Factor for Research Productivity among Librarians in Nigeria Universities: A Study of Universities in Ogun State

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Abstract

This study investigated the role of collaborative tools as a stimulating factor for research productivity among librarians in Nigerian universities. Three research questions were raised to guide the study. Descriptive survey research design was adopted, and the total enumeration method was used to include all 107 librarians from seven selected academic libraries across Ogun State. Data were collected using a self-structured, closed-ended questionnaire designed on Google Forms to allow easy online access and completion. The data were analyzed using descriptive statistics, including frequency, percentage, mean, and standard deviation, as well as regression analysis with the aid of SPSS version 26. Findings revealed that librarians highly use collaborative tools such as email, WhatsApp, Google Workspace, Zoom, and Telegram to support their research activities, indicating active engagement with digital platforms for communication, coordination, and document sharing. Despite this high usage, the study found that research productivity among librarians remains low, with limited output in terms of journal articles, conference papers, book chapters, and other scholarly works. Regression analysis further indicated a significant positive relationship between collaborative tools and research productivity, showing that librarians who effectively utilize these tools are likely to achieve higher research output. The study concluded that while collaborative tools enhance research processes, other factors such as institutional support, time management, research skills, and motivation also influence

productivity. Recommendations include providing regular training workshops on collaborative tools, establishing structured research collaboration groups, implementing supportive university policies such as grants and reduced administrative duties, and integrating collaborative platforms into formal research management systems to track and enhance productivity.

Keywords: Academic libraries, Collaborative tools, Digital collaboration, Librarians, Research productivity, Scholarly communication.

Introduction

The current academic environment is driven by fast technological advancements, improved knowledge production, and a growing emphasis on collaborative research. Universities are expected not only to disseminate knowledge but also to generate innovative research outputs that contribute to national development and global scholarship. In this perspective, librarians play dynamic roles in supporting teaching, learning, and research through information provision, research assistance, scholarly communication, and digital literacy services. The growing integration of digital technologies in academic libraries has further expanded these responsibilities, requiring librarians to adapt to emerging technological trends and innovative service delivery approaches (Sodipe et al., 2024).

Research productivity refers to the quantity and quality of scholarly outputs such as journal articles, conference papers, and grants generated by academics, and it remains a key indicator of university performance. Strong research productivity enhances institutional visibility and contributes to national development (Babalola & Allahmagi, 2023). Similarly, Anyaoku and Ezeani (2021) noted that universities with high research output often play leading roles in innovation, problem solving, and global competitiveness. However, Aiyebelehin (2022) asserted that Nigerian universities continue to struggle with low research output due to challenges such as limited funding, inadequate support systems, and weak collaborative culture. Academic staff in universities, including librarians, are expected to contribute actively to research output through scholarly publications and knowledge dissemination. This concern about weak research culture highlights the importance of understanding collaboration in research. According to Sodipe et al. (2025), with the rapid expansion of digital information made possible by the growth of Information and Communication Technology (ICT), researchers today are confronted with an overwhelming volume of knowledge distributed across various

platforms. No single academic institution can probably acquire or provide all the digital resources required to meet the diverse research needs of scholars. As research problems become more complex in the 21st century, the need for collaboration and the use of collaborative digital tools becomes increasingly important, particularly within the framework of technology adoption and information systems theories.

In academic environments, collaborative digital tools such as shared online databases, cloud storage systems, digital libraries, virtual workspaces, communication platforms, and research management applications have become essential. They make it easier for librarians to co-author papers, jointly analyses data, and access scholarly resources without physical limitations (Sodipe et al., 2025). Collaboration in research involves academic staff working together to produce shared knowledge, solve complex problems, and co-author publications. Research collaboration enables cross-fertilisation of ideas and improves the quality of scholarly work (Enakrire et al., 2020). Fari and Ingawa (2020) also stated that collaboration allows researchers to pool expertise, access better resources, and address multidisciplinary issues more effectively. In addition, Adebayo (2022) opines that collaborative engagement stimulates creativity and increases the likelihood of producing competitive research outputs. However, successful collaboration requires trust, shared goals, and effective communication, which are sometimes lacking in Nigerian universities. This growing demand for cooperative work reveals the need for collaborative digital tools in higher education, as explained by digital collaboration models.

With the rise of technologies associated with the Fourth Industrial Revolution, researchers can now collaborate more efficiently through platforms that support teamwork, version control, and knowledge sharing. These tools encourage collective problem-solving and foster partnerships that help researchers achieve results that may not be possible through isolated efforts. Since many information resources such as electronic journals, e-books, online reference tools, datasets, and web-based scholarly materials are already available in digital form, collaborative technologies provide a convenient avenue for accessing and sharing them. Researchers can use these tools to connect with colleagues around the world, exchange research materials, and improve the speed and accuracy of their work (Sodipe et al., 2025; Sodipe et al., 2024). Collaborative digital tools refer to digital platforms and applications that enable researchers to communicate, share documents, and work together regardless of physical location. Tools such as WhatsApp, email, Google Docs, and Google Drive support real-time interaction and co-authoring (Mohammed & Yusuf, 2020).

Similarly, Akpan and Udo (2020) stated that ICT-based platforms help researchers exchange information quickly and promote team learning among

university staff. Eke and Okafor (2021) also emphasised that social media tools like Telegram and Facebook enhance knowledge sharing and strengthen research partnerships. However, the effectiveness of these tools depends on users' ICT skills, perceived ease of use, and access to digital infrastructure, which are key elements of technology adoption theory (Sodipe et al., 2024). These features introduce the broader role of advanced collaborative technologies in supporting academic research. Collaborative technologies such as Zoom, Microsoft Teams, ResearchGate, and Academia.edu offer advanced features that support video meetings, shared workspaces, document editing, and professional networking. According to Igwe and Onwubiko (2021), these tools improve communication and streamline service delivery in academic environments. Majid and Foo (2022) also stated that collaborative technologies enhance knowledge sharing by allowing researchers to exchange documents, review drafts, and track contributions more effectively.

Furthermore, Ekong and Udoh (2022) asserted that ICT infrastructure in universities plays a crucial role in enabling digital collaboration and supporting research activities. Although these tools make teamwork easier, their effectiveness still depends on reliable internet and institutional support. These digital possibilities further reinforce the connection between collaborative digital tools and research productivity in Nigerian universities. Collaborative digital tools make research easier, faster, and more coordinated by allowing academics to work together regardless of distance. According to Martinez (2023), digital tools enhance communication and help researchers share ideas smoothly during research projects. Smith and Patel (2022) also stated that these tools support teamwork by enabling real-time editing, document sharing, and virtual meetings that speed up research processes. Similarly, Smith and Johnson (2021) noted that collaborative platforms increase publication output because they reduce delays and promote continuous interaction among researchers. However, the full benefits of these tools depend on strong ICT support and the willingness of librarians, to adopt them effectively.

This emphasis on ICT infrastructure leads to further discussion on the importance of digital support for research productivity. Information and communication technologies play a major role in modern research because they provide the backbone for digital collaboration. According to Shirazi and Ahmadi (2020), ICT enables researchers to work more efficiently by offering tools that support data sharing, co-authoring, and literature access. In addition, Jones and Lee (2020) observed that digital technologies promote innovation by helping researchers exchange ideas quickly and stay connected across institutions. However, Kim and Hernandez (2020) asserted that challenges such as poor internet access, low ICT skills, and limited digital devices still weaken the effectiveness of collaborative

digital tools in many academic environments. These limitations make it necessary to understand how these issues manifest within the specific context of Nigerian universities. Nigerian universities expect librarians, to publish scholarly works, attend conferences, and contribute to national development through research, yet many difficulties hinder these expectations. Adekoya (2023) stated that limited funding and weak infrastructure remain major obstacles affecting researchers' ability to use digital tools. Furthermore, Wilson et al. (2023) explained that many institutions still have low adoption of advanced digital collaboration systems due to inconsistent ICT support. Hence, it is therefore imperative to investigate collaborative digital tools as predictors of research productivity of librarians in Nigerian universities.

Statement of the Problem

Collaborative tools are increasingly recognized as essential resources for enhancing research productivity in academic environments. By facilitating communication, knowledge sharing, joint authorship, data management, and networking among researchers, these tools enable librarians to collaborate effectively across institutional and geographical boundaries. Ideally, the effective utilization of collaborative tools should enhance the quality and quantity of research outputs, reduce barriers to scholarly communication, foster innovation, and support the professional development of librarians. Consequently, librarians who have access to and effectively utilize collaborative tools are expected to demonstrate improved research productivity through increased publications, conference participation, research collaborations, and other scholarly contributions.

Research productivity in Nigerian universities may be declining due to challenges affecting how academics collaborate and access digital tools. Observations across many institutions show that researchers likely struggle with limited internet access, outdated facilities, and low awareness of modern collaborative digital technologies, which may reduce the speed and quality of research output. The problem appears to be growing as research topics become more complex and require teamwork, yet many librarians still rely on traditional communication methods that slow down collaboration. Although universities have introduced seminars, basic ICT training, and institutional repositories, these efforts have probably not produced the expected results because the underlying digital infrastructure remains weak. The consequences of these challenges include slow publication rates, reduced visibility of Nigerian research, and limited contributions to national development. Existing studies have mostly examined general research collaboration or ICT adoption among librarians, with limited focus on how specific

collaborative digital tools stimulate research productivity within Nigerian universities. Many of these studies also emphasize single regions or professional groups, leaving a gap in understanding the broader academic environment. Hence, it is therefore imperative to investigate how collaborative digital tools may stimulate research productivity in Nigerian universities.

Research Questions

The following research questions were answered in order to guide the study.

(1) To what extent do librarians use collaborative digital tools for research among librarians in Nigerian universities?

(2) What is the level of research productivity of librarians in Nigerian universities?

(3) Is there any significant relationship between collaborative digital tools and research productivity among librarians in Nigerian universities?

Literature Review

Overview of Collaborative digital tools

Collaborative digital tools refer to digital platforms that support people working together by enabling communication, coordination, and shared tasks. These tools help researchers exchange information more efficiently, especially in academic environments (Shirazi & Ahmadi, 2020). Smith and Johnson (2021) also stated that collaborative systems allow multiple users to work on shared goals seamlessly in real time. Similarly, Zhang (2020) noted that digital tools have transformed academic collaboration by providing channels that simplify communication among researchers from different locations. In addition, the rise of digital technologies suggests that collaboration is becoming central to modern scholarship. This growing importance of online teamwork naturally connects to the types of tools used in universities today. Collaborative digital tools used in universities include WhatsApp, Email, Google Docs, Microsoft Teams, Zoom, and other online platforms that support academic communication. According to Adeoye et al. (2021), social media applications such as WhatsApp and email services are widely adopted for sharing documents and coordinating research. Ideh and Eserada (2024) also observed that educators increasingly rely on digital platforms to exchange ideas and strengthen academic discussions.

Furthermore, Anyaoku and Ezeani (2021) noted that platforms like Google Docs and Zoom support synchronous and asynchronous collaboration, making them suitable for research work. In addition, technology adoption in universities shows that these tools help reduce geographical barriers. This leads to the broader question of the purpose these tools serve in academic activities. Collaborative digital tools serve the purpose of supporting communication, research coordination, and

collective knowledge building within academic communities. According to Pinto and Fontelles (2020), collaboration technologies encourage joint learning and help academics share information more freely. Smith and Patel (2022) also stated that digital tools make it easier to organize research activities by providing structured spaces for meetings and document exchange. Likewise, Johnson (2020) argued that collaborative digital tools contribute to more organized research workflows because they enhance the way researchers plan and manage academic tasks. In addition, these tools simplify administrative processes involved in research.

This purposeful function highlights how such platforms naturally extend into teamwork and communication support for researchers. Collaborative digital tools support teamwork by enabling researchers to work together more easily, even when they are not physically present.

According to Yila and Temboge (2024), digital communication channels significantly strengthen cooperation by allowing librarians and academics to coordinate tasks faster. Smith and Johnson (2021) noted that team-based research benefits from collaboration tools because they help maintain communication continuity among partners. Abramo et al. (2021) also asserted that modern collaborative technologies strengthen scientific teamwork by enabling quick feedback and shared responsibilities. In addition, digital teamwork reduces delays caused by traditional communication barriers. This teamwork function also connects to the importance of real-time document sharing and co-authoring in academic research. Collaborative digital tools enable real-time document sharing and co-authoring, making research faster and more coordinated. According to Smith and Patel (2022), tools like Google Docs and Microsoft Teams allow multiple users to write, edit, and comment on documents simultaneously. Adeoye et al. (2021) also observed that real-time sharing reduces challenges associated with sending multiple document versions back and forth. Similarly, Anyaoku and Ezeani (2021) noted that such tools improve accuracy and reduce errors in co-authored projects because changes are made immediately and transparently. In addition, real-time collaboration helps researchers stay updated on project progress. This immediate interaction strengthens the argument for the importance of these tools within university research environments.

Research Productivity

Research productivity refers to the measurable output generated by academics through publications, conference papers, grants, and innovations. It reflects the scholarly contributions of academics to knowledge creation and institutional advancement (Shirazi & Ahmadi, 2020). Zhang (2020) also noted that research productivity demonstrates the visibility and impact of an academic within

the global research community. Similarly, Smith and Johnson (2021) asserted that productive researchers often drive the intellectual growth of their institutions through consistent academic output. In addition, Mohammed and Yusuf (2020) observed that research productivity is shaped by the level of access academics have to digital tools and collaborative networks. This foundational understanding leads into the specific components that make up research productivity. Research productivity comprises several components, including publications, grants, conference presentations, and innovations that contribute to academic development.

According to Jones and Lee (2020), publications whether journal articles, books, or reviews remain the most widely recognised indicators of scholarly productivity. Kim and Hernandez (2020) also stated that successful grant applications help strengthen the research capacity of universities by attracting funding and resources. Similarly, Shirazi and Ahmadi (2020) noted that conference presentations promote knowledge exchange and academic visibility. In addition, Zhang (2020) opines that innovations and creative outputs also form part of modern research productivity measures. These various components highlight why productivity is central to institutional excellence, linking to the importance of research productivity to universities. Research productivity is important to universities because it enhances institutional ranking, academic credibility, and scholarly relevance. According to Wilson et al. (2023), universities with strong research output are more likely to attract quality students and academic partnerships. Brown (2022) also stated that research productivity strengthens professional development because academics gain recognition through their work. Similarly, Smith and Johnson (2021) noted that productive researchers contribute significantly to curriculum development and mentorship.

In addition, Adekoya (2023) explained that universities depend on research output to justify funding, accreditation, and global competitiveness. This institutional importance underscores the broader role of research in contributing to national growth, linking directly to the role of research in national development and competitiveness. Research productivity plays a major role in national development, innovation, and global competitiveness by driving knowledge creation and problem solving. According to Martinez (2023), research activities help societies address economic, technological, and social challenges. Jones and Lee (2020) noted that collaborative innovations emerging from research support national progress through new ideas and solutions. Similarly, Zhang (2020) asserted that countries with strong research output are more likely to dominate global knowledge systems and attract international partnerships. In addition, Smith and Patel (2022) opined that digital-age research strengthens global competitiveness by enhancing communication and international visibility. These national benefits make it necessary to examine how

collaboration contributes to productivity, introducing the influence of collaboration on research output. Research productivity can be significantly influenced by collaboration because working with others broadens perspectives, skills, and access to resources.

According to Smith and Johnson (2021), collaborative research often results in higher-quality publications because multiple experts contribute to problem-solving. Brown (2022) also noted that academics who collaborate are more likely to publish regularly due to shared responsibilities and stronger motivation. Similarly, Kammer et al. (2021) stated that collaboration enhances efficiency by combining individual strengths in a team environment. In addition, Martinez (2023) observed that partnerships between researchers create opportunities for interdisciplinary studies, which improve productivity levels. These collaborative benefits are strengthened when digital tools support teamwork, linking into the impact of digital tools on research output. Research productivity is strongly impacted by digital tools because they simplify communication, document sharing, and coordination during research activities. According to Mohammed and Yusuf (2020), digital tools such as social media and online platforms help researchers communicate easily and share documents across locations. Smith and Patel (2022) also stated that digital collaboration tools improve productivity by enabling real-time co-authoring and virtual meetings.

Similarly, Martinez (2023) noted that technology enhances research visibility by helping academics access information quickly. In addition, Jones and Lee (2020) explained that digital systems reduce delays that occur in traditional collaboration, making research timelines more efficient. These technological influences show that digital tools serve as a foundation for modern scholarly work, which leads to their broader relevance across academic environments. Research productivity increases when digital tools support inclusive participation and broaden the research network. According to Wilson et al. (2023), digital collaboration enables academics to work with national and international colleagues regardless of geographical limitations. Kim and Hernandez (2020) also noted that digital platforms improve access to open-access materials, which enriches research quality. Similarly, Brown (2022) asserted that technology fosters mentorship and professional learning communities that promote continuous engagement in research. In addition, Shirazi and Ahmadi (2020) explained that digital systems help researchers track citations, manage references, and monitor research impact, all of which strengthen productivity. These functions reinforce how digital tools deepen research engagement, linking to their emerging role in shaping modern scholarship.

Theoretical Framework

This study is anchored on the Technology Acceptance Model (TAM) propounded by Davis (1989). The theory explains how users come to accept and use technology, particularly in information systems and digital environments. TAM is widely used in studies on technology adoption because it focuses on two key factors: perceived usefulness and perceived ease of use. Perceived usefulness refers to the degree to which an individual believes that using a particular system will improve job performance, while perceived ease of use refers to how effortless the system is to use. In the context of academic staff, including librarians, these two factors determine whether collaborative digital tools such as Google Workspace, Zoom, and other platforms are adopted for research activities. Studies such as Sodipe et al. (2024) support this view by showing that librarians' technological competence and performance expectancy influence their use of automation systems, which aligns with the assumptions of TAM. The major assumption of this theory is that individuals are rational and will adopt technologies that they find useful and easy to use.

It also assumes that external factors such as training, experience, and institutional support indirectly influence technology adoption by shaping users' perceptions. This is evident in academic settings where the availability of ICT infrastructure, digital skills, and organisational support determines how academic staff utilise collaborative tools. For example, Sodipe et al. (2025) highlighted that awareness and application of emerging technologies in libraries influence how effectively such tools are used, while Sodipe et al. (2024) on electronic resources further indicates that access alone does not guarantee usage without proper management and user competence.

TAM remains highly relevant because it provides a clear framework for understanding why some academic staff which includes librarians adopt collaborative digital tools while others do not. The relevance of TAM to this study lies in its ability to explain how collaborative digital tools predict research productivity among academic staff in Nigerian universities. Since librarians are part of academic staff, their use of digital systems such as automated cataloguing tools and electronic resources (Sodipe et al., 2025; Sodipe et al., 2024) reflects how technology adoption influences research-related activities. The theory also supports the idea that effective use of collaborative digital tools, driven by perceived usefulness and ease of use, can enhance communication, knowledge sharing, and ultimately research productivity within academic institutions.

Review of Related Studies

Studies on collaboration and research productivity in Nigerian universities show that collaborative digital tools, skills, and technologies play an important role in boosting academic output. Yila and Temboge (2024) examined how collaboration skills influence the research productivity of librarians at the National Open University of Nigeria. Using a census survey of 54 librarians, the study found that both collaboration skills and research productivity were at a moderate level. More importantly, the study confirmed a significant positive relationship between collaboration skills and research productivity. The authors recommended continuous professional development, such as workshops and conferences, to strengthen collaboration among librarians. They concluded that strong collaboration skills create a supportive and productive research environment.

Similarly, Ideh and Eserada (2024) investigated research collaboration among Library and Information Science (LIS) educators and practitioners in Delta and Edo State universities. Using a descriptive survey design and total enumerative sampling, the study showed that the level of research collaboration was generally low. However, respondents agreed that collaboration is necessary to enhance knowledge sharing, improve teaching practices, and achieve collective goals. Factors that support successful collaboration included shared vision, trust, and mutual respect. The researchers recommended that LIS educators and practitioners engage more actively in collaborative research to exchange ideas and address emerging issues in the field. Adeoye et al. (2021) focused specifically on social media as a collaborative tool among LIS professionals in Nigeria. Their study revealed that platforms such as WhatsApp, email, Google Docs, Google Drive, Facebook, Telegram, and Zoom are commonly used for collaborative research. Respondents agreed that these tools help researchers communicate easily, network, and share documents regardless of location. However, differences in ICT skills and limited knowledge of social media tools were identified as major challenges. The study recommended more training and self-development opportunities to improve ICT competence and enhance collaborative research through digital platforms.

Olanusi and Falade (2023) investigated collaborative research among academic librarians in public universities in North-Central Nigeria. Using a survey of 60 librarians, they found that most librarians had engaged in collaborative research within and outside their institutions over the past two years. The most commonly used collaborative digital tools were Google+ and WhatsApp. The study also showed that collaboration increased the number of publications and improved research output. However, poor internet connectivity and limited funding were the major barriers. The authors recommended that librarians intensify collaborative efforts and that university management improve internet access to support research partnerships.

In their study on research productivity, Iwu-James et al. (2023) assessed both the quantity and quality of publications produced by academic librarians in South-West Nigeria. Their findings showed that research productivity was average, based on publication counts and the use of indexing platforms like Google Scholar, Scopus, and Web of Science. Google Scholar was the most commonly used indexing platform. The study emphasized the need for a more supportive research environment to help librarians improve their scholarly contributions. A recent study by Aloysius et al. (2025) explored collaborative technologies and knowledge sharing among librarians in federal universities in South-South and South-East Nigeria. Using a census of 243 librarians, the study found extensive use of collaborative technologies, especially simple and accessible tools like email and WhatsApp.

Methodology

This study adopted a descriptive survey research design, which was considered appropriate because it enables the collection of opinions and perceptions from a cross-section of the target population (Creswell, 2014; Sekaran & Bougie, 2016). The study was conducted among librarians in seven selected academic libraries in Ogun State, Nigeria, namely Laz Otti Memorial Library, Babcock University; Tellstech Library, Bells University of Technology; O.O.U Library, Olabisi Onabanjo University; Gbenga Daniel Library, Tai Solarin University of Education; Nelson Mandela Library, Christopher University; Centre for Learning Resources, Covenant University; and Nimbe Adedipe Library, Federal University of Agriculture, Abeokuta.

The total population for the study comprised 107 librarians drawn from these institutions, which is relatively small size, total enumeration was adopted, allowing all 107 librarians to participate in the study. This approach ensured comprehensive coverage of the target population and eliminated sampling bias that might arise from selecting only a subset of respondents. Consequently, the views and experiences of librarians across the selected universities were adequately represented.

Data were collected using a self-designed, closed-ended questionnaire developed through Google Forms, which provided respondents with convenient online access and ease of completion. The questionnaire was distributed electronically to all librarians in the selected institutions, and the responses obtained were used for the analysis of collaborative tools and research productivity among librarians in Ogun State universities.

Results

Research Question 1: To what extent do librarians use collaborative digital tools for research among librarians in Nigerian universities?

Table 1: Extent of the Use of Collaborative Tools for Research

Collaborative digital tools	VHU (%)	HU (%)	MU (%)	NU (%)	Mean	Std. Dev.	Remark
Email and mailing lists	45 (42.1 %)	26 (24.3 %)	22 (20.6 %)	14 (13.1 %)	3.05	1.01	Highly used
Google Workspace (Docs, Drive, Meet)	37 (34.6 %)	28 (26.2 %)	25 (23.4 %)	17 (15.9 %)	2.87	1.08	Highly used
WhatsApp groups	41 (38.3 %)	29 (27.1 %)	20 (18.7 %)	17 (15.9 %)	2.95	1.06	Highly used
Telegram groups	33 (30.8 %)	32 (29.9 %)	25 (23.4 %)	17 (15.9 %)	2.81	1.05	Highly used
Microsoft Teams	25 (23.4 %)	31 (29.0 %)	30 (28.0 %)	21 (19.6 %)	2.54	1.11	Highly used
Zoom	36 (33.6 %)	28 (26.2 %)	28 (26.2 %)	15 (14.0 %)	2.88	1.03	Highly used
Institutional repositories	28 (26.2 %)	30 (28.0 %)	31 (29.0 %)	18 (16.8 %)	2.61	1.07	Highly used
Social media (Facebook, X, LinkedIn)	19 (17.8 %)	27 (25.2 %)	35 (32.7 %)	26 (24.3 %)	2.28	1.08	Moderately used
Online forums & professional networks	22 (20.6 %)	24 (22.4 %)	36 (33.6 %)	25 (23.4 %)	2.31	1.05	Highly used
Wikis & collaborative knowledge bases	16 (15.0 %)	20 (18.7 %)	38 (35.5 %)	33 (30.8 %)	2.04	1.02	Moderately used
Average Mean					**2.68**	**1.06**	**Highly used**

Keys: VHU = Very Highly Used, HU = Highly Used, MU = Moderately Used, NU = Not Used.
Decision rule: 1.00-1.45: Not Used; 1.46-2.30: Moderately Used; 2.31-3.15: Highly Used; 3.16-4.00: Very Highly Used.

Table 1 shows that Nigerian university librarians frequently use email, WhatsApp, Google Workspace, and Zoom for research collaboration, with mean scores ranging

from 2.87 to 3.05, indicating high usage. Microsoft Teams and institutional repositories are also highly used but slightly less. Tools like social media, online forums, and wikis have lower mean scores (2.04–2.31), indicating moderate usage. Hence, with an average mean of 2.68, result showed that librarians in Nigerian universities highly use collaborative digital tools to support their research activities.

Research Question 2: What is the level of research productivity of librarians in Nigerian universities?

Table 2: Level of Research Productivity of Librarians

Research Productivity Indicators	**0–2**	**3–5**	**6–8**	**9 and Above**	**Total**	**Mean**	**Std. Dev.**	**Remark**
Journal Articles	41 (38.3%)	29 (27.1%)	19 (17.8%)	18 (16.8%)	107	2.13	1.12	Low
Conference Papers	45 (42.1%)	31 (29.0%)	17 (15.9%)	14 (13.1%)	107	2.00	1.07	Low
Book Chapters	53 (49.5%)	25 (23.4%)	16 (15.0%)	13 (12.1%)	107	1.90	1.04	Low
Technical Reports	47 (43.9%)	30 (28.0%)	17 (15.9%)	13 (12.1%)	107	1.96	1.06	Low
Workshop Papers	51 (47.7%)	28 (26.2%)	16 (15.0%)	12 (11.2%)	107	1.90	1.03	Low
Seminar Papers	49 (45.8%)	27 (25.2%)	19 (17.8%)	12 (11.2%)	107	1.94	1.05	Low
Monographs	57 (53.3%)	24 (22.4%)	15 (14.0%)	11 (10.3%)	107	1.81	1.00	Low
Edited Works	50 (46.7%)	29 (27.1%)	17 (15.9%)	11 (10.3%)	107	1.90	1.02	Low
Average Mean						**1.94**	**1.05**	**Low**

Decision rule: 1.00-1.49: Very Low; 1.50-2.49: Low; 2.50-3.49: High; 3.50-4.00: Very High.

Table 2 presents the level of research productivity of librarians in Nigerian universities across various scholarly outputs. The result shows that journal articles have a mean score of 2.13, indicating low productivity, with 38.3% having only between 0–2 publications. Conference papers also show low involvement with a mean of 2.00, and 42.1% having only 0–2 publications. Book chapters have an even lower mean of 1.90, as 49.5% published only 0–2 chapters. Technical reports recorded a mean of 1.96, with 43.9% producing between 0–2 reports. With an

average mean of 1.94, the findings indicate that librarians in Nigerian universities have a low level of research productivity, as the values fall below the decision benchmark of 2.50.

Research Question 3: Is there any significant relationship between collaborative digital tools and research productivity among librarians in Nigerian universities?

Table 3: Multiple Regression analysis of RQ Three

Model Summary				
R = .723[a]				
Multiple R^2= .523				
Multiple R^2 (Adjusted)= .518				
Std. Error Est.= 2.147, p<0.05				
		ANOVA		
Model	***Sum of Squares***	**Mean square**	***F***	**Sig**
Regression	248.551	124.276	26.890	.000[b]
Residual	226.398	2.116		
Total	474.949			

a. **Dependent variable:** *Research Productivity*
b. **Predictors:** (Constant), *Collaborative digital tools*

Table 3 presents the multiple regression analysis examining the relationship between collaborative digital tools and research productivity among librarians in Nigerian universities. The coefficient of multiple correlation (R = .723) indicates a strong positive relationship between collaborative digital tools and research productivity. The R^2 value of .523 shows that 52.3% of the variance in research productivity is explained by the use of collaborative digital tools. The F-ratio (F = 26.890, p = .000 < 0.05) indicates that the model is statistically significant. Hence, there is significant relationship between collaborative digital tools and research productivity among librarians in Nigerian universities, which implies that the more librarians effectively use collaborative digital tools, the higher their research output is likely to be.

Discussion of the Findings

The study showed that librarians in Nigerian universities highly use collaborative digital tools to support their research activities. This finding aligns with the study of Adeoye et al. (2021), who observed that platforms such as WhatsApp, email, Google Docs, Google Drive, Facebook, Telegram, and Zoom are commonly used by LIS professionals for collaborative research. Similarly, Aloysius et al. (2025) found extensive use of collaborative technologies among librarians in federal universities,

with simple tools like email and WhatsApp being widely adopted for knowledge sharing and communication. This finding is also consistent with the work of Olanusi and Falade (2023), who reported that most academic librarians engaged in collaborative research using tools such as WhatsApp and Google+ to enhance research output. Furthermore, Mohammed and Yusuf (2020) emphasized that ICT-based tools support real-time interaction, co-authoring, and information exchange, which enable researchers to work effectively across distances. Akpan and Udo (2020) also asserted that digital platforms facilitate team learning and strengthen research networks among university staff. However, this finding is not entirely in line with Ideh and Eserada (2024), who reported a generally low level of active research collaboration among LIS educators, suggesting that while tools are available, and their utilization may vary depending on institutional culture and motivation.

The study revealed that there is low level of research productivity among librarians in Nigerian universities. This finding is in line with the study of Aiyebelehin (2022), who asserted that Nigerian universities continue to struggle with limited research output due to inadequate funding, weak collaborative culture, and poor support systems. Similarly, Iwu-James et al. (2023) reported that research productivity among academic librarians in South-West Nigeria was average, with librarians relying heavily on platforms like Google Scholar, Scopus, and Web of Science, yet producing limited scholarly work. Babalola and Allahmagi (2023) also emphasized that low research output undermines institutional visibility and reduces the ability of universities to contribute meaningfully to national development. Furthermore, Anyaoku and Ezeani (2021) noted that universities with low research productivity struggle to lead in innovation, problem-solving, and global competitiveness. Adekoya (2023) highlighted that challenges such as limited funding, inadequate infrastructure, and heavy workloads hinder librarians from engaging fully in research activities. This finding is not in line with the study of Olanusi and Falade (2023), who found that collaborative research increased publication output among librarians when barriers such as funding and connectivity were mitigated.

The study showed that there is significant relationship between collaborative digital tools and research productivity among librarians in Nigerian universities, which implies that the more librarians effectively use collaborative digital tools, the higher their research output is likely to be. This finding aligns with Yila and Temboge (2024), who established a significant positive relationship between collaboration skills and research productivity among librarians, indicating that digital and interpersonal collaboration can boost scholarly output. Similarly, Adeoye et al. (2021) reported that social media and collaborative platforms, including WhatsApp,

Google Docs, and Zoom, facilitate communication, networking, and document sharing, directly influencing research productivity. This finding also supports the study of Ekong and Udoh (2022), who emphasized the importance of ICT infrastructure in enabling digital collaboration and enhancing research activities in universities. Fari and Ingawa (2020) further highlighted that collaboration allows researchers to pool expertise and address multidisciplinary issues more efficiently, demonstrating the practical impact of collaborative digital tools on research performance. Additionally, Igwe and Onwubiko (2021) noted that advanced collaborative technologies such as Zoom and Microsoft Teams improve communication, streamline workflows, and support co-authoring, thereby increasing research outputs. This finding is not entirely in line with the study of Ideh and Eserada (2024), who reported generally low engagement in collaborative research, suggesting that while tools can enhance productivity, their effectiveness depends on consistent use, institutional support, and user competence.

Conclusion

In conclusion, librarians highly use collaborative digital tools such as email, WhatsApp, Google Workspace, Zoom, and Telegram to support their research activities; which implies that librarians are technologically inclined and actively engage with digital platforms to communicate, coordinate, and share research materials. The high usage of these tools demonstrates their awareness of the benefits of collaboration in research, including improved communication, quicker access to information, and the ability to co-author and manage research projects efficiently. There was a low level of research productivity among librarians. Despite the high use of collaborative digital tools, librarians' output in terms of publications, conference participation, and research project completion remains relatively low. This implies that while collaborative digital tools facilitate research processes, other factors such as institutional support, time constraints, research skills, and motivation may influence the actual productivity of librarians. Librarians who effectively utilize collaborative digital tools tend to produce more research output, reinforcing the importance of digital collaboration in academic research. The implication is that collaborative digital tools can be strategic enablers of research performance when used optimally.

Recommendations

Based on the findings, the following recommendations were made:

1. Libraries should provide regular training workshops on advanced collaborative digital tools to enhance librarians' efficiency and encourage

broader usage in research activities. Librarians should establish structured research collaboration groups and communities within universities to leverage these tools effectively for joint research projects.

2. University management should implement supportive policies, including research grants and reduced administrative workloads, to boost librarians' research productivity. Librarians should set personal research targets and use time-management strategies to improve research output alongside tool usage.
3. Universities integrate collaborative digital tools into formal research management systems to monitor and enhance productivity. Librarians should adopt best practices in using collaborative platforms for project tracking, co-authoring, and knowledge sharing.

References

Abramo, G., D'Angelo, C. A., & Murgia, G. (2021). Collaboration in contemporary science: A review. *Scientometrics, 126*(1), 155–174.

Adebayo, S. O. (2022). Digital collaboration and knowledge sharing among academic librarians in Nigeria. *Journal of Library and Information Services, 10*(2), 45–59.

Adekoya, C. O. (2023). Library funding and sustainable development of higher education. *International Information & Library Review, 55*, 1–12.

Adeoye, A. A., Onuoha, C., Obiano, D. C., & Olayode, M. (2021). Social media as a collaborative tool for research among Library and Information Science (LIS) professionals in Nigeria. *Library Philosophy and Practice (e-journal)*, 5137.

Aiyebelehin, A. J. (2022). "Add-my-name" as a parody of research collaboration among Nigerian researchers. *Accountability in Research, 29*(1), 45–54.

Akpan, I. M., & Udo, J. P. (2020). ICT adoption and collaborative learning among library staff in Nigerian universities. *Library Philosophy and Practice (e-journal), 4567*, 1–14.

Aloysius, D. A., Aloysius, M. D., & Ekanemesang, I. E. (2025). Collaborative technologies and knowledge sharing among librarians in federal university libraries in South-South and South-East Nigeria. *International Journal of Research and Scientific Innovation, 12*(10), 2368–2378.

Anyaoku, E. N., & Ezeani, C. N. (2021). Social media and knowledge sharing among librarians in Nigerian university libraries. *Library Management, 42*(3), 177–189.

Babalola, Y. T., & Allahmagi, K. (2023). Institutional support on research productivity in public libraries in North-West Nigeria. *Global Journal of Applied, Management and Social Science, 23*, 1–15.

Brown, M. (2022). Professional development through research collaboration. *Library and Information Research, 16*(1), 78–91.

Creswell, J. W. (2014). *Research design: Qualitative, quantitative, and mixed methods approaches* (4th ed.). SAGE Publications. 1-270.

Eke, H. N., & Okafor, V. N. (2021). Collaborative technologies for knowledge creation and dissemination in academic libraries. *African Journal of Library, Archives and Information Science, 31*(1), 65–80.

Ekong, A. O., & Udoh, F. J. (2022). ICT infrastructure and professional collaboration in Nigerian federal university libraries. *Nigerian Libraries, 54*(2), 122–141.

Enakrire, R. T., Chisita, C. T., & Adeyinka, T. (2020). Partnership among librarians: Reflection on observations, interviews and research reports from three universities in Nigeria and Zimbabwe. *International Journal of Higher Education, 9*(5), 338–345.

Fari, S. A., & Ingawa, A. I. (2020). Analysis of factors influencing academic collaborative research in selected federal universities in Nigeria. *MiddleBelt Journal of Library and Information Science, 18*, 1–12.

Ideh, P. N., & Eserada, R. E. (2024). Research collaboration among Library and Information Science educators and practitioners in universities in Delta and Edo States, Nigeria. *Nasarawa Journal of Library and Information Science, 8*(1), 204–215.

Igwe, K. N., & Onwubiko, C. (2021). The role of digital collaboration tools in enhancing service delivery in academic libraries. *Library Hi Tech News, 38*(6), 12–19.

Iwu-James, J., Egbuchuwa, E., Ugwuanyi, M., Asogwa, J., Amanze, J., Abah, M., & Ajala, C. (2023). Research productivity of academic librarians in South-West Nigeria. *International Journal of Knowledge Dissemination, 4*(2), 105–122.

Johnson, R. M. (2020). The changing face of librarianship: Exploring the impact of librarian research on information services and scholarship. *Library and Information Research, 44*(2), 78–92

Jones, A., & Lee, S. (2020). Innovation through collaboration in LIS. *Library Trends, 58*(4), 100–117.

Kammer, J., King, M., Donahay, A., & Koeberl, H. (2021). Strategies for successful school librarian and teacher collaboration. *SLR School Library Research, 24*, 1–24.

Kim, S., & Hernandez, J. (2020). Promoting open access initiatives. *Journal of Academic Librarianship, 46*(2), 89–102.

Majid, S., & Foo, S. (2022). Enhancing knowledge sharing in libraries through collaborative technologies. *Journal of Librarianship and Information Science, 54*(3), 321–335.

Martinez, L. (2023). The role of technology in research collaboration. *Digital Library Perspectives, 39*(2), 140–156.

Mohammed, A. I., & Yusuf, K. O. (2020). Adoption of social media and collaborative digital tools among librarians in Nigerian universities. *Communications in Information Literacy, 14*(1), 80–95.

Olanusi, A. E., & Falade, A. O. (2023). Collaborative research among academic librarians in public university libraries in North–Central Nigeria. *Journal of Balkan Libraries Union, 10*(1), 1–6.

Pinto, M. D. P., & Fontelles, M. J. (2020). Collaboration between teacher and librarian in information literacy training: An experience report. *Informação & Sociedade: Estudos, 30*(3), 341–456.

Sekaran, U., & Bougie, R. (2016). *Research methods for business: A skill-building approach* (7th ed.). Wiley. 1-447.

Shirazi, B., & Ahmadi, S. (2020). Academic librarians' research productivity: A literature review. *The Journal of Academic Librarianship, 46*(6), 102178.

Smith, A., & Johnson, R. (2021). Exploring the relationship between collaboration and research productivity: A comprehensive analysis. *Journal of Research Productivity, 35*(2), 187–205.

Smith, E., & Patel, R. (2022). Digital collaboration skills and research productivity: Navigating the virtual research landscape. *Journal of Virtual Research Environments, 18*(2), 123–140.

Sodipe, O. M., Aarinola, A. A., Aliyu, M., & Quadri, M. O. (2024). Librarians' Technological Competence, Performance, Expectancy, and Perceived Ease of the Use of Automation Software in Academic Libraries in Ogun State. *Lead City International Journal of Library, Information & Communication,* 1(2), 359–371. https://doi.org/10.5281/zenodo.18935408

Sodipe, O. M., Aarinola, A. A., Mahmud, A., & Bamgbose, A. A. (2024). Utilisation and Management of Electronic Resources in Selected Academic Libraries in South-West, Nigeria. *University of Ibadan Journal of Library and Information Science UI-JLIS,* 7(1 & 2), 17–27. https://doi.org/10.5281/zenodo.18934769

Sodipe, O. M., Ukangwa, C. C., Adebiyi, A. O., & Olutoki, A. E. (2025). Awareness, Application and Use of Fourth Industrial Revolution (4IR) Technologies in selected libraries in Ogun State, Nigeria. *Lafia Journal of Library and Information Science, 7(1), 13–28.* http://lalibjournals.org/index.php/LJLIS/article/view/106

Wilson, J., Brown, A., Smith, R., & Taylor, M. (2023). Enhancing educational programs through research collaboration. *Education for Information, 39*(1), 42–58.

Yila, U. M., & Temboge, A. (2024). Evaluating the role of collaboration skills in shaping research productivity among librarians at the National Open University of Nigeria (NOUN). *International Journal of Library and Information Technology, 6*, 126–134.

Zhang, Y. (2020). Alternative metrics for assessing research impact. *Journal of Academic Librarianship, 46*(3), 102129.