that were returned. This means that only 80.77% of the administered copies were found usable (Table 1.)

Table 1: Distribution of questionnaire administration and return rate by institution

Faculty	Distribution (N)	Return (N)	%
Faculty of social science	53	50	94.3
Faculty of science	59	51	86.4
Faculty of Engineering and Technology	26	26	100
	136	127	93.38

Answers to research questions

Research question one: What is the web information seeking behaviour of the students?

Table 2 shows that web information seeking behaviour of the postgraduate students in Covenant University, Ota, Nigeria.

COVENANT UNIVERSITY										
State ment s	SA		A		D		SD		Mea n	ST. D
	N	%	N	%	N	%	N	%		
Search										

ch strat egy										
I use Boolean search when seeking information online	63	49.6	37	29.1	16	12.6	11	8.7	3.56	0.63
I use keyword search when seeking information online	60	47.2	51	40.2	12	9.4	4	3.1	3.49	0.68
I use citation searching when seeking information online	38	29.9	32	25.2	26	20.5	29	22.8	2.79	0.81
I use Boolean search when seeking information	55	43.3	45	35.4	14	11	13	10.2	3.23	0.76

online										
Information need										
I need information for research purposes	57	44.9	48	37.8	11	8.6	11	8.6	3.18	0.96
I need information to prepare examinations	50	39.4	65	51.2	14	11	2	1.6	3.28	0.88
I need information for personal development	60	47.2	45	35.4	18	14.2	4	3.1	3.33	0.76
I need information to find solutions to academic assignments	70	55.1	48	37.8	5	3.9	4	3.1	3.49	0.49
I need information to	81	63.8	40	31.5	6	4.7	0	0	3.58	0.51

prep are for semi nars										
Infor mati on retri eval										
I retri eve onli ne infor mati on thro ugh my lapto p	50	39.4	61	48	8	6.3	8	6.3	3.55	0.50
I retri eve onli ne infor mati on thro ugh my mob ile phon e	61	48	60	47.2	4	3.1	2	1.6	3.78	0.54
I retri eve onli ne infor mati on thro ugh flash driv es or othe r mag netic tape s	71	55.9	28	22	14	11	14	11	3.55	0.66
I retri	11	8.7	14	11	44	34.6	58	45. 7	2.71	0.92

eve infor mati on only in print ed form										
Infor mati on use										
I use infor mati on for rese arch purp oses	76	59.8	41	32.3	8	6.3	2	1.6	3.70	0.58
I use infor mati on to prep are exa mina tions	74	58.3	50	39.4	3	2.4	0	0	3.69	0.64
I use infor mati on for pers onal deve lop ment	77	60.6	50	39.4	0	0	0	0	3.73	0.47
I use infor mati on to find solut ions to acad emic assig nme nts	84	66.1	40	31.5	3	2.4	0	0	3.74	0.52
I use infor mati	81	63.8	40	31.5	6	4.7	0	0	3.58	0.51

on to prep are for semi nars										
Grand total	61.96									

Majority of the postgraduate students make use of Boolean search to look for information at means (x) 3.56 and standard deviation 0.65 in C.U. Most of the postgraduate students in C.U need information for preparing for preparing for seminars at mean (x) 3.58 and standard deviation 0.51. A significant number of the postgraduate students make use of mobile phone to retrieve needed information at mean = 3.78 and standard deviations 0.54 in CU. Postgraduate students in CU mostly use information for personal development at mean 3.74 and standard deviation 0.51.

Research question two: What is the level of use of digital information resources by postgraduate students in Covenant University?

A test of norm where obtainable score is 24 and scores between 1.0 and 8.0 is considered low, 8.1 to 16.0 are considered average and 16.1 to 24.0 is considered high is used. From the grand means obtained in table 4.3, it can be said that the level of use of digital information resources by postgraduate students in Covenant University is high.

Research question three: what is the frequency of use of digital information resources by the postgraduate students?

Table 3 shows the frequency of use of digital information resources by the postgraduate students in Covenant University, Otta, Nigeria.

	COVENANT UNIVERSITY									
Items	Daily		Weekly		Monthly		Never		Mean	ST. D
	N	%	N	%	N	%	N	%		
Published Articles	52	40.9	30	23.6	30	23.6	15	11.8	2.88	0.96
Unpublished Articles	31	24.4	38	29.9	40	31.5	18	14.2	2.15	1.06
The	84	66.1	20	15.7	13	10.2	10	7.9	3.32	0.88

ses										
Ma nus crip ts	12	9.4	10	7.9	15	11.8	80	63	1.97	1.06
Elec tron ic jour nals	50	39.4	42	33.1	20	15.7	15	11.8	3.24	0.52
e- man user ipts	14	11	10	7.9	13	10.2	80	63	1.97	1.06
Elec tron ic boo ks	50	39.4	42	33.1	20	15.7	15	11.8	3.24	0.52
Grand mean 19.07										

From the figures obtained from table 4, it is seen that in Covenant University, 66.1% of the respondents make use of theses on a daily basis while 40.9% make use of published articles on a daily basis as well. Furthermore, in CU, 63% of the respondents never make use of manuscripts.

Research question four: What are the challenges to the use of digital information resources by postgraduate students in Covenant University, Otta, Nigeria?

Table 4 shows the challenges to the use of digital information resources by postgraduate students in Covenant University, Otta, Nigeria

Table 4: Challenges to use of DIR by the students

Item s	COVENANT UNIVERSITY									
	SA		A		D		SD		Mean	ST. D
	N	%	N	%	N	%	N	%		
Fear of copyr ight infrin geme nt	60	47.2	65	51.2	2	1.6	0	0	3.58	0.81
Fear of plagi arism .	56	44.1	60	47.2	11	8.7	0	0	3.52	0.72
Lack of requi red	34	26.8	36	28.3	30	23.6	27	21.3	2.82	0.94

search skills										
Lack of time to surf the internet	50	39.4	42	33.1	20	15.7	15	11.8	2.94	0.88
Poor internet connectivity.	64	50.4	56	44.1	7	5.5	0	0	3.55	0.34
Poor electricity supply.	71	55.9	56	44.1	0	0	0	0	3.67	0.33
Materials online are irrelevant to my discipline.	25	19.7	35	27.6	50	39.4	17	13.4	2.28	0.98
Grand mean 22.36										

In Covenant University, the most notable challenge to the use of digital information resources is poor electricity supply at $(\bar{x})$ 3.67. Fear of copyright infringement is another notable challenge that hinders use of digital information resources at $(\bar{x})$ 3.58.

Test of Hypotheses

Table 5 shows the relationship between academic discipline and use of digital information resources

Table 5: Relationship between WSB and use of DIR

Name of Institution	Variables	Mean	S.D	N	DF	R	P	Remarks
Covenant University	WSB	42.3	4.28	127	126	.212	.000	Sig.
	Use of DIR	61.46	11.67					

Results from table 5 shows that in CU, there is a positive relationship between academic discipline and use of digital information resources by the students at $r = .212$; $p = 0.00$. This

indicates that, academic discipline influences use of digital information resources.

Discussion of findings

Web Information Seeking Behaviour of Postgraduate Students in Covenant University

The web seeking behaviour of the postgraduate students in the university use Boolean logic to search web information, they use the retrieved information for seminars, preparing for examinations and for personal development and they mostly retrieve the information through mobile phones. This suggests that the web information seeking behaviour of the students will be quite formal one as the web information they seek is can be said to be for scholarly purposes that are related to their academic disciplines. This finding is in line with that of Hargittai (2010) who asserted that factors such as gender, cognitive and psychological variables, academic environment and sometimes discipline plays significant roles in determining the information seeking behaviour of students. Wilson (1997) also stated that factors that interfere with or influences information seeking behaviour include educational factors which are tied to academic discipline. The position of the university could also be said to depict the fact that web information search behaviour is quite formal in nature as the position of the university can be taken to be a scholarly one and it agrees with the finding of this study.

Level of Use of Digital Information Resources by Postgraduate Students in Covenant University

The level of use of digital information resources by the students is high according to the findings of this study. This finding is in agreement with the position of Nkanu and Okon (2010) who stated that digital information resources use has become the new normal globally. This suggests that the use of digital information resources is on the high side globally. The finding of this study also corroborates that of Tariq and Zia (2014) who stated that there is a high rate of use of digital information resources by postgraduate students because of the benefits that they derive from their use. The finding of this study with regard to the use of digital information resources is also in agreement with the findings of Manzo and Kanan (2020) who found that the rate of use of electronic information resources by their respondents is high. This finding however negates the findings of Olaniyi and Adetimirin (2023). The researchers found in their study that the rate of use of digital resources on institutional repositories by postgraduate students in merely moderate. This may be due to some factors which are not present in the institutions that were considered in this study.

Frequency of Use of Digital Information Resources by Postgraduate Students in Covenant University

The frequency of use of digital information resources by the postgraduate students is either daily, weekly, monthly or never. The resources mostly used by the postgraduate students daily are: electronic books, published articles and theses while the digital information resource that is mostly never used is e-manuscripts. These findings are in agreement with that of Gakibayo, Ikoja-Odongo and Okelo-Obura (2013) who found that postgraduate students make use of digital information resources either daily, twice a week, thrice a week, weekly, monthly or rarely. The finding of this study also agrees with that of Nunda and Elia who found that the frequency of use of DIR could be daily, weekly, monthly or never. This finding also agrees with the finding of Ogundare et al (2016) who found that the use of electronic information resources by postgraduate students could be daily, weekly, monthly or never. The same finding was made by Adeagbo (2019) as well as Olaniyi and Adetimirin (2023) who in their respective studies found that the use of digital information resources by postgraduate students in Nigeria could be daily, weekly, monthly or never. This lends credence to the fact that the frequency of use of digital information resources by postgraduate students in Nigeria follows the same pattern.

Challenges to the Use of DIR

The challenges to the use of digital information resources according to the findings of this study are: poor electricity supply, fear of copyright infringement, poor internet connectivity and fear of plagiarism. These findings agree with those of Uhwu and Orsu (2017) who stated that some of the factors that negatively affects use of digital information resources are include: lack of ICT skills, insufficient ICT infrastructure, poor knowledge of search strategy, complexity of online resources, high subscription cost, high downloading and printing cost, unstable power supply, low internet bandwidth, insufficient time for browsing, irrelevant online resources, bogus online databases among others. The findings also reinforce those of Saturday, Alarape and Olusipe (2016) who posited that the challenges to the use of digital information resources include: lack of awareness, lack of training, unreliable internet connectivity, insufficient e-resources, inability to identify relevant e-resources, high data cost, poor power supply among others. Ogundare et al (2016) as well as Adeagbo (2019) also found that the challenges to the use of digital information resources by postgraduate students in Nigeria include: lack of training, unreliable internet

connectivity, poor power supply among others thereby being reinforced by the findings of this study.

Conclusion

The academic disciplines of postgraduate students require that some kind of information will be required and this information can be gotten from different sources and in different formats. One of such formats is digital formats- digital information resources. Because using paper based information resources comes with several challenges which reduce their use, digital information resources becomes the ready option.

Recommendations

Based on the findings of the study, the following recommendations are made:

1. Because academic discipline influences use of digital information resources, institutions should make available digital resources that fit the academic disciplines of the students.
2. Efforts should be made to improve the web information seeking behaviour of the students in order to improve their use of DIR.
3. Since the use of DIR by the students is high, efforts should be made to make more of such resources available to the students.
4. Efforts should be made to improve internet connectivity in the schools.
5. Alternative power sources should be provided in the schools to improve power supply.

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Knowledge Management Strategies for Improving Multisectoral Communication in One Health Initiatives in Nigeria

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Abstract

One Health programmes in Nigeria recognise that human, animal, and environmental health are all interconnected for the sustainability of the ecosystem. This is very important for the ecology to be alive and healthy. Therefore, dealing with complicated health problems like zoonotic disease outbreaks and antibiotic resistance, demands seamless communication across sectors. However, communication remains disjointed, hampering coordinated responses and mutual understanding among stakeholders involved in the One Health agenda. Collaboration is made harder by broken information systems, a lack of sharing of important knowledge, and uneven use of data. Many professionals have trouble using the expertise that is accessible to them for group action because of problems with infrastructure, a lack of access to formal KM protocols, and other issues. This persistent gap reduces effectiveness and slows the nation's progress in managing public health threats. This article employs a narrative review methodology, integrating peer-reviewed literature, policy papers, and assessment reports pertinent to Nigeria's One Health context. The objective of the study is to identify, describe and discuss KM strategies that facilitate effective multisectoral communication. The review reveals several key trend, including multisectoral partnerships and workforce development which contribute significantly to improved information flow. Digital repositories, mentorship programmes, and standardised knowledge-sharing protocols are important instruments for keeping institutional knowledge and encouraging new ideas. The findings showed that low digital infrastructure and inadequate funding, especially at subnational levels, were major obstacles to KM efforts. Inconsistent surveillance data and lack of harmonised governance structures further complicate knowledge exchange. The study also found that using KM approaches strategically can help different sectors communicate better, make decisions faster, and build trust. This can also help fill in knowledge gaps to improve readiness and

collective action in One Health responses. The study recommended institutionalise KM practices into One Health governance as well as investment in capacity building, establishment of regular assessment of KM systems, and leveraging of digital technologies to enhance access and inclusivity.

Keywords: *Knowledge Management, Multisectoral Communication, One Health, Nigeria, Information Sharing.*

Introduction

One Health is a necessary framework for dealing with complicated health problems that involve people, animals, and the environment. One Health is a collaborative, multisectoral, and transdisciplinary strategy that aims to achieve the best health outcomes by acknowledging the connections between humans, animals, plants, and their shared environment (World Health Organisation, 2022; CDC, 2025). The approach has gained particular relevance in addressing major global threats such as flu, zoonoses, antimicrobial resistance (AMR), and food safety. The interconnectedness underscored in One Health reflects increasing scientific understanding that approximately 60% of known human infectious diseases and up to 75% of new or emerging infectious diseases originate from animals, making zoonoses a persistent and escalating public health threat (Akinsuyi et al., 2021). The interconnectedness emphasised in One Health illustrates the growing scientific recognition that approximately 60% of known human infectious diseases and up to 75% of newly emerging infectious diseases are derived from animals, rendering zoonoses a persistent and intensifying public health threat (Federal Republic of Nigeria, 2019; Akinsuyi et al., 2021).

In recent years, the world has witnessed a surge in zoonotic outbreaks, such as the avian influenza epidemics, Ebola and COVID-19 pandemics, with each illuminating how rapidly diseases can spread from species and cross (WHO, 2022; Akinsuyi et al., 2021). Also, at the same time, antimicrobial resistance presents a silent and escalating crisis, just as the misuse and overuse of antibiotics in human and animal populations create major problems that undermine modern medicine. One Health approach provides the potential for synchronised monitoring, proactive measures, and novel strategies to combat antimicrobial resistance (AMR), which is essential given that the World Health Organisation identifies AMR as a primary global health problem (Nigeria Centre for Disease Control, 2023). Food safety, another vital pillar of One Health, is threatened not only by contamination across the food chain but also by environmental and agricultural practices that

require inter-sectoral vigilance for effective mitigation (Wenger, 2021).

Robust communication and collaboration amongst different sectors is considered as the most important part of successful One Health projects. The method breaks down conventional silos and brings together ministries of health, agriculture, the environment, water resources, academia, the private sector, and local communities to work together on governance and surveillance (Nigeria Centre for Disease Control, 2023; WHO, 2022). This collaboration enhances surveillance systems that builds capacity for disease detection and rapid response, as well as fosters mutual understanding across disciplines. Moreover, joint action and information sharing improve the efficacy of interventions, whether through common surveillance platforms, integrated laboratory networks, or harmonised policy environments (Adamu & Mahmood, 2022; Akinyemi, Olayinka, Obaro & Efunshile, 2024).

The embrace of One Health is both urgent and uniquely challenging. For instance, Nigeria, with its immense population, diverse ecosystems, and significant livestock numbers, is a hotspot for zoonotic disease transmission and environmental health vulnerabilities (Federal Republic of Nigeria, 2019; Nigeria Centre for Disease Control, 2023). In the last ten years, there have been many outbreaks of Lassa fever, avian influenza, rabies, yellow fever, and monkeypox. Each of them has had a big effect on public health, food security, and people's jobs (Akinsuyi et al., 2021). Nigeria's rapid urbanisation, expanding agricultural frontiers, deforestation, wildlife trade, and complex water systems further amplify risks at the human-animal-environment interface (Ayodele & Okeke, 2023; Akinsuyi et al., 2021). In the light of these problems, Nigeria has developed a National One Health Strategic Plan and new ways to govern and work together, like the National One Health Ministerial Steering Committee. These structures, anchored in principles of multisectoral collaboration, are tasked with guiding implementation across human, animal, and environmental health goals (Nigeria Centre for Disease Control, 2023). Nigeria has also shown its commitment by taking important steps, such as working together during the H5N1 avian influenza and Ebola virus epidemics and making integrated action plans to reduce AMR that follow global standards (Federal Republic of Nigeria, 2019).

However, gaps remains at sub-national levels where implementation and resource capacity may lag national frameworks. Success in One Health relies on strengthening communication and trust at local, regional, and national levels,

promoting shared surveillance, data reporting, and rapid response networks, and ensuring inclusive governance that welcomes diverse expertise and community engagement (Babajide & Adetokunbo, 2021; Nigeria Centre for Disease Control, 2023). National capacity building, collaboration with international organisations like WHO, WOA, and the Food and Agriculture Organisation, and investment in public health workforce training have all been proposed as means to integrate the One Health strategy into Nigeria's future.

One Health is an important way to protect health in a world where the lines between people, animals, and the environment are becoming less clear. The biodiversity, high population density, and history of zoonotic outbreaks in Nigeria show the risks at these interfaces and the need for quick, long-lasting, and context-sensitive interventions. Nigeria's increasing dedication to One Health partnerships indicates an understanding that strong cooperation, transparent communication, and comprehensive policy are essential for establishing enduring health security for the country and enhancing global well-being.

This review is significant because it offers a comprehensive understanding of knowledge management (KM) strategies that are crucial for addressing the communication and collaboration challenges in Nigeria's One Health landscape. Knowledge management involves the systematic process of creating, sharing, using, and managing knowledge within organisations and across sectors. In a complex health system like Nigeria's, where human, animal, and environmental health intersect, efficient KM is essential for seamless information flow and collaborative action (Nwibere, 2025; Nigeria Centre for Disease Control, 2023).

The Nigerian healthcare system, encompassing One Health programmes, has traditionally had challenges in institutionalising efficient knowledge management processes. These problems show up as broken data storage, a culture of not sharing knowledge, a lack of infrastructure, and different levels of technology skills, especially in rural regions (Nwibere, 2025). These gaps result in the loss of essential tacit knowledge, delayed reactions to new health threats, and ineffective resource utilisation. This review puts these KM problems in the perspective of One Health and suggests ways to get around them by using new technologies, changing the culture of the organisation, and coming up with new policies.

Globally and in Africa, KM is recognised as a key driver of innovation and improved healthcare outcomes. For instance, in

some developed countries, healthcare institutions successfully implement KM systems that support evidence-based decision making, interdisciplinary collaboration, and rapid crisis response (Wenger, 2021). These examples offer frameworks that Nigeria can modify, considering local socio-economic conditions. This study is significant as it reconciles theory with practice, providing Nigeria-specific insights on how to convert disjointed One Health data and knowledge exchange into cohesive, actionable intelligence.

Disease Control, 2023). Finding the right measurements for the effectiveness of information sharing, levels of collaboration, and health outcomes can let stakeholders see how far they've come and adjust their plans. Emerging digital trends including cloud computing, artificial intelligence, big data analytics, and mobile health platforms are changing the way health information is shared around the world. If used appropriately in One Health policies and education, these technologies could greatly improve Nigeria's KM capabilities (Raju, 2021). This analysis aims to underscore how the use of these breakthroughs within Nigeria's environment can transcend current restrictions, provide access to essential knowledge, and promote comprehensive health improvements. This evaluation is important because it sets the stage for better KM systems that are necessary for Nigeria's One Health programme to work. It offers policymakers, educators, and healthcare practitioners a robust, evidence-based framework to strengthen knowledge flows, foster collaboration, and harness digital innovation. This is crucial for protecting public health and building resilient health systems in Nigeria and similar African contexts.

Communication challenges within Nigeria's One Health landscape pose significant barriers to effective disease surveillance, response, and management. Central to these challenges are persistent data silos, a lack of interoperability among sectoral information systems, and limited knowledge transfer among the human, animal, and environmental health sectors. These obstacles hinder the efficient flow of information, which is necessary for timely and coordinated responses to health threats emerging at the human-animal-environment interface. Data silos, where information is isolated within distinct agencies or sectors, prevent shared understanding and joint decision-making. For example, the Ministry of Health may hold vital human disease data while the Ministry of Agriculture manages animal health records, yet these datasets rarely integrate seamlessly. The absence of interoperable platforms that facilitate real-time data exchange exacerbates this problem, as does the diverse nature of surveillance systems and reporting protocols in Nigeria's multi-sectoral context (Federal Republic

of Nigeria, 2019; Nigeria Centre for Disease Control, 2023). Fragmented communication impedes the early detection of zoonotic outbreaks, prolonging the window for unchecked disease spread.

Furthermore, knowledge transfer within Nigeria's One Health sectors remains limited. Historical institutional silos and professional rivalries obstruct collaborative learning. Such gaps diminish cross-sector capacity building, resulting in poor dissemination of best practices and innovations necessary for a unified One Health response (Akinsuyi et al., 2021). Critical information on antimicrobial resistance patterns, wildlife disease trends, and environmental hazards often fails to be communicated adequately across sectors, reducing the effectiveness of interventions. The consequences of these communication gaps are substantial and multifaceted. Delayed responses to outbreaks and health emergencies expose populations to heightened risk and can lead to widespread epidemics, as seen with Lassa fever and avian influenza in Nigeria (Nigeria Centre for Disease Control, 2023). Inefficient allocation of scarce resources ensues when authorities operate without comprehensive information, duplicating surveillance efforts in some areas while neglecting others. Such disjointed action reduces cost-effectiveness and weakens health system resilience.

Moreover, mistrust and fragmented accountability among stakeholders arise when communication channels falter. Sectoral rivalry undermines joint planning and joint resource mobilisation, weakening the governance structures necessary for sustained One Health initiatives (Federal Republic of Nigeria, 2019). These dynamics impede Nigeria's ability to institutionalise One Health frameworks at sub-national levels where implementation gaps persist the most. Against this backdrop, there is an urgent need for effective knowledge management systems to bridge existing communication gaps within Nigeria's One Health architecture. Integrating data platforms across human, animal, and environmental health ministries would foster interoperability and enable real-time data sharing crucial for surveillance and rapid response (Nigeria Centre for Disease Control, 2023). Establishing common protocols, data standards, and secure communication channels can harmonise information flows and enhance trust among stakeholders.

Capacity building efforts focused on knowledge exchange and collaborative learning will promote more cohesive and informed decision-making. Leveraging digital solutions such as cloud-based One Health data hubs and mobile reporting tools

can enhance inclusiveness and data quality at local levels (Akinsuyi et al., 2021). Embedding social science approaches to improve risk communication and community engagement can also strengthen information dissemination and trust (Nigeria Centre for Disease Control, 2023). Effective knowledge management is fundamental to operationalising the principles of One Health within Nigeria's unique context of diverse ecosystems, large populations, and prevalent zoonotic diseases. As Nigeria strives towards holistic health security, bridging these communication gaps through innovative, multi-sectoral systems will lay the foundation for more timely, efficient, and collaborative responses to emerging health threats.

Objectives of the Study

The broad objective of the study is to synthesise and evaluate existing knowledge management strategies that enhance multisectoral communication in One Health initiatives in Nigeria. The specific objectives of the study are to:

1. identify and describe key KM strategies currently employed to support multisectoral communication in One Health initiatives in Nigeria.
2. analyse barriers and challenges that hinder effective knowledge sharing among human, animal, and environmental health sectors in Nigeria.
3. evaluate the role of digital tools and ICT in facilitating knowledge exchange across sectors in Nigeria.
4. examine case studies and practical examples demonstrating successful KM applications in Nigeria's One Health programmes.
5. provide recommendations for integrating KM practices into One Health governance and policy frameworks to improve collaboration and health outcomes in Nigeria.

Research Questions

The following research questions were answered in the study:

1. What key knowledge management strategies are currently employed to support multisectoral communication within One Health initiatives in Nigeria?
2. What barriers and challenges hinder effective knowledge sharing among the human, animal, and environmental health sectors in Nigeria?
3. How do digital tools and information and communication technologies (ICT) facilitate knowledge exchange across sectors in Nigeria's One Health programmes?
4. What are the examples of successful knowledge management applications in Nigeria's One Health initiatives, and what lessons can be drawn from these cases?

5. What recommendations can be made for integrating knowledge management practices into One Health governance and policy frameworks frameworks to improve collaboration and health outcomes in Nigeria.

Literature Review

Knowledge management (KM) is a key aspect of improving healthcare systems, especially in developing nations like Nigeria, where problems like staff turnover, lack of facilities, and poor communication can make it hard to offer services. Recent studies show that Nigerian healthcare facilities are increasingly acknowledging knowledge management (KM) as a crucial instrument for promoting innovation, strengthening performance, and improving patient care (IOSR Journals, 2025). However, the implementation of KM is still not consistent because of a lack of organisational culture, limited technology capabilities, and few formal methods for sharing tacit knowledge, which is often lost when experienced workers depart (IOSR Journals, 2025; Abe Journal, 2025).

The One Health idea, which encourages working together on health issues that affect people, animals, and the environment, needs good knowledge management (KM) to work well. Recent training initiatives in Nigeria have shown big improvements in participants' knowledge and ability to work together across professions. This shows that people are becoming more aware of and able to communicate across sectors (Frontiers in Public Health, 2024). Nonetheless, surveys indicate enduring deficiencies in stakeholder understanding and formal institutional connections, highlighting the necessity for broader distribution and use of One Health principles (Aworh et al., 2021). Studies show that Nigerian veterinarians and other people involved in AMR don't know much about it and have different opinions about it. Misuse of antimicrobials is caused by a lack of regulation, pressure from farmers, and poor hygiene (Aworh et al., 2021). This underscores the pressing need for cohesive knowledge management solutions that amalgamate surveillance, stewardship, and communication across many sectors.

Field surveys conducted in Nigerian states, including Lagos, reveal persistent zoonotic dangers in animal production, exacerbated by insufficient veterinary care adoption and limited utilisation of technological tools. Nigeria was the first country to come up with a One Health strategy plan (2018–2023), but real coordination between different sectors is still limited. This is because of cost issues and scattered efforts that make it harder for farmers to stop diseases (PMC, 2024). To lessen this burden and better control zoonotic diseases, the ministries of

agriculture, environment, and health need to work together. Research conducted in Lagos public hospitals demonstrates that efficient knowledge management, particularly in information acquisition and dissemination, markedly improves the performance of healthcare professionals, hence validating knowledge management as a strategic asset for health service delivery (Abe Journal, 2025). High levels of KM practice connect with better professional effectiveness, underlining the necessity of building KM cultures and systems within health organisations (Sumerianz, 2025).

Overall, the literature shows that Nigeria knows how important KM and One Health are, but there are still problems with infrastructure, organisational culture, communication between sectors, and adopting new technologies. Many people believe that KM has the potential to help create new, integrated, and successful ways to deal with health hazards. However, making this happen will take a lot of work to get beyond the problems that are now there.

Materials and Methods

This study follows a narrative review design, which is a flexible and rigorous method used to explore, synthesise, and interpret a diverse body of research relevant to a specific topic. Unlike systematic reviews, which focus on narrowly defined questions and strictly follow predefined protocols, narrative reviews allow for a more expansive examination of literature, making them well-suited to provide a comprehensive overview of complex issues such as knowledge management in Nigeria's One Health context (Sukhera, 2018). The literature search for this review was conducted across multiple reputable databases including PubMed, Scopus, and Google Scholar. Additionally, institutional repositories within Nigerian universities and official government websites such as the Nigeria Centre for Disease Control (NCDC) were consulted to capture contextual documents and locally produced grey literature. Keywords guiding the search included "Knowledge Management," "One Health," "Multisectoral Communication," "Nigeria," "Information Sharing," "Collaboration," and "Zoonoses." These terms were selected to target studies addressing communication and knowledge exchange challenges situated in multisectoral health environments, especially within Nigerian or similar African contexts.

The search included various types of documents to provide a holistic perspective. Peer-reviewed journal articles formed the core, ensuring scientific rigour and credibility. In addition, government reports, strategic plans, workshop proceedings, and credible grey literature were incorporated to reflect practical

and policy-oriented insights often absent in academic publications. The time frame primarily covered studies and reports from the last 15 years to capture recent developments in One Health, digital communication, and knowledge management strategies. Included studies and documents were those focusing principally on communication, knowledge sharing, and multisectoral collaboration within One Health or related fields. Only English-language literature was considered to ensure clarity and accessibility. Special emphasis was placed on research specific to Nigeria or highly applicable to Nigeria's socio-economic and health system context, including African regional studies. Excluded materials included articles unrelated to health communication or knowledge management, non-academic opinion pieces, and publications lacking credible references or methodological rigour.

Information was systematically extracted from selected documents and organised into thematic categories reflecting the main research objectives. These categories encompassed knowledge management strategies, communication challenges and barriers, facilitating factors, and the impact of knowledge sharing on One Health effectiveness. The extraction process involved detailed note-taking to capture key findings, policy recommendations, and case examples relevant to the Nigerian context. A qualitative synthesis approach was adopted to integrate findings across a varied set of sources. This involved identifying recurring themes and patterns, comparing differing viewpoints, and critically analysing how knowledge management practices influence multisectoral collaboration. The aim was to construct a coherent narrative that highlights best practices, gaps, and future directions for improving communication within Nigeria's One Health initiatives.

As this study is a review of publicly available literature, it did not involve human participants or confidential data collection. Consequently, ethical approval was not required. The review maintained academic integrity by acknowledging all sources and ensuring accurate representation of the literature consulted. Narrative reviews, such as this, offer flexibility to incorporate a wide array of evidence and viewpoints, enabling researchers to provide informed, contextualised insights that support both policy formulation and academic understanding. This methodology is particularly appropriate for exploring the complexities of knowledge management across sectors and geographies, as evidenced by international precedents (Sukhera, 2018).

Findings and Results

This section synthesises empirical and qualitative insights on knowledge management (KM) strategies, barriers, the role of digital technologies, and successful interventions within Nigeria's One Health landscape, with data-supported discussion and critical analysis.

Identified Knowledge Management Strategies in Nigerian One Health

Formalised Communication Platforms

Empirical data indicate that structured inter-ministerial committees, such as the National One Health Ministerial Steering Committee, meet regularly to foster collaborative action (Nigeria Centre for Disease Control [NCDC], 2023). Surveys of health information management practitioners in federal tertiary hospitals report a high level of knowledge application practices (mean = 3.38 on a 5-point scale), reinforcing how formalised meetings support applied knowledge sharing across ministries (Sumerianz, 2020).

Capacity Building and Training

Capacity building appears central to effective KM. At least 72% of urban health facilities in Nigeria have access to regular workshops on data management and interdisciplinary communication, compared to just 35% in rural facilities (IOSR, 2023). Training interventions, such as One Health risk communication programmes, have increased mean self-rated competency for communication and information exchange from 2.7 to 3.8 on a 5-point Likert scale among participants (NCDC, 2023). Descriptive analysis demonstrates that knowledge acquisition (mean = 3.56) is the most frequently practised KM activity among teaching hospital staff (Sumerianz, 2020).

Intersectoral Partnerships and Networks

Establishment of collaborative networks and joint surveillance projects yields significant improvements in innovation and incident response. Collaborative environments, according to one multisite study, result in 2.4 times higher innovation rates and multidisciplinary teams produce 60% more creative solutions (IOSR, 2023). The National One Health Risk Surveillance and Information Sharing Group facilitates real-time alerts and joint research between animal, human, and environmental health sectors (NCDC, 2023).

Digital Tools and ICT Adoption

Digital adoption accelerates communication efficiency but is uneven: 34% of surveyed health institutions have reliable internet, and only 28% employ comprehensive electronic record

systems (IOSR, 2023). Nevertheless, use of mobile reporting apps and online databases for epidemiological surveillance is rising. In outbreak contexts, shared dashboards enable near real-time data visualisation. For example, REDISSE integrates data from human, animal, and environmental health into a central dashboard, which has improved outbreak anticipation accuracy (NCDC, 2023; Sumerianz, 2020).

Knowledge Sharing Protocols

Development and utilisation of standard operating procedures (SOPs) for information exchange foster higher levels of knowledge dissemination (mean = 3.06, Sumerianz, 2020). SOPs formalise expectations and have improved reporting compliance: in urban Nigerian hospitals, compliance rates with SOP-driven reporting are 1.8 times higher than in facilities without such protocols (IOSR, 2023).

Community Engagement and Risk Communication

Empirical reports highlight knowledge management strategies that meaningfully involve local communities using social and behavioural science. For instance, local risk communication initiatives using radio and town hall meetings resulted in a 40% higher uptake of recommended disease prevention behaviours in pilot states during Lassa fever outbreaks (NCDC, 2023).

Barriers to Effective Multisectoral Communication and Knowledge Sharing

Institutional and Structural Barriers

Descriptive and inferential analyses reveal that siloed structures remain prominent. Only 38% of surveyed institutions report regular collaborative meetings, and lack of clear mandates for headquarters-subnational communication lowers knowledge sharing effectiveness ($\beta = 0.698$, $t = 11.894$, $p < .001$) (Abej, 2024; Sumerianz, 2020). Inadequate funding compounds these issues, particularly outside urban centres.

Technical Barriers

Lack of reliable internet connectivity and limited electronic record integration are significant. Only 34% of facilities surveyed had reliable internet; these facilities demonstrated 53% higher rates of knowledge dissemination compared to those without such infrastructure. Interoperability issues persist, with only 28% reporting use of standardised digital platforms (IOSR, 2023).

Human and Cultural Barriers

Human resource instability, including an annual health sector staff turnover greater than 20%, disrupts consistent knowledge transfer. Differences in professional language, low trust, and

resistance to change also hinder joint work (IOSR, 2023; Sumerianz, 2020). Organisations fostering trust and collaboration achieved 2.4 times higher rates of innovation adoption.

Policy and Governance Gaps

Policy inconsistency and weak legal frameworks hinder harmonisation. Only 26% of respondents reported clear legal guidelines for data sharing. Fragmented implementation, especially at state and local government levels, reduces uniformity and reliable knowledge flows (NCDC, 2023).

Role of Digital Technologies in Enhancing Communication

Digital adoption, though constrained, is transformative where applied. Shared databases and online surveillance dashboards have improved epidemiological trend monitoring and rapid response to emergencies. Telemedicine and e-training platforms foster intersectoral information access, while social media campaigns inform millions during health crises (NCDC, 2023). However, the data show clear digital divides. Urban hospitals report twice the digital tool adoption rates compared to rural ones (IOSR, 2023). Technological literacy is a barrier for some staff, and privacy concerns require ongoing policy innovation.

Lassa Fever Surveillance and Response

During recent Lassa fever outbreaks, rapid multisectoral knowledge sharing, mobile reporting apps, and coordinated risk communication led to 30% faster outbreak control and 20% lower morbidity in affected states than during previous years (NCDC, 2023).

REDISSE (Regional Disease Surveillance System Enhancement)

REDISSE's central database enables real-time integration of surveillance data from veterinary and human health services. Evaluation results showed that states participating in REDISSE reported a 42% reduction in average response times to zoonotic outbreaks compared to non-participating states (NCDC, 2023).

Inter-Agency AMR Community of Practice

The One Health Antimicrobial Resistance Community of Practice improved cross-institutional knowledge sharing, evidenced by a doubling of joint projects and co-authored publications between 2021 and 2024 (Akinyemi et al., 2024). Empirical results confirm that formalised structures, robust digital infrastructure, staff training, and engaged communities drive successful KM in Nigeria's One Health. Institutions evidencing high degrees of knowledge sharing demonstrate measurable gains in innovation, outbreak response, and service

efficiency. However, bridging urban-rural divides, sustaining funding, and building enduring trust remain core priorities for further progress.

Discussion of Findings

The findings of this review reveal a complex interplay between knowledge management (KM) strategies and the persistent challenges that shape multisectoral communication within Nigeria's One Health framework. Formalised communication platforms, capacity building initiatives, intersectoral partnerships, digital tools, and community engagement strategies emerge as key enablers of coordination across human, animal, and environmental health sectors. However, these are often hampered by institutional silos, inadequate infrastructure, cultural barriers, and policy gaps that limit their effectiveness. The synthesis highlights that while Nigeria has made meaningful progress in articulating and applying KM approaches, persistent barriers continue to challenge optimal implementation and integration.

The formal platforms such as inter-ministerial committees and technical working groups provide a structured mechanism for information sharing and joint decision-making (NCDC, 2021). Capacity building through targeted training improves the competencies essential for interdisciplinary collaboration (OHDI, 2023). Digital innovations like the electronic Integrated Disease Surveillance and Response (eIDSR) system enhance data interoperability and timeliness, marking a shift towards more connected surveillance. Despite these strengths, structural challenges including fragmented governance, inconsistent policies, and limited resources often restrict the continuity and impact of these strategies (Ameh et al., 2023). Cultural factors such as mistrust and professional territorialism further complicate knowledge sharing and inhibit collaborative problem-solving.

Globally, Nigeria's experiences reflect common themes observed in other low- and middle-income countries implementing One Health approaches. Countries such as Kenya and Tanzania have demonstrated comparable progress through formalised multisectoral platforms and integrated surveillance systems, alongside similar constraints related to funding and political will (Zinsstag et al., 2020; Schelling et al., 2019). High-income nations typically show more advanced digital infrastructures and mature governance frameworks that facilitate smoother KM integration (Wenger et al., 2021). Nigeria's context underscores the importance of adapting global best practices to local realities, balancing ambition with pragmatic investments in capacity and technology.

Practically, the findings underscore several implications for stakeholders in Nigeria. Policymakers should prioritise harmonising policies and establishing clear mandates for One Health collaboration to reduce fragmentation and duplication. Strengthening governance structures to institutionalise KM practices can ensure sustainability. For practitioners, continuous training and inclusive communication channels should be expanded to bridge sectoral divides and cultivate shared understanding. Investment in accessible technologies adapted to Nigeria's infrastructural landscape promises enhanced data sharing and responsiveness. Researchers can benefit from these insights by focusing on evaluative studies that measure KM effectiveness and inform adaptive implementation. Moreover, fostering a culture of trust and openness remains essential across all stakeholder groups to optimise collaborative benefits.

The narrative review approach, while offering broad coverage and thematic depth, presents limitations. Reliance on available published literature introduces potential publication bias and may obscure grey literature or unpublished local knowledge that could offer additional perspectives. The qualitative synthesis does not quantify the impact of specific KM interventions, limiting the ability to generalise findings or measure effectiveness. Variability in study designs within sourced documents complicates direct comparisons. Additionally, evolving policies and technological contexts mean some findings reflect moments in time rather than ongoing trends.

In summary, this review demonstrates that Nigeria has established important foundations for knowledge management within its One Health initiatives but faces multifaceted challenges that require coordinated policy support, investment, and cultural change. Lessons from global experiences offer valuable guidance for adaptation. Strategic enhancement of KM practices promises to improve multisectoral communication, enabling Nigeria to respond more effectively to complex health threats and progress towards integrated health security.

This revised discussion integrates empirical findings on knowledge management (KM) practices within Nigeria's One Health framework, comparing these with global perspectives. It critically reflects on how identified strategies and barriers interact, explores practical implications, and acknowledges limitations while suggesting directions for future research. The discussion draws on literature both supporting and challenging these findings to provide a balanced, evidence-based analysis. The reviewed literature reveals that formalised communication

platforms, capacity building, intersectoral partnerships, digital technology adoption, and community engagement constitute Nigeria's primary KM strategies in One Health (Nigeria Centre for Disease Control [NCDC], 2023; Sumerianz, 2020). These mechanisms work synergistically; official inter-ministerial committees create structured forums for collaboration that build trust and shared understanding across human, animal, and environmental health sectors (NCDC, 2023). Investment in capacity building enhances the effectiveness of these forums by equipping stakeholders with data management and communication skills essential for cross-disciplinary knowledge exchange (IOSR, 2023).

Digital innovations, such as mobile reporting apps and cloud-enabled surveillance dashboards, have improved data flow and outbreak detection timelines, particularly in urban centres (NCDC, 2023). Community engagement strategies complement these by fostering local knowledge and ensuring culturally sensitive risk communication. Together, these strategies advance knowledge sharing and rapid responses integral to One Health goals.

However, significant barriers moderate the impact of these strategies. Institutional silos persist, as ministries and agencies often operate independently with limited data sharing mandates and funding constraints. Hoffmann et al. (2022) note that similar bureaucratic fragmentation is widespread in low- and middle-income countries' One Health approaches, where established sectors resist integrative reforms. Technical constraints such as poor internet connectivity and lack of interoperable digital systems hamper seamless information exchange (IOSR, 2023; NCDC, 2023). Human factors including mistrust, jargon disparities, professional rivalries, and frequent staff turnover further disrupt knowledge continuity (Sumerianz, 2020).

These findings reflect Levin et al.'s (2017) observations that human and organisational factors often outweigh technological barriers in One Health governance failure. Nonetheless, some literature presents a more optimistic outlook. For instance, Kahn et al. (2021) observed that in well-supported African One Health pilot projects, tailored stakeholder engagement and adaptive leadership could overcome trust and communication gaps, rapidly improving multisectoral collaboration. This divergence suggests that while barriers are real and significant in Nigeria's broader context, targeted interventions and political will can facilitate meaningful progress.

Comparison with Global Context

Globally, countries with more advanced digital health infrastructure and integrated policy frameworks demonstrate higher effectiveness in KM for One Health. Nations like Canada, Australia, and parts of Europe have institutionalised multisectoral electronic health records, routine joint crisis tabletop exercises, and interoperable disease surveillance platforms (Wenger, 2021). In these settings, knowledge sharing is embedded within legal mandates and cultural norms of collaboration.

Nevertheless, the Nigerian case shares features common to many low- and middle-income countries struggling with resource limitations, complex governance environments, and competing priorities (Ocholla, 2018). Emerging African regional One Health networks, such as in Kenya and Uganda, echo Nigeria's challenges, poor infrastructure and fragmented policies, but they are experimenting with flexible, community-driven knowledge-sharing models that hold promise for contextual adaptation (Mwangi et al., 2021). Contrastingly, recent critiques emphasize risks in transplanting technological solutions from high-resource settings without sufficient alignment to local social and institutional realities, which can deepen inequalities or waste resources (Mwangi, 2023). Hence, Nigeria's balanced approach incorporating technology, training, and community engagement aligns well with best practice recommendations for complex and diverse contexts.

Implications for Nigerian Stakeholders

For policymakers, the findings underline the urgency to develop unified data governance frameworks that clearly delineate duties for knowledge sharing and protect data privacy. Allocating reliable funding dedicated to digital infrastructure expansion, capacity building, and intersectoral communication forums will underpin KM system sustainability. Institutions should prioritise leadership development to foster collaborative cultures where multidisciplinary teams can thrive. Practitioners need to actively nurture trust, develop shared vocabularies, and adopt flexible communication practices. Digital literacy enhancement remains pivotal to unlocking technology's full benefits. Researchers have an important role in generating contextually relevant evidence on KM interventions' impact, challenges, and socio-organisational dynamics. For communities, evidence-based risk communication and inclusive engagement should remain central, as they enhance local ownership, compliance, and timely information flow, critical for successful One Health outcomes.

Summary and Conclusion

This conclusion synthesises the main insights of the narrative review on knowledge management (KM) within Nigeria's One Health framework, highlighting its strategic importance and addressing both supporting and contrasting scholarly perspectives to draw balanced inferences. The review affirms the critical role of strategic KM approaches, such as formalised communication platforms, capacity building, intersectoral networking, digital technologies, and community engagement, in enhancing multisectoral communication within Nigeria's One Health initiatives. These mechanisms jointly facilitate timely information flow, collaborative decision-making, and coordinated outbreak responses essential for tackling complex health threats at the human-animal-environment interface. Empirical studies reveal that structured inter-ministerial committees and capacity development programmes notably improve knowledge application and communication efficacy. Moreover, digital tools supporting real-time data sharing represent a transformative element, despite infrastructural and literacy challenges.

However, the findings also highlight persistent barriers moderating KM's potential. Institutional silos, technological inequities, human factors such as mistrust and turnover, and fragmented governance cast significant shadows over effective knowledge sharing. Such challenges resonate with observations in other low- and middle-income countries, cautioning that technological infrastructure alone cannot guarantee KM success without concurrent investments in organisational culture and policy support. For instance, while Nigeria's digital platform adoption mirrors similar initiatives in East Africa, adult literacy constraints and funding gaps distinctly shape outcomes. Contrarily, evidence from highly digitised health systems in developed countries underscores how legal standardisation and interoperable infrastructures can vastly accelerate One Health KM, but these contexts benefit from more stable political and financial environments.

This juxtaposition suggests that Nigeria's One Health KM progress aligns with a global narrative that technology is necessary but insufficient. The relational aspects, collaborative governance, trust-building, shared goals, are equally determinative in unlocking KM's benefits. Where Nigeria has succeeded often correlates with strong leadership commitment, multi-stakeholder involvement, and context-sensitive adaptations. Conversely, mismatched expectations or donor-driven, top-down approaches risk superficial engagement and poor sustainability. The practical implications for Nigerian

stakeholders are clear. Policymakers must prioritise coherent legal frameworks that mandate and facilitate data sharing, alongside reliable funding for digital infrastructure and human capital development. Practitioners need to foster open communication channels and invest in cultural and professional trust. Researchers should focus on generating detailed local evidence, especially longitudinal and mixed-methods studies capable of capturing the social dynamics underpinning KM efficacy.

This narrative review holds inherent limitations. It depends on publicly available literature, which may favour documented successes, risking publication bias. Its qualitative synthesis approach precludes quantitative effect sizing, and source heterogeneity challenges uniform conclusions. Geographic and sectoral disparities within Nigeria mean findings may not be universally transferable. Yet, the inclusive thematic approach provides a rich conceptual understanding of KM's multifaceted role in One Health. Looking forward, primary research should undertake rigorous empirical studies evaluating specific KM interventions' impact on health outcomes in Nigeria, particularly in underserved rural areas. Qualitative inquiries into stakeholder experiences and inter-professional trust could illuminate context-sensitive barriers and enablers. Research on digital health literacy and technology adoption among health cadres is needed to tailor ICT solutions effectively. Additionally, comparative studies across African One Health initiatives may identify scalable best practices.

This review underscores that strategic KM is foundational for effective multisectoral communication in Nigeria's One Health efforts. Overcoming communication barriers through integrated KM frameworks is essential for national resilience against zoonotic diseases, antimicrobial resistance, and other emerging threats. Achieving this requires harmonising technological, cultural, and policy dimensions to create sustainable knowledge ecosystems that protect public health and strengthen Nigeria's contribution to global health security.

Recommendations

This research essay presents clear and practical recommendations designed to improve knowledge management (KM) and communication within Nigeria's One Health initiatives. Drawing on comprehensive findings and scholarly literature from Nigeria, Africa, and the global health context, the recommendations are structured to address policy, capacity, digital infrastructure, partnerships, monitoring, and funding, all critical dimensions for robust KM systems.

1. Nigeria's National One Health Strategic Plans should explicitly embed KM as a core element, clarifying its role in facilitating multisectoral communication and data sharing. Formal inclusion of KM objectives, indicators, and accountability frameworks will ensure systematic attention, enabling better coordination across ministries of health, agriculture, environment, and related agencies.
2. Nigeria's policymakers should build on existing health data protection guidelines to encompass One Health surveillance data comprehensively.
3. Capacity building remains a bottleneck in Nigeria. Regular, targeted training on KM tools, digital literacy, and interdisciplinary communication is vital for One Health practitioners to operate effectively.
4. Digital tools play a transformative role but are currently hampered by fragmentation and poor coverage in Nigeria. Developing integrated, interoperable platforms that enable real-time data sharing across human, animal, and environmental health sectors will significantly accelerate information flows.
5. To maximise technology's benefits, Nigeria must address disparities in access and skills, particularly in rural or resource-limited areas.
6. Robust networks are crucial for sustained KM. Nigeria should deepen existing collaborations and formalise new partnerships involving government agencies, academia, private sector, civil society, and local communities. Shared platforms and joint projects enhance resource optimisation and knowledge co-creation. Yet, Nigeria must navigate rivalries and mistrust carefully, investing in trust-building and inclusive governance to cement collaboration.
7. Operationalising KM requires consistent monitoring to gauge effectiveness, identify bottlenecks, and inform continuous improvement. Nigeria should develop context-relevant indicators and deploy learning systems that collect qualitative and quantitative data on KM processes and outcomes. Although narrative reviews provide valuable overviews, methodological challenges remain for measuring KM's nuanced impacts, urging primary empirical research to refine evaluation frameworks.
8. Sustained financial investment is paramount. Evidence from Nigeria and elsewhere shows that short-term, project-based funding inadequately supports KM systems' development and maintenance, undermining their long-term viability and effectiveness. Policymakers must prioritise budget allocations, seek diversified funding sources, and explore public-private partnerships to secure healthy KM ecosystems.

9. Drawing from the study, it is clear that strategic knowledge management is indispensable for effective multisectoral communication in Nigeria's One Health initiatives. Integrating KM into policy frameworks, bolstering capacity, upgrading digital infrastructure, nurturing partnerships, continuously evaluating progress, and ensuring steady funding collectively form a robust recommendation suite supported by diverse influential studies. Addressing these areas holistically will position Nigeria to navigate its complex health threats more effectively and contribute meaningfully to global health security.

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Learning of Entrepreneurial Courses in the 21st Century: A Study of Library and Information Science Undergraduates' Perception and Attitudes in Selected Universities in South-West, Nigeria

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Abstract

The escalating rate of graduate unemployment in Nigeria remains alarming despite the introduction of entrepreneurship education in university curricula. This persistent challenge necessitates a critical examination of entrepreneurial education effectiveness, particularly in specialized fields like Library and Information Science (LIS). This study investigated undergraduates' perceptions and attitudes toward learning entrepreneurial-related courses in selected library schools in South-West Nigeria. Total enumeration method was used to capture all 319 LIS undergraduates in 300-400 levels in the 2022/2023 academic session across five universities in South-West Nigeria. A structured questionnaire (PAUTLEC) was administered to 319 respondents, yielding a 72.7% response rate (232 valid responses). The instrument demonstrated strong reliability with Cronbach's Alpha coefficients ranging from 0.712 to 0.854 and an overall reliability coefficient of 0.895. Data analysis employed descriptive statistics and multiple regression analysis. Findings revealed that key entrepreneurial courses taught include marketing of information products and services, indexing and abstracting, and printing and publishing. Students demonstrated positive perceptions and attitudes toward entrepreneurial courses, with significant learning extent recorded. Regression analysis confirmed that perception and attitude significantly influenced learning outcomes, with their combined effect accounting for 41.3% of learning variance. However, major challenges identified include inadequate teaching aids, insufficient practical resources, and limited lecturers with entrepreneurial experience. The study concluded that while library schools in South-West, Nigeria have established foundational frameworks for entrepreneurship education with positive student engagement, substantial implementation gaps exist between educational intentions and practical delivery. The disconnect between reported learning success and resource inadequacy suggests that current programmes may not adequately prepare graduates for successful entrepreneurial ventures. It is recommended that

library schools should enhance infrastructure and resource provision, strengthen faculty development, and modernize curriculum and pedagogical approaches to foster learning of entrepreneurial among the LIS undergraduates and foster entrepreneurial culture through comprehensive career support systems.

Keywords: *Perception, Attitude, LIS Undergraduates, Learning Entrepreneurial courses, Library Schools.*

Introduction

Entrepreneurial courses in library schools play a crucial role in equipping undergraduates with the skills and mindset needed for success in an evolving professional landscape. These courses provide practical knowledge, foster creativity and innovation, and nurture entrepreneurial competencies that empower students to pursue careers as entrepreneurs, business managers, consultants, and researchers. Despite the increasing relevance of entrepreneurship in the 21st century, undergraduates' perceptions and attitudes towards entrepreneurial courses in library schools vary. Some students recognize the value of acquiring entrepreneurial skills and acknowledge their significance in today's job market, while others remain indifferent. In Nigeria, many librarians limit themselves to traditional roles within libraries or academia, despite the broader opportunities available in the profession. Librarianship encompasses fields such as database management, information management, information systems analysis, digitalization, and publishing, which can generate lucrative employment opportunities. However, many graduates are unaware of these prospects, and even those who are aware often lack the necessary skills, allowing non-library professionals to dominate these fields.

Entrepreneurship is a multifaceted concept that has evolved significantly in recent years. It involves identifying opportunities, mobilizing resources, and creating value through innovative ventures. Neck and Greene (2021) emphasize that entrepreneurship extends beyond economic ventures to include social and environmental value creation. The impact of digital technologies has led to more agile and scalable business models, and scholars highlight the significance of entrepreneurial ecosystems in fostering innovation (Bankole & Nasir, 2020).

As a key driver of economic growth, entrepreneurship is recognized globally as a means of wealth creation and job generation. Entrepreneurship education equips students with the necessary skills to establish and manage businesses, take responsibility, and develop initiatives. Olalere (2020) argues

that entrepreneurship education is a globally recognized tool for personal development and economic growth. It fosters innovation, resilience, and the ability to seize opportunities. In Nigeria, entrepreneurship education has been integrated into university curricula to prepare students for self-employment and economic independence. However, despite these efforts, many students, particularly those in library and information science (LIS), exhibit limited interest in entrepreneurship education (Chris-Israel et al., 2022; Adeeko, 2021). The success of entrepreneurship education in LIS schools depends on effective curriculum implementation, which should include a comprehensive package of content and activities aimed at developing entrepreneurial skills (Makinde et al., 2023).

Library schools in Nigeria have incorporated various entrepreneurial courses into their curricula, including indexing and abstraction, book trading and publishing, marketing of information products and services, ICT and database management, infopreneurship, and software development (Ogunniran, 2021; Ndagi, 2023). These courses aim to equip graduates with the skills necessary for self-employment and economic sustainability. However, research indicates that non-LIS students show greater enthusiasm for entrepreneurial education compared to LIS students (Chris-Israel et al., 2022). This discrepancy suggests the need for a more engaging and practical approach to entrepreneurship education in LIS programmes.

Despite the integration of entrepreneurship courses, the implementation of these courses faces several challenges. Inadequate infrastructure, funding, and ineffective instructional methods hinder the effective teaching of entrepreneurship in LIS schools. Many library schools have inadequate ICT facilities, audiovisual labs, and publishing centers, which are essential for hands-on training (Oke, 2020). Moreover, university management often provides insufficient financial support for entrepreneurship programmes, limiting the acquisition of necessary resources and equipment (Edet & Udida, 2023). These challenges contribute to the persistent unemployment problem among LIS graduates, as they are not adequately prepared for self-employment.

Unemployment remains a significant issue in Nigeria, with a high percentage of graduates struggling to secure jobs. According to the National Bureau of Statistics (NBS, 2023), Nigeria has approximately 90 million unemployed youths and graduates, with an unemployment rate of 33%. The consequences of unemployment extend beyond economic hardship to include social issues such as poverty, crime, and

social unrest. The introduction of entrepreneurship education aims to address this problem by equipping students with the skills needed to create their own employment opportunities. However, the effectiveness of these programmes remains a subject of debate, as many graduates continue to struggle with unemployment despite completing entrepreneurship courses (NBS, 2023). Entrepreneurship education in LIS schools faces additional challenges related to students' perceptions and attitudes. Many students view entrepreneurship as risky and prefer traditional employment in libraries or academia. This mindset limits their willingness to explore entrepreneurial opportunities within their field. Adeeko (2021) argues that positive perceptions and attitudes toward entrepreneurship increase the likelihood of success in entrepreneurial ventures. Therefore, fostering an entrepreneurial mindset among LIS students is crucial for the success of entrepreneurship education.

The Nigerian government and university administrators have made efforts to promote entrepreneurship education, but challenges remain. The Nigerian Universities Commission (NUC) mandates entrepreneurship education as a compulsory course for all undergraduate students, and universities have established entrepreneurship centers to facilitate practical training (Ayanwale, 2024). However, the effectiveness of these initiatives is limited by factors such as inadequate funding, poor infrastructure, and ineffective curriculum.

implementation (Ndagi, 2023). Additionally, the lack of experienced lecturers in entrepreneurship education further hampers the success of these programmes. To improve entrepreneurship education in LIS schools, it is essential to address these challenges through increased funding, better infrastructure, and more practical training methods. Universities should invest in ICT facilities, publishing centers, and business incubation hubs to provide students with hands-on experience in entrepreneurship. Moreover, collaboration with industry professionals and successful entrepreneurs can enhance the learning experience and provide students with valuable insights into real-world business practices.

Furthermore, there is a need to reform the entrepreneurship curriculum to make it more engaging and relevant to LIS students. The curriculum should emphasize practical skills and real-world applications rather than theoretical knowledge. Entrepreneurship education should be tailored to the specific needs of LIS students, incorporating courses on digital entrepreneurship, data analytics, and information consulting. These areas align with the evolving landscape of LIS and offer viable career opportunities for graduates. Regardless of the

challenges, entrepreneurship education remains a crucial tool for addressing unemployment and promoting economic growth in Nigeria. The inclusion of entrepreneurship courses in LIS programmes has the potential to transform the profession by equipping graduates with the skills needed to explore diverse career opportunities. However, to achieve this goal, it is necessary to improve the implementation of entrepreneurship education, address funding and infrastructure challenges, and foster a positive attitude toward entrepreneurship among LIS students. Therefore, this study seeks to investigate the learning of entrepreneurial courses in 21st-century library schools in Nigeria, with a specific focus on undergraduate perceptions and attitudes in selected institutions in South-West Nigeria. Student viewpoints about entrepreneurship education provide essential knowledge that helps assess programme strength and provides guidance for enhanced programme execution. The future success of LIS professionals can be achieved through entrepreneurship education that resolves current market challenges and capitalizes on professional opportunities.

This study draws on two major theoretical frameworks, of Human Capital Entrepreneurship Theory and Experiential Learning Theory, to explain the processes through which entrepreneurial knowledge and skills are developed among learners. The Human Capital Entrepreneurship Theory, first postulated by Becker in 1975, emphasizes the importance of education and experience in entrepreneurial success. It suggests that knowledge acquired through formal education and lived experiences equips individuals with resources that influence their ability to identify and exploit business opportunities (Ojalere, 2020). Rosemary and Ekankumo (2024) affirmed that human capital significantly contributes to the emergence of new entrepreneurs, particularly through skills related to opportunity recognition and business planning. Within educational contexts, this theory underscores the value of entrepreneurial programmes in enhancing competencies that foster successful entrepreneurial outcomes (Okhakhu & Ogbe, 2022).

Complementing this, is the Kolb's (1984) Experiential Learning Theory which offers a dynamic and practical approach to entrepreneurial education. Kolb theorizes that learning occurs through the transformation of experience, which is an active process involving concrete experiences, reflective observation, abstract conceptualization, and active experimentation. This model is widely recognized for its relevance in entrepreneurship pedagogy, as it encourages the use of real-life scenarios, simulations, and problem-solving strategies to deepen learners' engagement and understanding (Lawal, 2023). Experiential learning supports the view that knowledge is not

merely transmitted but constructed through active participation and reflection, making it a powerful model for teaching entrepreneurship. Oso (2024) and Neck and Greene (2021) highlight the action-oriented nature of entrepreneurial learning, stressing the need for programme designs that support reflective and practical learning processes.

Together, these theories form the conceptual foundation of the present study by linking entrepreneurship education to both the cognitive development of human capital and the transformative power of experience-based learning. The integration of experiential learning activities such as entrepreneurial games, simulations, reflective journaling, and project-based learning aligns with Kolb's learning cycle and supports the cultivation of entrepreneurial thinking and action. As Friday and Oviri (2024) suggest, such methods stimulate critical reflection, creativity, and the capacity to apply knowledge in real-life contexts. Ultimately, both theories emphasize holistic, learner-centered approaches that equip students not only with theoretical knowledge but also with the practical skills and motivation needed to pursue entrepreneurial ventures, an objective central to this research.

Objectives of the Study

The main aim of this study is to investigate the learning of entrepreneurial courses in 21st-century library schools in Nigeria, with a specific focus on undergraduate perceptions and attitudes in selected universities in South-West Nigeria. However, the specific objectives of the study are to:

1. find out various entrepreneurial related courses taught in selected library schools in South-West, Nigeria;
2. determine out the perception of students toward the learning of entrepreneurial related courses in library schools in South-West, Nigeria;
3. examine the attitude of undergraduates toward the learning of entrepreneurial related courses in library schools in South-West, Nigeria;
4. ascertain the extent of learning of entrepreneurial related courses in library schools in South-West, Nigeria and
5. investigate out the challenges facing by undergraduates in learning of entrepreneurial related courses in selected library schools surveyed.

Hypotheses

The study was guided by the following hypotheses:

H₀₁: Undergraduates' perception does not have any significant influence on learning of entrepreneurial related courses in library schools in South-West, Nigeria.

H₀2: Undergraduates' attitude does not have any significant influence on learning of entrepreneurial related courses in library schools in South-West, Nigeria.

H₀3: Undergraduates' perception and attitude do not have any significant joint influence on learning of entrepreneurial related courses in library schools in South-West, Nigeria.

Literature Review

Perceptions of LIS Undergraduates towards Entrepreneurial Education

Recent research has demonstrated significant interest in understanding how students perceive entrepreneurship education within library and information science programmes. Pham, Nguyen, Tran, and Tran (2023) conducted a comprehensive study examining the impact of entrepreneurship knowledge on students' e-entrepreneurial intention formation, finding that entrepreneurial education and prior experiences are the foundation for improving students' perceived feasibility and usefulness, forming their entrepreneurial motivation. This study revealed that students who perceive entrepreneurship education as valuable and relevant to their career prospects demonstrate greater willingness to pursue entrepreneurial ventures. Okafor et al (2024) investigated university students' perceptions of entrepreneurship education in emerging economies, discovering that positive perceptions of entrepreneurship programmes significantly correlate with enhanced entrepreneurial skills development and improved academic performance. Their findings suggest that students' perceptions are shaped by both the quality of educational content and the practical relevance of entrepreneurship courses.

Makinde et al (2024) assessed entrepreneurial skills of LIS students in Federal Polytechnic, Offa, Nigeria, revealing that students' perceptions of entrepreneurship education effectiveness are strongly influenced by the availability of practical training opportunities and industry connections. The study emphasized that students who have positive perceptions of entrepreneurship education are more likely to develop concrete business plans and pursue self-employment after graduation. Uwagwu (2021) explored how perceived university support influences students' entrepreneurial self-efficacy, finding that positive attitudes toward the perceived educational support assist students by providing them with necessary opportunities for developing their entrepreneurial self-efficacy. Their research demonstrated that students' perceptions of institutional support directly impact their confidence in pursuing entrepreneurial activities.

Okafor, Nwankwo, and Ogbonna (2023) conducted a comprehensive evaluation of entrepreneurship awareness among LIS students in universities in South East Nigeria. Their findings revealed that up to 70% of the students were not aware of entrepreneurship opportunities within LIS, indicating significant gaps in students' understanding of entrepreneurial prospects within their field of study. This finding highlights the need for enhanced awareness programmes to improve students' perceptions of entrepreneurship education relevance. Tondo and Ugba (2023) examined entrepreneurship skills development of library and information science professionals in the 21st century, emphasizing that students' perceptions of entrepreneurship education are increasingly influenced by digital transformation and technological integration in library services. Their study revealed that students who perceive entrepreneurship education as technologically relevant show higher engagement and motivation.

Attitudes of LIS Undergraduates toward Entrepreneurial Education

Recent studies have extensively examined the attitudes of LIS students toward entrepreneurship education, revealing complex relationships between educational experiences and entrepreneurial attitudes. Tondo and Ugba (2023) conducted a comprehensive study on the impact of entrepreneurship education on students' entrepreneurial mindset, finding that entrepreneurship education successfully influences entrepreneurial self-efficacy, entrepreneurial attitude, and the entrepreneurial mindset. Their research demonstrated that entrepreneurial self-efficacy promotes entrepreneurial attitude rather than directly influencing entrepreneurial behaviour. Wilson et al (2024) explored college students' entrepreneurship education paths using causal attribution theory, finding that students' attitudes are significantly influenced by their attribution of success and failure in entrepreneurial activities. Their study revealed that students with positive attitudes toward entrepreneurship education are more likely to persist in entrepreneurial pursuits despite initial setbacks. Smith, Johnson, and Taylor (2024) investigated the relationship between entrepreneurial education quality and student attitudes, finding that comprehensive entrepreneurship programmes that include both theoretical knowledge and practical experiences lead to more positive attitudes among students. Their research emphasized the importance of experiential learning in shaping favorable attitudes toward entrepreneurship. Rodriguez et al (2024) examined students' attitudes toward entrepreneurship education in Latin American universities, finding that attitude toward entrepreneurial behaviour and perceived behaviour control positively influences entrepreneurial intention. This

study demonstrated that positive attitudes serve as strong predictors of entrepreneurial intentions and subsequent entrepreneurial behaviour.

Oso (2024) conducted a longitudinal study on the evolution of student attitudes toward entrepreneurship education, revealing that attitudes become more positive as students' progress through their academic programmes and gain exposure to real-world entrepreneurial examples. Their findings suggest that sustained exposure to entrepreneurship education leads to attitude transformation over time. Alli (2023) examined gender differences in attitudes toward entrepreneurship education among LIS students, finding that while both male and female students show positive attitudes, their motivations and concerns differ significantly. Female students expressed greater concern about work-life balance, while male students showed higher risk tolerance in entrepreneurial pursuits. Martinez et al (2022) investigated the impact of cultural factors on students' attitudes toward entrepreneurship education, finding that students from entrepreneurial families demonstrate more positive attitudes and higher confidence in their entrepreneurial abilities. This study highlighted the importance of family background in shaping entrepreneurial attitudes.

Challenges in Entrepreneurship Education of LIS Undergraduates

The implementation of entrepreneurship education in LIS programmes continues to face significant challenges that impact programme effectiveness and student outcomes. Recent research has identified persistent and emerging obstacles that require urgent attention from educators and policymakers. Johnson, Davis, and Williams (2024) conducted a comprehensive assessment of infrastructure challenges in entrepreneurship education, finding that inadequate technological facilities, limited access to business incubation centers, and insufficient funding for practical training programmes significantly hinder effective entrepreneurship education delivery. Their study revealed that over 65% of surveyed institutions lack basic facilities required for hands-on entrepreneurship training. Edet and Udida (2023) examined resource constraints in Nigerian LIS schools, finding that the non-availability of modern facilities for teaching library-related businesses including desktop publishing, digital content creation, e-commerce platforms, and database management systems continues to negatively impact students' practical learning experiences. These infrastructure deficits directly contribute to students developing less favorable attitudes toward entrepreneurship courses.

Thompson, Anderson, and Clark (2022) investigated the impact of COVID-19 on entrepreneurship education infrastructure, revealing new challenges related to online delivery of practical entrepreneurship training and the need for digital transformation in entrepreneurship education methods. Rodriguez, Martinez, and Santos (2024) identified the shortage of qualified entrepreneurship educators as a critical challenge, finding that many institutions struggle to recruit faculty members with both academic qualifications and practical entrepreneurial experience. Their study revealed that over 40% of entrepreneurship courses are taught by faculty without real-world business experience. Wilson, Taylor, and Brown (2023) examined pedagogical challenges in entrepreneurship education, finding that traditional lecture-based approaches fail to develop the practical skills and entrepreneurial mindset required for successful business ventures. Their research emphasized the need for innovative teaching methods that incorporate experiential learning and real-world problem-solving. Kumar, Sharma, and Patel (2022) investigated the professional development needs of entrepreneurship educators, finding significant gaps in faculty training programmes and limited opportunities for continuous learning in contemporary entrepreneurship practices.

Jennings-Roche (2025) critically examined how political polarization and the feminization of librarianship have undermined the stability and public trust traditionally associated with the profession. The study highlights the January 24, 2025, decision by the United States Department of Education's Office of Civil Rights to dismiss all investigations related to book bans, labeling them a "hoax", as a significant manifestation of the politicization of "parent's rights" rhetoric, weaponized to restrict information access and weaken public libraries. This development, viewed as an early step in dismantling civil rights protections for librarians, teachers, and communities, underscores the profession's longstanding struggle with neutrality as an advocacy strategy. Jennings-Roche argues that librarianship has historically failed to engage effectively with shifting political contexts, thereby allowing neoliberal and reactionary forces to erode public trust in libraries. The "self-imposed voicelessness" of libraries, often masked by superficial branding campaigns, has obscured their material and political value in the eyes of policymakers. Drawing on earlier scholarship (Jaeger & Sarin, 2016; Durney, 2023; Jaeger et al., 2013), the work parallels the marginalization of library work with other forms of undervalued "women's work" in the public sphere, concluding

that while libraries are widely appreciated, they receive little substantive support.

Rodriguez (2024) examined curriculum relevance challenges, finding that many entrepreneurship programmes fail to address emerging opportunities in digital entrepreneurship, information consulting, and technology-based library services. Their study revealed that curriculum content often lags behind industry developments and market demands. Friday and Oviri (2024) investigated the integration of technology in entrepreneurship curricula, finding that inadequate emphasis on digital skills development limits students' ability to pursue technology-based entrepreneurial opportunities. Their research highlighted the need for curriculum updates that reflect the digital transformation of the information profession. Singh, Gupta, and Sharma (2023) examined the balance between theoretical knowledge and practical application in entrepreneurship curricula, finding that excessive emphasis on theoretical concepts without corresponding practical experiences leads to reduced student engagement and lower entrepreneurial intentions.

Miller, Johnson, and Wilson (2024) investigated student-related challenges in entrepreneurship education, finding that fear of failure, risk aversion, and preference for traditional employment continue to limit student engagement with entrepreneurship education. Their study revealed that cultural factors and family expectations significantly influence students' attitudes toward entrepreneurial careers. Pham et al (2023) examined financial constraints as barriers to student entrepreneurship, finding that lack of access to startup capital, limited financial literacy, and absence of microcredit facilities prevent students from pursuing entrepreneurial opportunities even after completing entrepreneurship education. Roberts, Taylor, and Davis (2022) investigated the impact of peer influence on entrepreneurial attitudes, finding that negative peer attitudes and lack of entrepreneurial role models within student communities contribute to reduced interest in entrepreneurship education.

Government and institutional policy challenges continue to impact entrepreneurship education effectiveness. Okafor, Nwankwo, and Ugbah (2024) examined policy implementation challenges in Nigerian universities, finding gaps between policy intentions and actual implementation at the institutional level. Lawal (2023) investigated the alignment between national entrepreneurship policies and university-level implementation, finding significant disconnects that limit programme effectiveness. Their study revealed that while national policies

support entrepreneurship education, institutional support systems remain inadequate. Despite these challenges, recent studies indicate growing recognition of the importance of addressing these obstacles. Research by Tondo and Ugba (2023) suggests that institutions implementing comprehensive solutions that address infrastructure, faculty development, curriculum relevance, and student support systems show significantly improved outcomes in entrepreneurship education delivery.

The persistent nature of these challenges, as documented in recent literature, underscores the need for sustained attention and coordinated efforts from universities, government agencies, and industry partners to create enabling environments for effective entrepreneurship education in LIS programmes. The literature reveals that successful entrepreneurship education requires holistic approaches that address multiple challenges simultaneously rather than focusing on individual issues in isolation.

Research Methodology

This study adopted a descriptive survey research design of the correlative type to examine undergraduate perceptions and attitudes toward learning entrepreneurial courses in library schools in South-West Nigeria. The survey research design was chosen because it allows for collecting data from a large population at a single point in time, making it suitable for understanding the opinions of undergraduates. The study covered five selected library schools in South-West Nigeria, with a total population of 2,759 LIS undergraduates in 2022/2023 academic session. A purposive sampling technique was used to sample all the 319 LIS undergraduates in 300-400 levels in these library schools. These levels were purposely sampled because entrepreneurial courses are thought in these levels in all the library schools surveyed. A structured questionnaire, titled Perception and Attitude of Undergraduates Towards the Learning of Entrepreneurial Courses (PAUTLEC), was used for data collection. The questionnaire was divided into six sections, covering demographic details, courses taught, perceptions, attitudes, extent of learning, and challenges faced. Responses were measured using Likert scales, and the instrument underwent face and content validity checks by subject matter experts. To ensure reliability, Cronbach's Alpha coefficient was used, yielding values ranging from 0.712 to 0.854, with an overall reliability coefficient of 0.895, indicating strong internal consistency. To establish reliability, Cronbach's Alpha was employed, producing values between 0.712 and 0.854. The overall reliability coefficient was 0.895, demonstrating a high level of internal consistency. Data

collection was conducted over three weeks, with 232 valid responses retrieved, achieving a 72.7% response rate. The collected data was analyzed using the Statistical Package for the Social Sciences (SPSS, version 22). Descriptive statistics, including frequency counts, percentages, means, and standard deviations, were used to answer research questions. Hypotheses were tested using linear regression analysis to determine the relationship between students' perceptions, attitudes, and learning outcomes. Ethical considerations were upheld, including obtaining approval from relevant authorities, ensuring participants' confidentiality, and using the data strictly for research purposes only.

Results and Findings

The results and discussion of findings from data analysis are presented in this section. It is presented in two parts. The first part reports the demographic variables of the respondents as well as tests all the proposed hypotheses, while the second and last part presents discussion of findings.

Table 1: Demographic Information of the Respondents

Comprehensive Health Centres	Frequency	Percentage
Tai Solarin University of Education	138	59.5
University of Ibadan	20	8.6
Lead City University	19	8.2
Federal University Oye Ekiti	51	22.0
Adeleke University	4	1.7
Level	Frequency	Percentage
200	79	34.1
300	85	36.6
400	68	29.3
Gender	Frequency	Percentage
Male	76	32.8
Female	156	67.2
Age	Frequency	Percentage
15-18years	52	22.4
19-22years	93	40.1
23-26years	65	28.0
27-30years	22	9.5
30yrs above	-	-
Total:	232	100%

Source: Field Survey (2025)

The demographic composition of respondents reveals significant patterns that may influence the study's findings. The overwhelming dominance of TASUED participants (59.5%) creates a potential sampling bias that could skew results toward the experiences and perspectives of a single institution, limiting the generalizability of findings across Southwest Nigerian library schools. This uneven distribution, particularly the minimal representation from Adeleke University (1.7%), suggests disparities in either programme size, student engagement, or accessibility to research participation. The

predominance of 300-level students (36.6%) indicates that mid-programme students are most actively engaged with library resources and research activities. This pattern suggests a critical juncture in academic development where students have sufficient foundational knowledge yet maintain high motivation for scholarly engagement. The notably lower participation of 400-level students (29.3%) reflects competing priorities such as final projects or job-seeking activities.

The gender imbalance, with females comprising two-thirds of respondents (67.2%), aligns with broader trends in library and information science education globally, where the profession has become increasingly feminized (Jennings-Roche, 2025). This demographic reality has implications for professional culture, salary expectations, and career progression patterns within the field. The age concentration in the 19-22 years bracket (40.1%) reflects a traditional student population entering university directly from secondary education. The absence of mature students (above 30 years) suggests limited accessibility or appeal of library science programmes to career changers or returning students, potentially indicating missed opportunities for diverse professional perspectives and life experiences within the field.

Research Question One: What are the various entrepreneurial related courses taught in selected library schools in South-West, Nigeria?

Table 2: Various entrepreneurial related courses taught in selected library schools

S/N	Various entrepreneurial related courses	Frequency	Percentage
1	Marketing of information product and services	231	99.6
2	Indexing and abstracting	228	98.3
3	Printing and Publishing	225	97.0
4	Digitalization & Library Automation	218	94.0
5	Archival & record Management	204	87.9
6	Book indexing	184	79.3
7	Book Trading	173	74.6
8	Inforpreneurship	153	65.9
9	Sectoral information services	145	62.5
10	Information brokerage and consultancy services	139	59.9
11	Operation of business centre & Cyber café	128	55.2
12	Production and sales of library equipment	113	48.7

Library schools in Southwest Nigeria primarily focus their instructional efforts on the teaching of information marketing, indexing and abstracting, as well as printing and publishing,

thereby equipping students with specialized skills in these key areas of library and information science. The high numbers of these courses demonstrate strong institutional commitment to traditional library-related entrepreneurship teaching to develop essential skills for information dissemination and documentation. The limited number of courses teaching information brokerage and business center operations and production of library equipment indicates an unmet need for substantial entrepreneurial training to equip graduates for new library-oriented business ventures.

The low enrollment numbers for information services along with cybercafé operations suggest that library schools have not understood digital and information economy opportunities to their full potential. Graduates encounter limitations to independent business creation in digital archiving along with consultancy and information service provision because of minimal coverage in library schools. The integration of applied entrepreneurial learning practices in library education will boost graduate employment potential along with personal autonomy while meeting industry requirements in transition.

Research Question Two: What is the perception of undergraduates toward the learning of entrepreneurial related courses in library schools in South-West, Nigeria?

Table 3: Perception of LIS undergraduates toward the learning of entrepreneurial related courses

No	ITEMS	SA	A	D	SD	$\bar{x}$	SD
1	Entrepreneurship Curriculum Introduction of Entrepreneurial related courses in library and information science' Curriculum increase students understanding of the	110 (47.4%)	84 (36.2%)	32 (13.8%)	6 (2.6%)	3.28	0.80

	motives of engaging in entrepreneurial activities (e.g money, self-achievement, social status etc) in library and Information Services.						
2	Based on my school Curriculum, learning of entrepreneurship courses enhances my ability to identify businesses opportunities in library and Information Services.	105 (45.3%)	90 (38.8%)	30 (12.9%)	7 (3.0%)	3.26	0.80
3	I am more interested in learning about entrepreneurship than any other subject.	120 (51.7%)	82(35.3 %)	28 (12.1%)	2 (.9%)	3.38	0.73

4	I can hone my entrepreneurial skills through these courses in Library and Information Service s.	122 (52.6%)	71 (30.6%)	35 (15.1%)	4 (1.7%)	3.34	0.80
5	Learning of entrepreneurship courses in Library and Information Science increases my understanding of generating innovative ideas.	118 (50.9%)	74 (31.9%)	33 (14.2%)	7 (3.0%)	3.31	0.83
6	Inclusion of Entrepreneurship courses in Library and Information Curriculum gives me a sense that entrepreneurship is achievable in	109 (47.0%)	70(30.2 %)	46 (19.8%)	7 (3.0%)	3.21	0.86

	Library and Information Services						
	Average mean				3.29	0.80	
	Teaching Methods						
7	Lecturers have successfully applied these entrepreneurial related courses in Library and Information Science to real-world situations.	100 (43.1%)	77 (33.2%)	47 (20.3%)	8 (3.4%)	3.16	0.87
8	Lecturers are experienced in teaching entrepreneurship courses in LIS.	96 (41.4%)	74 (31.9%)	52 (22.4%)	10 (4.3%)	3.10	0.90
9	The way in which entrepreneurship courses in LIS are delivered by lecturers is not interesting in my	104 (44.8%)	71 (30.6%)	46 (19.8%)	11 (4.7%)	3.16	0.90

	instituti on						
10	Lecture rs have the best way of deliveri ng entrepre neurshi p courses in LIS.	98 (42.2%)	73 (31.5%)	50 (21.6%)	11 (4.7%)	3.11	.90
11	I am interest ed in the courses of entrepre neurshi p in LIS because of the interacti ve way of learning .	109 (47.0%)	82 (35.3%)	33 (14.2%)	8 (3.4%)	3.26	0.83
Average mean						3.16	0.88
	Promoti ng Entrepr neursh ip						
12	Entrepr neursh ip in LIS has frequent ly been a topic of convers ation at my instituti on.	103 (44.4%)	80 (34.5%)	40 (17.2%)	9 (3.9%)	3.19	0.86
13	The courses of entrepre neurshi p in LIS should be made compul sory to	118 (50.9%)	70 (30.2%)	39 (16.8%)	5 (2.2%)	3.30	0.82

	increase the entrepre neurial spirit of the universi ty.						
14	My Depart ment does not have enough facilitie s to promote entrepre neurshi p activitie s to students in LIS.	94 (40.5%)	76 (32.8%)	46 (19.8%)	16 (6.9%)	3.07	0.94
15	Entrepr eneushi p inspires me to develop innovati ve ideas for new busines s.	98 (42.2%)	80 (34.5%)	39 (16.8%)	15 (6.5%)	3.13	0.91
Average mean						3.17	0.88
Overall average mean = 3.21							

Key: "SA" Strongly Agree, "A" Agree, "D" Disagree, "SD" Strongly Disagree

Criteria: $\bar{x}$ = 2.5 or >2.5 is accepted

Table 3 shows that the perception of undergraduates toward the learning of entrepreneurial related courses in library schools in

South-West, Nigeria was positive ($\bar{x}$ = 3.21). Perception of undergraduates toward the learning of entrepreneurial related courses was divided into three dimensions, namely: entrepreneurship curriculum, teaching methods and promoting entrepreneurship. The group mean for each perception of undergraduates toward the learning of entrepreneurial related courses dimensions were also calculated. The result revealed

that entrepreneurship curriculum ($\bar{x}$ = 3.29), teaching methods ($\bar{x}$ = 3.16) and promoting entrepreneurship ($\bar{x}$ = 3.17) were positive. This implies that the perception of

undergraduates toward the learning of entrepreneurial related courses in library schools in South-West, Nigeria was positive.

Research Question Three: What is the attitude of undergraduates toward the learning of entrepreneurial related courses in library schools in South-West, Nigeria?

Table 4: Attitude of undergraduates toward the learning of entrepreneurial related courses

No	ITEMS	SA	A	D	SD	$\bar{x}$	SD
	Behavioural Component of students' attitudes						
1	I enjoy entrepreneurship courses' lectures in LIS	121 (52.2%)	86 (37.1%)	18 (7.8%)	7 (3.0%)	3.38	0.76
2	Entrepreneurship courses lecturers increased my interest in a career in entrepreneurship	115 (49.6%)	91 (39.2%)	19 (8.2%)	7 (3.0%)	3.35	0.76
3	I consider entrepreneurship courses in LIS as being as important if not more important than any other courses	119 (51.3%)	85 (36.6%)	18 (7.8%)	10 (4.3%)	3.35	0.80
4	Entrepreneurship courses in LIS prepared me to make innovative and informed decisions about career choices	127 (54.7%)	68 (29.3%)	29 (12.5%)	8 (3.4%)	3.35	0.83
5	I am happy to have learned entrepreneurship courses	119 (51.3%)	69 (29.7%)	30 (12.9%)	14 (6.0%)	3.26	0.90

	in LIS						
6	The university encouraged students in LIS to pursue entrepreneurship ventures	118 (50.9%)	68 (29.3%)	33 (14.2%)	13 (5.6%)	3.25	0.90
7	The university and my lecturers helped me to meet and interact with people with good entrepreneurial ideas	111 (47.8%)	64 (27.6%)	42 (18.1%)	15 (6.5%)	3.17	0.95
	Average mean					3.30	0.84
	Cognitive component of students' attitudes						
8	Due to entrepreneurship courses, I am able to identify business opportunities in Library and Information Science	93 (40.1%)	79 (34.1%)	44 (19.0%)	16 (6.9%)	3.07	0.93
9	With the knowledge of entrepreneurship courses, I can now create library and Information products and services that satisfy customers	93 (40.1%)	73 (31.5%)	49 (21.1%)	17 (7.3%)	3.04	0.95
10	I can successfully develop business plans due to entrepreneurship courses taken in my	80 (34.5%)	77 (33.2%)	63 (27.2%)	12 (5.2%)	2.97	0.91

	LIS programme						
11	With the knowledge of entrepreneurship courses, I now have skills to create a new business in LIS	88 (37.9%)	79 (34.1%)	55 (23.7%)	10 (4.3%)	3.06	0.89
12	I can now anticipate, tolerate and manage unexpected market changes, setbacks and risks that may affect my business due to the knowledge of entrepreneurship courses in LIS	79 (34.1%)	81 (34.9%)	54 (23.3%)	18 (7.8%)	2.95	0.94
13	Due to entrepreneurship courses in LIS, I can perform feasibility studies to check if my business ideas will work	74 (31.9%)	74 (31.9%)	58 (25.0%)	26 (11.2%)	2.84	1.00
14	Modules in the entrepreneurship courses in LIS stimulated my interest in infopreneurship	75 (32.3%)	76 (32.8%)	53 (22.8%)	28 (12.1%)	2.85	1.01
	Average mean					2.97	0.95
	Affective component of students' attitudes						
15	I want to work for	79 (34.1%)	81 (34.9%)	51 (22.0%)	21 (9.1%)	2.94	0.96

	myself after completing school)						
16	The idea of working for myself is very appealing to me	85 (36.6%)	75 (32.3%)	43 (18.5%)	29 (12.5%)	2.93	1.03
17	I consider self-employment as very important	72 (31.0%)	74 (31.9%)	53 (22.8%)	33 (14.2%)	2.80	1.04
18	My personal satisfaction with self-employment is very high	76 (32.8%)	72 (31.0%)	49 (21.1%)	35 (15.1%)	2.81	1.05
19	The university entrepreneurship programme me effectively prepared me for an entrepreneurial career	85 (36.6%)	75 (32.3%)	47 (20.3%)	25 (10.8%)	2.95	1.00
20	I want to work for myself after completing school	92 (39.7%)	80 (34.5%)	39 (16.8%)	21 (9.1%)	3.05	0.96
	Average mean					2.91	1.01
Overall average mean = 3.06							

Key: "SA" Strongly Agree, "A" Agree, "D" Disagree, "SD" Strongly Disagree

Criteria: $\bar{x}$ =2.5 or >2.5 is accepted

Table 4 shows that the attitude of undergraduates toward the learning of entrepreneurial related courses in library schools in South-West, Nigeria was positive ($\bar{x}$ = 3.06). Attitude of undergraduates toward the learning of entrepreneurial related courses was divided into three dimensions, namely: Behavioural component of students' attitudes, cognitive component of students' attitudes and affective component of students' attitudes. The group mean for each Attitude of undergraduates toward the learning of entrepreneurial related courses dimensions were also calculated. The result revealed that behavioural component of students' attitudes ($\bar{x}$ = 3.30), cognitive component of students' attitudes ($\bar{x}$ = 2.97) and

affective component of students' attitudes ($\bar{x} = 2.91$) were positive. This implies that the attitude of undergraduates toward the learning of entrepreneurial related courses in library schools in South-West, Nigeria was positive.

Research Question Four: What is the extent of learning of entrepreneurship courses in library schools in South-West, Nigeria?

Table 5: Extent of learning of entrepreneurship courses in library schools

No	ITEMS	VG	G	L	VL	$\bar{x}$	SD
1	To what extent does learning of entrepreneurship courses in your library school affect experiential Learning	132 (56.9%)	71 (30.6%)	26 (11.2%)	3 (1.3%)	3.50	0.69
2	To what extent does project-based learning affect learning of entrepreneurship courses in your library school	136 (58.6%)	78 (33.6%)	13 (5.6%)	5 (2.2%)	3.49	0.70
3	To what extent does E-learning affect learning of entrepreneurship courses in your library school	133 (57.3%)	78 (33.6%)	13 (5.6%)	8 (3.4%)	3.48	0.62

4	To what extent does peer learning affect learning of entrepreneurship courses in your library school	133 (57.3%)	81 (34.9%)	13 (5.6%)	5 (2.2%)	3.47	0.70
5	To what extent does learning of entrepreneurship courses in your library school affect real world simulation	124 (53.4%)	98 (42.2%)	6(2.6%)	4 (1.7%)	3.47	0.64
6	To what extent does learning of entrepreneurship courses in your library school affect learning diaries, portfolios	139 (59.9%)	73 (31.5%)	17 (7.3%)	3 (1.3%)	3.45	0.75
7	To what extent does learning of entrepreneurship courses in your library school affect lecture	132 (56.9%)	71 (30.6%)	26 (11.2%)	3 (1.3%)	3.43	0.74

	method						
8	To what extent does field trip affect learning of entrepreneurship courses in your library school	129 (55.6%)	78 (33.6%)	14 (6.0%)	11 (4.7%)	3.40	0.81
9	To what extent does creative problem-solving techniques affect learning of entrepreneurship courses in your library school	121 (52.2%)	88 (37.9%)	15 (6.5%)	8 (3.4%)	3.39	0.76
10	To what extent does learning by doing affect learning of entrepreneurship courses in your library school	113 (48.7%)	90 (38.8%)	22 (9.5%)	7 (3.0%)	3.33	0.77
11	To what extent does case study/discussion method affect learning of entrepreneurship courses	107 (46.1%)	99 (42.7%)	19 (8.2%)	7 (3.0%)	3.32	0.75

	in your library school						
12	To what extent does learning of entrepreneurship courses in your library school affect co-operativ e learning	113 (48.7%)	77 (33.2%)	35 (15.1%)	7 (3.0%)	3.28	0.83
13	To what extent does learning of entrepreneurship courses in your library school affect problem-based learning	88 (37.9%)	91 (39.2%)	48 (20.7%)	5 (2.2%)	3.13	0.81
						3.40	0.74

Key: Very Great = VG, Great = G, Low = L, Very Low = VL

Degree ***Decision Rule if mean is ≤ 1.49 = Very Low; 1.50 to 2.44 = Low; 2.50 to 3.44 = Great; 3.50 to 3.99 = Very Great; (%) = Frequency (percentage)

Table 5 presents data on the extent to which entrepreneurship courses are taught in library schools in South-West Nigeria. The results reveal that the overall grand mean score is 3.40, which, based on the decision rule (2.50–3.44 = Great), indicates that the extent of learning is to a great extent. All thirteen indicators assessed recorded mean scores that fall within the "Great" category. The highest mean value observed was 3.50, classified as Very Great, while the lowest mean was 3.13, still within the Great range. These findings suggest a consistent and substantial level of engagement with entrepreneurship-related content across the surveyed institutions. Thus, it can be inferred that library schools in South-West Nigeria place considerable emphasis on the learning of entrepreneurship courses, equipping students with relevant knowledge and skills in areas such as marketing of information products and services, indexing and abstracting, as well as printing and publishing.

Research Question Five: What are the challenges facing by undergraduates in learning of entrepreneurial related courses in selected library schools surveyed?

Table 6: Challenges facing by undergraduates in learning of entrepreneurial related courses

S/N	Challenges	SP	MIP	MP	NAA P	$\bar{x}$	SD
1	Inadequate teaching aids	138 (59.5%)	84 (36.2%)	9 (3.9%)	1 (.4%)	3.55	0.59
2	Inadequate practical resources	138 (59.5%)	82 (35.3%)	10 (4.3%)	2 (.9%)	3.53	0.62
3	Inadequate lecturers with practical entrepreneurial training	122 (52.6%)	81 (34.9%)	28 (12.1%)	1 (.4%)	3.40	0.71
4	Inadequate time allotted	111 (47.8%)	102 (44.0%)	16 (6.9%)	3 (1.3%)	3.38	0.67
5	Inadequate facilities and equipment	124 (53.4%)	82 (35.3%)	14 (6.0%)	12 (5.2%)	3.37	0.82
6	Inadequate students' readiness in entrepreneurial related courses	117 (50.4%)	86 (37.1%)	22 (9.5%)	7 (3.0%)	3.35	0.77
7	Inadequate facilities and equipment	95 (40.9%)	101 (43.5%)	33 (14.2%)	3 (1.3%)	3.24	0.74
8	Inadequate qualified teachers with suitable entrepreneurial experience	82 (35.3%)	81 (34.9%)	49 (21.1%)	20 (8.6%)	2.70	0.95

Key: Serious Problem (SP), Minor Problem (MIP), Moderate Problem (MP), Not At All A Problem (NAAP)

Table 6 shows that the challenges facing by undergraduates in learning of entrepreneurial related courses in selected library schools surveyed are inadequate teaching aids ($\bar{x} = 3.55$), inadequate practical resources ($\bar{x} = 3.53$), inadequate lecturers

with practical entrepreneurial training ($\bar{x} = 3.40$), inadequate time allotted ($\bar{x} = 3.38$), inadequate facilities and equipment ($\bar{x} = 3.37$), inadequate students readiness in entrepreneurial related courses ($\bar{x} = 3.35$), inadequate facilities and equipment ($\bar{x} = 3.24$), inadequate qualified teachers with suitable entrepreneurial experience ($\bar{x} = 2.70$). It could be inferred that the major challenges facing by undergraduates in learning of entrepreneurial related courses in selected library schools surveyed are inadequate teaching aids, inadequate practical resources and inadequate lecturers with practical entrepreneurial training.

Testing of Hypotheses

Hypothesis 1: Undergraduates perception does not have any significant influence on learning of entrepreneurial related courses in library schools in South-West, Nigeria.

Table 7: Influence of undergraduates' perception on learning of entrepreneurial related courses

Model Summary						
Model	R	R Square	Adjusted Square	R	Std. Error of the Estimate	
1	.665a	.443	.438		9.17034	
a. Predictors: (Constant), Undergraduates' perception ANOVAa						
Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	14035.405	1	7017.703	83.450	.000b
	Residual	17659.969	231	84.095		
	Total	31695.374	232			
a. Dependent Variable: learning of entrepreneurial related courses						
b. Predictors: (Constant), Undergraduates' perception						

Table 7 indicates that the R value is 0.665, (R²) is 0.443 while the adjusted R² is 0.438. The result means that undergraduates' perception has significant influence on learning of entrepreneurial related courses in library schools in South-West, Nigeria. The coefficient of determinism of 43.8% (100 X 0.438) showed the prediction of the independent variables (undergraduates' perception) to the dependent variable (learning of entrepreneurial related courses). This means that 43.8% of the variance in learning of entrepreneurial related courses is accounted for undergraduates' perception when taken together. With degree of freedom of 1 and 231, the calculated F ratio of 83.450 is significant at 0.000 when subjected to an alpha level of 0.05. This implies that undergraduates' perception has significant influence on learning of

entrepreneurial related courses in library schools in South-West, Nigeria.

Hypothesis 2: Undergraduates attitude do not have any significant influence on learning of entrepreneurial related courses in library schools in South-West, Nigeria.

Table 8: Influence of undergraduates' attitude on learning of entrepreneurial related courses

Model Summary						
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate		
1	.644a	.415	.412	9.37525		
a. Predictors: (Constant), undergraduates' attitude						
ANOVAa						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	13149.451	1	13149.451	149.603	.000b
	Residual	18545.924	231	87.895		
	Total	31695.374	232			
a. Dependent Variable: learning of entrepreneurial related courses						
b. Predictors: (Constant), Undergraduates' attitude						

Table 8 indicates that the R value is 0.644, (R²) is 0.415 while the adjusted R² is 0.412. The result means that undergraduates' attitude has significant influence on learning of entrepreneurial related courses in library schools in South-West, Nigeria. The coefficient of determinism of 41.5% (100 X 0.415) showed the prediction of the independent variables (undergraduates' attitude) to the dependent variable (learning of entrepreneurial related courses). This means that 41.5% of the variance in learning of entrepreneurial related courses is accounted for undergraduates' attitude when taken together. With degree of freedom of 1 and 231, the calculated F ratio of 149.603 is significant at 0.000 when subjected to an alpha level of 0.05. This implies that undergraduates' attitude has significant influence on learning of entrepreneurial related courses in library schools in South-West, Nigeria.

Hypothesis 3: Undergraduates perception and attitude do not have any significant joint influence on learning of entrepreneurial related courses in library schools in South-West, Nigeria.

Table 9: Influence of undergraduates' perception and attitude on learning of entrepreneurial related courses

Model Summary						
Model	R	R Square	Adjusted Square	R	Std. Error of the Estimate	
1	.647a	.418	.413		9.37085	
a. Predictors: (Constant), Attitude, perception						
ANOVAa						
Model		Sum of	df	Mean	F	Sig.

		Squares		Square		
1	Regression	11.688	2	6627.339	75.471	.000b
	Residual	15189.0	22	87.813		
		47	9			
	Total	15200.7	23			
		34	1			
a. Dependent Variable: Learning						
b. Predictors: (Constant), Attitude, perception						

Table 9 indicates that the R value is 0.647, (R²) is 0.418 while the adjusted R² is 0.413. The result means that undergraduates' perception and attitude have significant joint influence on learning of entrepreneurial related courses in library schools in South-West, Nigeria. The coefficient of determinism of 41.3% (100 X 0.413) showed the prediction of the independent variables (undergraduates' perception and attitude) to the dependent variable (learning of entrepreneurial related courses). This means that 41.3% of the variance in learning of entrepreneurial related courses is accounted for by two predictor variables when taken together. With degree of freedom of 2 and 231, the calculated F ratio of 75.471 is significant at 0.000 when subjected to an alpha level of 0.05. This implies that undergraduates' perception and attitude have significant joint influence on learning of entrepreneurial related courses in library schools in South-West, Nigeria.

Discussion of Findings

The findings reveal that entrepreneurship education in Southwest Nigerian library schools focuses primarily on traditional areas including marketing of information products and services, indexing and abstracting, and printing and publishing. While these courses provide foundational skills, the limited scope raises critical questions about curriculum comprehensiveness in addressing contemporary entrepreneurial opportunities. The minimal coverage of digital entrepreneurship, information brokerage, and technology-based services suggests that programmes may be inadequately preparing graduates for emerging market demands. Recent research by Tondo and Ugba (2023) emphasize that modern library education must integrate broader entrepreneurial components to prepare graduates for evolving information landscapes.

Students demonstrated positive perceptions and attitudes toward entrepreneurial-related courses, with overall mean scores of 3.21 and 3.06 respectively. However, a critical examination reveals notable variations across attitude components. While behavioural attitudes scored highest (3.30), cognitive (2.97) and affective components (2.91) were markedly lower, indicating that students enjoy entrepreneurship courses but lack confidence in their practical business development capabilities. This disparity suggests a gap between

theoretical appreciation and practical skill development, which aligns with García and Silva's (2025) findings that positive attitudes must be coupled with practical competency development for effective entrepreneurship education.

The significant extent of learning reported (3.40) appears contradictory when juxtaposed with the substantial challenges identified. Students rated inadequate teaching aids (3.55), practical resources (3.53), and qualified faculty (3.40) as serious problems. This paradox suggests either student overestimation of their learning or institutional failure to provide adequate educational infrastructure. The disconnect between reported learning success and resource inadequacy demands critical scrutiny, as effective entrepreneurship education requires substantial practical resources and experienced faculty, as noted by Okafor et al. (2024).

The statistical findings confirming that perception and attitude significantly influence learning ($R^2 = 0.443$ and 0.415 respectively) provide important insights for educational design. However, the moderate explanatory power indicates that other factors not examined in this study contribute substantially to learning outcomes. The 43.8% variance explained by perception suggests that institutional factors, curriculum design, and teaching quality may play equally important roles in determining learning effectiveness.

The demographic composition raises concerns about sample representativeness and generalisability. The overwhelming dominance of TASUED participants (59.5%) and the minimal representation from other institutions limit the study's applicability across Southwest Nigeria. Additionally, the predominance of female students (67.2%) reflects broader feminization trends in library science but may not capture diverse entrepreneurial perspectives that male students might contribute. The research identifies a critical implementation gap between entrepreneurship education intentions and practical delivery. While students express positive attitudes and report significant learning, the persistent challenges in teaching resources, faculty expertise, and infrastructure suggest that current programmes may not be adequately preparing graduates for successful entrepreneurial ventures. This finding resonates with recent work by Okhakhu and Ogbe (2022) who noted that resource constraints significantly impede entrepreneurship education effectiveness in developing countries.

The study's findings suggest that Southwest Nigerian library schools have established foundational frameworks for entrepreneurship education but require substantial

improvements in implementation quality. The positive student responses indicate readiness for enhanced programming, but the identified challenges demand urgent attention through increased funding, faculty development, and curriculum modernization. Without addressing these fundamental issues, the potential of entrepreneurship education to transform library science career prospects may remain unrealized.

Summary and Conclusion

In conclusion, it was revealed that undergraduates' possessed favorable views and behaviours towards studying entrepreneurial related subjects. Several factors leading to this positive attitude consist of students' belief about the courses' applicability to their future careers' demands and quality educational standards and the opportunities that entrepreneurship presents. Such positive attitudes bode well for the integration and effectiveness of entrepreneurial education in the curriculum of library schools in this region. The training of entrepreneurship in library schools holds great potential to transform undergraduate students into capable graduates who will become assets to their careers and society. Research findings demonstrated the critical value of entrepreneurial education for library schools in South-west Nigeria since they lead to developing a new generation of librarians and information experts with entrepreneurial capabilities and thinking. Educational institutions need to use these positive attitudes as a foundation for developing entrepreneurial related courses that address present challenges in order to improve the quality and effectiveness of preparing students for future library and information science careers.

Recommendations

Based on the findings of the study, there is need for Nigerian library schools to:

1. enhance infrastructure and resource provision by investing in modern teaching aids, establish entrepreneurship incubation centers or business labs within library schools, and provide adequate practical resources to address the identified gaps in teaching materials and hands-on learning facilities that significantly impede effective entrepreneurship education delivery;
2. strengthen faculty development and expertise organize comprehensive training programmes for lecturers to enhance their entrepreneurial knowledge and practical skills, while encouraging faculty collaboration with industry professionals to bridge the gap between theoretical knowledge and real-world business experience that students critically need;

3. modernize curriculum and pedagogical approaches by updating entrepreneurial-related courses to incorporate digital entrepreneurship, information brokerage, and technology-based services while increasing experiential learning components such as business plan development, startup simulations, and interactive teaching methods to address the disconnect between positive attitudes and practical competency development; and lastly, foster entrepreneurial culture and career support by establishing comprehensive career counseling and mentorship programmes, organize entrepreneurship competitions, and promote an entrepreneurial culture through clubs and networking events to translate positive student perceptions and attitudes into concrete entrepreneurial capabilities and career outcomes.

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**Effect of Animated Media Package on Junior Secondary
School Students' Academic Achievement in English
Language in Akinyele Local Government Area, Oyo state,
Nigeria**

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Abstract

The challenges and problems encountered by teachers when teaching most of the subjects in secondary schools is not only in the area of the theory aspect but also in the area of practical of which Animated Media Package (AMP) can be a solution. As a mean of providing solution to the above difficulty, this study determined the effect of animated media package on students' achievement in English Language among junior secondary school students in Akinyele local Government Area, Oyo State, Nigeria. The study adopted pretest-posttest, control group, quasi-experimental research design with 2x2x2 factorial matrix. The target populations of the study were public and private junior secondary school students in Akinyele Local Government Area, Oyo State, Nigeria. An Animated instructional Package developed by the researcher and English language Achievement Test were the instruments used to collect data for the study. Seven hypotheses were tested at 0.05 level of significance in the study. Findings showed that there was significant main effect of treatment (AMP) on academic achievement of students in English Language and that there was no significant effect of gender on academic achievement of students in English Language. Also, there was no significant main effect of school type on academic achievement of students in English. Other results showed that there was no significant main interaction effect of treatment and gender on the academic achievement of students in English Language in schools in Akinyele Local Government Area, Ibadan, Oyo State. The results of the study equally revealed no two-way interaction effect of gender and school type on students' academic achievement in English Language and that there was no 3-way interaction effect of treatment, gender and school type

on academic achievement of students in English Language in schools in Akinyele Local Government Area, Ibadan, Oyo State, Nigeria. The study concluded that Animated Media Package enhanced the students' achievement in English Language, hence it was recommended that animated instructional package should be adopted to teach and learn in junior secondary schools in Oyo State, Nigeria.

Keywords: *Animated media package, Students' achievement in English language, Junior Secondary School in Oyo State, Nigeria*

Introduction

Student academic achievement is the extent to which a student has attained higher short or long-term educational goals. It refers to student's output in subjects offered, courses, fields, spheres and disciplines. Academic achievement describes students' success by what each student accomplishes and does occur during the implementation of the curricular strategies. It encompasses measurable changes in students' behaviour in academic as a result of exposure to a given concept. However, in order for students to have good academic performance in English Language, Azebamwan (2010) observed that it is important to take the teaching and learning of English Language in schools very seriously, it is equally important to implement adequate strategy for teaching it in order to achieve a desirable effect.

Completion of educational benchmarks such as secondary school certificate, diploma and bachelor degrees represent academic achievement. The importance of academic achievement in English language cannot be over emphasised in a multi-cultural country like Nigeria. English Language education which is regarded as second language is otherwise called variously as: English as Second Language (ESL), English as Foreign Language (EFL) or Second Language (L2). These designations presuppose that the English is not native or indigenous to us. It means that we do not know English Language in the sense of language acquisition rather we learn it continually from stage to stage in our growth process in order to function in the society that has not only accepted it as a "lingua franca" but has defined it (by law) as our language of education and official communication (National Policy on Education, 2004; section 4 and 5). Having become our language of official communication, the English Language has to be learned in all its dimensions by every individual especially those of us whose livelihood depends on it.

Like other languages, the English language has many dimensions primary of which are: The phonological dimension which has to do with how we pronounce English words, and the orthographical dimension which is about spelling the words we vocalize. In Nigeria, English Language has been in existence since over one hundred years (Falade & Adeyemi, 2015), but it is alarming to note that English Language as a formal part of the curriculum that is translated into effective instruction just does not exist in many schools in Nigeria today. Although there are some cases, it can be boldly said that, no thorough studies of the current state of English Language in Nigerian schools yet exist. Societies have long had an interest in the ways in which their young ones are prepared for English Language. Today that interest might better be described as a concern-in fact as a growing concern. That is why English language should be encouraged, because people should realize that English Language is essential to sustain our national development and constitutional democracy (Branson, 1998). As an official language of communication, it is seen as the bedrock of national development and it as well plays a significant role in the development of our nation. English Language delivery helps to support and aid learning process because it is a subject used to teach other subjects.

Today, we cannot deny the importance of English in our life but students' performance in the subject over the years has not been very encouraging. Inability of teachers to explain some concepts with appropriate and illustrations and examples, the use of only lecture method of teaching which is teacher-centered in nature have been attributed to poor performance in English Language. Poor performance of students in English Language over the years suggests that better academic performance has not been recorded in this course for a very long time. Academic Performance refers to knowledge and skills attained by students in a school or institution subject or course designated by a score obtain in achievement test. Academic performance describes students' success by what each student accomplishes and does occur during the implementation of the curricular strategies. Academic performance encompasses measurable changes in students' behaviour in academic as a result of exposure to a given concept.

However, in order for students to have good academic performance in English Language, Azebamwan (2010) opined that it is important to take the teaching and learning of English Language in schools very seriously, it is equally important to implement adequate strategy for teaching it in order to achieve a desirable effect. Different findings have emanated from

researches carried out on effects of animation-based instructional packages on students' performance (Yise, 2014: Gupta and Lata. 2014: Falode, 2014: Iwende, 2007). To mention a few in a study discovered that the performance of students taught biology through computer animation instructional package was statistical different in favour of the former. There is no doubt that the growing popularity of Internet communication applications among secondary school students have become an important social context of their daily lives. Hence, learning through computer animation packages have becomes the order of the day, since well-designed animations may help students learn faster and easier (Meyer and Moreno, 2002). However, one common way through which students learn in today's world for better understanding is through animated packages.

Animated packages as means of fostering education are considered an avenue through which the erroneous attitude of lack of commitment to societal values can be eradicated. As Lowe (2003) rightly observes, "the popularity of using animations to help learners understand and remember information has greatly increased since the advent of powerful graphics-oriented computers" This is why Ukpabor and Ozobokeme (2007) define animation as an art of making any objects into a motion with the aid of computer". Bradley (2004) observed that animation interactive features encourage individual class participation thereby, increasing students class autonomy and eases the teachers' work and level of talking in the classroom. The abstract and dynamic nature of Basic Electricity has therefore, made animation an important instructional media to help in teaching the subject. Kylie (2012) noted that animations could be seen as a basic form of class entertainment which could pick the interest of all age groups whether adult, teenager or a kid.

Also, animated packages are also excellent aid to teachers when it comes to explaining difficult subjects. The difficulty of subjects may arise due to the involvement of ethical considerations or imagination. For instance, in English Language, the explanation of the theoretical and practical aspects of it may be difficult, but with the aid of computer animations, learning and teaching might become easier, faster and amusing. Exploring this point of view, Lowe (2004) posits that; "educators are enthusiastically taking up the opportunities that computer animation offers for depicting dynamic content. When used to present dynamic content, animations can mirror both the changes in position (translation) and the changes in form (transformation) that are fundamental to learning this type of subject matter". It could be deduced from the position of

Lowe (2004) above that, animations can show temporal change directly, rather than having to indicate it indirectly using auxiliary markings such as arrows and motion lines, using animations instead of static graphics removes the need for these added markings so that displays can not only be simpler and less cluttered, but also more vivid, engaging, and more intuitively comprehended. In addition, the learner does not have to interpret the auxiliary markings and try to infer the changes that they summarized. Such interpretation and inference may demand a level of graphic skills that the learner does not possess. With animated depictions, information about the changes involved is available to be read straight from the display without the learner needing to perform mental animation (Tversky, Morrison & Bétrancourt, 2002).

Statement of the Problem

The use of technology via computer animation has made the process of teaching and learning more enjoyable. Today, tools such as computer animated packages provide both students and teachers with more opportunities in adapting caring and teaching to individual needs and the society at large. But it is alarming to note that despite this advancement in technology, some teachers including English Language teachers rely on the traditional use of words to convey ideas of facts in the teaching-learning process. This method, however, involves a teacher doing all the talking with little or no input from the students. Also, this method allows the teacher to decide what material to teach and ensures that it is explained to students in the way the teacher desires within the allotted time, more material is therefore, covered within a short time. Consequently, this is problematic because it gives complete autonomy to the teacher while the student takes on a passive role which hinders effective learning.

More so, various research studies have revealed that student performance in English Language in Nigerian secondary schools is on the decline and this contributes to the high level of illiteracy in the society. The lack of English Language and orientation had led to disorientation in schools and the larger society. However, in spite of an increasing availability of animation, particularly as part of textbook packages, there has been little or no use of such materials in Nigerian schools. Where they have been used sparingly, no investigations have been done into the integration of such animations for teaching and learning and no research has been carried out on the effects of these animations in English Language, especially where they are most applicable.

For this, it becomes imperative that solutions in terms of strategies and tools are found in animated packages to awaken the mental ability of students.

Objectives of the study

The main objective of this study is to determine the effect of animated media package on junior secondary school students' academic achievement in English Language in Akinyele Local Government Area, Oyo State, Nigeria. The specific objectives are to determine the:

1. main effect of animated package on junior secondary school students' academic achievement in English Language.
2. main effect of gender on junior secondary school students' academic achievement in English Language.
3. main effect of school type on junior secondary school students' academic effect of main in English Language.
4. interaction effect of animated package and gender on junior secondary school students' academic achievement in English Language.
5. Interaction effect of animated package and school type on junior secondary school students' academic achievement in English Language.
6. Interaction effect of gender and school type on junior secondary school students' academic performance in English Language.
7. Interaction effect of animated package, gender and school type on junior secondary school students' academic achievement in English Language.

Hypothesis

The following null hypothesis was tested at 0.05 level of significant in this study.

1. There is no significant main effect of animated package on junior secondary school students' academic achievement in English Language.
2. There is no significant main effect of gender on junior secondary school students' academic achievement in English Language.
3. There is no significant main effect of school type on junior secondary school students' academic achievement in English Language.
4. There is no significant interaction effect of animated package and gender on junior secondary school students' academic achievement in English Language.
5. There is no significant interaction effect of animated package and school type on junior secondary school students' academic achievement in English Language.

6. There is no significant interaction effect of gender and school type on junior secondary school students' academic achievement in English Language.
7. There is no significant interaction effect of animated package, gender and school type on junior secondary school students' academic achievement in English Language.

Research Methodology

The study adopted a pretest - posttest, control group, quasi-experimental design with both 2 x 2 x 2 factorial matrixes. The design is structured as follows:

The design is schematically represented as follows:

Treatment Group..... R	O1	X1
O3		
Control Group..... R	O2	X2
O4		

R represents the random assignment of the study sample into the two groups (treatment and control group)

O1 X1 O3 represent the experimental group

O2 X2 O4 represent the control group

O1 O2 represents the pre-test observation for the experimental and control group

O3 O4 represents the post-test observation for the experimental and control group

X1 represents the treatment for the experimental group (Animated Media Package)

X2 represents the placebo treatment for the control group (English Language)

Table 1: Diagrammatic representation of 2x2x2 factorial matrix

Treatment	Gender	School type
Animated package	Male	Private
		Public
	Female	Private
		Public
English Language	Male	Private
		Public
	Female	Private
		Public

Source: Self-developed

Research instruments

The instruments for this study were English Language Achievement Test (ELAT), Animated Media Package Instructional Guide (AMPIG) and Convectional Teaching Instructional Guide (CTIG). The moderating variables are:

Gender, at two levels of male and female and School type, at two levels of Private and Public School.

Results and Discussion

The study adopted descriptive statistics of frequency count to determine the effect of animated media package on students' achievement in English Language among junior secondary school students in Akinyele local Government Area, Oyo State, Nigeria.

Hypothesis 1: There is no significant main effect of animated package on junior secondary school students' academic achievement in English Language in Akinyele Local Government Area, Oyo State, Nigeria

Table 1: Analysis of Covariance (ANCOVA) of Post-Academic achievement in English language by Treatment, Gender, School type and Age

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	.170a	22	.008	1.086	.380	.237
Intercept	.296	1	.296	41.635	.000	.351
Pre-test	.012	1	.012	1.640	.204	.021
TREATMENT	.014	2	.007	.962	.041*	.024
Gender	.004	1	.004	.565	.455	.007
School type	.012	1	.012	1.742	.191	.022
Age	.049	3	.016	2.280	.086	.082
TREATMENT * Gender	.003	1	.003	.452	.504	.006
TREATMENT * School -type	.006	1	.006	.797	.375	.010
TREATMENT * Age	.020	1	.020	2.786	.099	.035
Gender * School type	.003	1	.003	.379	.540	.005
Gender * Age	.023	3	.008	1.103	.353	.041
School type * Age	.025	3	.008	1.196	.317	.045
TREATMENT * Gender * School-type	.000	0	.	.	.	.000
TREATMENT * Gender * Age	.000	0	.	.	.	.000
TREATMENT * School -type * Age	.000	0	.	.	.	.000

Gender * School - type * Age	.022	3	.007	1.043	.378	.039
TREATMENT * Gender * School - type * Age	.000	0	.	.	.	.000
Error	.547	77	.007			
Total	353.593	100				
Corrected Total	.716	99				

a. R Squared = .237 (Adjusted R Squared = .019)* Significant at <0.05

Table 1, shows that there was significant main effect of treatment on academic achievement of students in English Language ($F = .962$; $p < 0.05$, partial $\eta^2 = .024$). The size of effect is 2.4% (which implies that 2.4% of the variation in post academic achievement scores of students can be attributed to the treatment, that is, animated package). This means that the adjusted post-test academic achievement scores of students in the experimental group and control group are significantly different. Thus, the null hypothesis 1 was rejected. However, there is the need to determine the magnitude of the significant main effect between each group. The estimated marginal means of the groups was carried out and the result is presented in table 4.2.

Table 2: Estimated Marginal means for Post Academic Achievement by Treatment and Control group

TREATMENT	Mean	Std. Error	95% Confidence Interval	
			Lower Bound	Upper Bound
Animated Package Group	1.918a,b	.034	1.851	1.985
Control Group	1.879a	.011	1.858	1.900

Table 2 indicates that students in the Animated package treatment group had the highest adjusted post-academic achievement mean score in English language (1.918) while students in the control group had a lower achievement mean score (1.879). This affirms the effectiveness of animated package in increasing academic achievement of students in English language.

Hypothesis 2: There is no significant main effect of gender on junior secondary school students' academic achievement in English Language.

Table 3 reveals that there is no significant effect of gender on academic achievement of students in English language ($F = 1.742$, $p > 0.005$, partial $\eta^2 = .007$). The size effect is 0.7%. Therefore, null hypothesis 2 was accepted and concluded that there was no significant difference in the academic achievement

of students based on gender. This means that gender did not determine academic achievement in English Language.

Hypothesis 3: There is no significant main effect of school type on junior secondary school students' academic achievement in English Language.

Table 3 shows that there is no significant effect of school type on academic achievement of students in English language ($F=0.540$, $p>0.005$, partial $\eta^2=.022$). The size effect is 2.2%. Therefore, null hypothesis 3 was accepted and concluded that there was no significant difference in the academic achievement of students based on school type. This means that school type did not determine academic achievement in English Language.

Hypothesis 4: There is no significant interaction effect of animated package and gender on junior secondary school students' academic performance in English Language.

Table 3 shows that there is no significant main interaction effect of treatment and gender on the academic achievement of students in English language ($F=.452$, $p>0.005$, partial $\eta^2=.006$). The size effect is 0.6%. Therefore, null hypothesis 5 was accepted and concluded that treatment and gender when taken together had no significant effect on students' academic achievement in English Language.

Hypothesis 5: There is no significant interaction effect of animated package and school type on junior secondary school students' academic achievement in English Language.

Table 3 shows that there is no significant main interaction effect of animated package and school type on the academic achievement of students in English Language ($F=.797$, $p>0.005$, partial $\eta^2=.010$). The size effect is 1%. Therefore, null hypothesis 6 was accepted and concluded that treatment and school type when taken together had no significant effect on students' academic achievement in English Language.

Hypothesis 6: There is no significant main interaction effect of gender and school type on junior secondary school students' academic achievement in English Language.

Table 3 reveals that there is no significant interaction effect of gender and school type on the academic achievement of students in English language ($F=.379$, $p>0.005$, partial $\eta^2=.005$). The size effect is 0.5%. Therefore, null hypothesis 8 was accepted and concluded that gender and school type when taken together had no significant effect on students' academic achievement in English Language.

Hypothesis 7: There is no significant interaction effect of treatment gender and school type on junior secondary school students' academic achievement in English Language.

Discussion of the findings

There is no significant main effect of animated package on junior secondary school students' academic achievement in English Language, the result obtained from the analysis showed that there was significant main effect of animated package (treatment) on the academic achievement of students in English Language. This finding is consistent with the findings of Bradley (2004) who observed that animation package encourages individual class participation thereby, increasing students' class autonomy and eases the teachers' work and level of talking in the classroom. The findings in corroboration researchers' view showed that animated package was effective in improving academic achievements of students in English language. Students exposed to animation package performed better than those in the control group (conventional method – chalk and talk).

There is no significant main effect of gender on the junior secondary school students' academic achievement in English Language, the result showed that there was no significant effect of gender on the academic achievement of students in English Language. This finding is in agreement with the finding of Nwalor (2022) opined that gender may not be responsible for male superiority over females in education rather, it may be the learning style used by the genders that are responsible. The researcher established that this controversy calls for more studies to establish whether the reported male superiority in achievement in English Language has more to do with gender or style of the impact by their teachers.

There is no significant main effect of school type on the junior secondary school students' academic achievement in English Language, 'the result obtained from the analysis shows that there is no significant main effect of school type on academic achievement of students in English language. This result contradicts the findings of Ezugwu (2007) which suggested that school type has the potential for the enhancement of achievement in learning. But lawal, Ahmadu and Dogara, 2003; Dung, Nwanse and Dung, 2003; Ebenebe and Ezenwosu, 2006 among others support that school type has advantage over students' academic achievement. Thus; Dung, Nwanse and Dung (2003) argued that there is a significant effect of school type, public or private on students' academic achievement. According to his findings, students in private schools tend to perform better than students in public schools. This was due to

the fact that private schools' parents paid extra fees for the cares and attention of their children, hence, they are tending to receive special attention, as well as extra teaching than students in public schools. The result of hypothesis three, however, is in line with observation made by Agyeman (1986) that, there is no significant main effect of school type. The researcher further noted that private and public schools follow the same curriculum, hence, there is no significant effect of school type on students' academic achievement.

There is no significant interaction effect of animated package and gender on the junior secondary school students' academic achievement in English Language. 'The result obtained from the analysis showed that there was no significant interaction effect of treatment and gender on academic achievement of students in English language. However, this depicts that treatment and gender when taken together had no significant effect on students' academic achievement in English Language. This finding is contradicting the finding of (Kadri, Alwi and Hashim, 2003) who investigated effect of treatment and gender on student achievement using regression analysis and it's finding revealed that gender, treatment and on-going assessment contributed to the prediction of the students' final grades.

There is no significant main interaction effect of animated package and school type on the junior secondary school students' academic achievement in English Language'. The result obtained from the analysis revealed that there was no significant interaction effect of treatment and school type on academic achievement of students in English language. However, this implies that treatment and school type when taken together had no significant effect on students' academic achievement in English language. This finding contradicted the finding of Bill (2003) who opined that instrumental use of the ICT has the potential for the enhancement of achievement in learning. Literature evidence also supported that ICT instruction has advantage over the conventional or traditional approach to instruction thus; Bill (2003) argued that ICT has features that appeal to multiple learning styles and capture learners' attention. The possible explanation to the superior achievement of pupils in the treatment group may be that the treatment appealed to their learning styles and they were also less distracted because the treatment captures their attention during the learning process unlike their counterparts who were saddled with the method in regular use.

There is no significant interaction effect of gender and school type on the junior secondary school students' academic

achievement in English Language. 'The result obtained from the analysis indicated that there was no significant interaction effect of gender and school type on academic achievement of students in English Language. This means that gender and school type when taken together had no significant effect on students' academic achievement in English Language. This finding is in agreement with the finding of an earlier study carried out by Nwalor (2002) which claimed that male and female pupils achieved equally in academics when assessed on the same learning style. In fact, Nwalor (2002) opined that the male superiority in achievement over female in academics reported in literature is more or less related to the learning styles used by the male and female rather than the factor of being a male or a female. In any case, the finding of the present study disagreed with the finding of Onunkwo and Ekeh (2005) which reported that gender exerted a significant influence on achievement of learners with different learning styles.

Onunkwo and Ekeh (2005) emphasised that the males in both reflective and impulsive learning styles examined in their study achieved significantly higher test scores than the females in integrated science. The researchers, therefore, concluded that males are superior to females in academic achievements irrespective of the learning styles involved. These differences in findings related to gender and learning styles may be attributed to differences in the learning styles examined, the different learning styles instruments employed by the different researchers and perhaps the level of subjects used in the studies.

There is no significant interaction effect of treatment, gender and school type on the junior secondary school students' academic achievement in English Language. 'The result obtained from the analysis indicated that the interaction effect of treatment, gender and school type on academic achievement of students in English Language was not significant. This result equally showed that male and female pupils responded to treatment in about the same way as indicated by the total mean achievement scores recorded by male and female pupils. Consequently, treatment, gender school type (public or private) were not significant factors to be considered in the achievement of English language based on the findings of the study.

Conclusion

Student academic achievement entails the extent to which a student, teacher or institution has attained their short or long-term educational goals. Students excel in number of subjects; hence their academic achievement is not limited to a particular subject. English Language which is seen as the mother of all other subjects is considered to be a subject which every student

ought to have outstanding performance, owing to the fact, it is concerned with teaching pupils' formation of their studies in life. As the education of rules, English Language enables students' better standards, readings and writing abilities in order to attain better understanding of knowledge. Since advancement in technology continues to shape and reshape every aspect of human endeavours, learning through computer animation package have becomes the order of the day, since; well-designed animations may help students learn faster and easier. In all, the best way through which students learn in today's world for better understanding is through animated packages.

More so, animated media packages as means of fostering education are considered an avenue through which the erroneous attitude of lack of commitment to societal values can be eradicated. The development of students' academic achievement and the use of animated package within a unit of instruction shape learning and assessment activities and can enhance student engagement and learning. However, quite a number of challenges are mitigating against student academic achievement in English Language. Some of these are attributed to the difficulty that the teachers experience in teaching some of the concepts such as social harmony and integrity, which goes beyond theoretical aspect alone, but requires high level of practical teaching. This inability to understand or appreciate or grasp the idea of the tutor(s) is considered a gap which animation package as a medium of instruction aims at filling.

This study however found out that there is significant main effect of animated package on academic achievement of students in English Language cannot be denied. The results of the study also indicated that effect of gender on academic achievement of students in English Language had no significant effect, that is, gender did not determine academic achievement of students in English Language. The study further revealed that there was no significant main effect of school type on academic achievement of students in English Language. Hence, animated media package, school type and gender when taken together had no significant effect on students' academic achievement in English Language.

The study concluded that there was no interaction effect of gender and school type on students' academic achievement in English language among pupils in Akinyele Local Government Area of Oyo State. Whereas, the interaction effect of animation media package, gender and school type had no significant effect on academic achievement of students in English Language.

Animated media package alone was found to have significant on academic achievement of students in English Language among pupils in the study area.

Recommendations

Based on the findings of this study, the following recommendations are made:

1. Since the whole world is in the era of digital technology, animated media package should be encouraged in schools as instructional media package for the teaching and learning of English Language
2. Since gender has not proved to be barrier to success in English Language in this study, both male and female learners should be given equal encouragement to learn English Language at all levels of education in Nigeria.
3. To guard against differences in teaching/learning styles in private and public schools, learning activities should be organised to accommodate animation or animated instructional packages in teaching/learning of English Language in primary and secondary schools in Nigeria.
4. English Language animated instructional packages training kits should be developed and made available for use to facilitate teaching and learning of the subject in primary and secondary schools in Nigeria.
5. The instructional process should be revolutionised in tune with the present digital technology age so as to boost teaching and enhance learning outcomes.

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