LASU JOURNAL OF MULTIDISCIPLINARY NIGERIAN STUDIES (LASUJMNS)

Vol 2(1) March 2026
ISSN: 3121 9144

USE OF CLOUD COLLABORATIVE TOOLS BY LIBRARIANS IN ACADEMIC UNIVERSITIES: THE LASU LIBRARY EXPERIENCE

Ogungbo, Wakilu O.[1] & Amosun, Faith I.[2]
[12]University Library, Lagos State University, Nigeria
faithaamosun@gmail.com

Abstract

Cloud collaborative tools are increasingly transforming how academic activities are carried out, including library service delivery. In Nigerian academic libraries, adoption of these tools is growing, but issues of access and effective use by librarians remain a concern. The study employed a descriptive survey design. Data were collected using structured questionnaires administered to professional and para-professional library staff of Lagos State University and analysed with descriptive statistics. Results showed that cloud collaborative tools such as WhatsApp, Google Workspace, Zoom, Yahoo Mail, Telegram, and Microsoft 365 were the most frequently used. Library staff utilized these tools for knowledge sharing, contribution to professional development, awareness of trends in the profession, membership in academic bodies, social interactions, and the delivery of library services. High data costs, information integrity, message overload, and constant expectations of availability were identified as significant challenges. Social anxiety and technological skills were regarded as minor challenges to the use of these tools by library staff. Cloud collaborative tools enhance productivity, professional development, and cooperation among library staff, despite existing challenges. The study recommends improved institutional support, across-board digital literacy training, and strengthened internet infrastructure to promote effective adoption and sustained use of cloud collaborative tools in Nigerian academic libraries.

Keywords:
academic libraries, cloud collaborative tools, Lagos State University Library, Librarians.

Citation:
Ogungbo, W. O., & Amosun, F. I. (2026). Use of cloud collaborative tools by librarians in academic universities: The LASU library experience. *LASU Journal of Multidisciplinary Nigerian Studies (LASUJMNS)*, 2(1). 127-140

Introduction

An academic library is an extensive collection of various types of information resources affiliated with an institution of higher education, with the aim of meeting the information and research needs of its students, staff, and community. In addition to its vast collection, an academic library offers services and resources to support teaching and learning, including access to online databases, computer workstations, collaborative spaces, reference services, and information literacy education. According to Adewojo and Mayowa-Adebara (2016), the

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ISSN: 3121 9144

extent to which academic libraries can effectively meet the needs of their users largely depends on the skills of their librarians and the use of modern technologies.

As the landscape of information access and its management continues to evolve, so also have the roles and required skill sets of academic librarians evolved. Traditionally, librarians were primarily responsible for developing and managing physical collections, offering reference services, and facilitating user engagement through face-to-face communication and collaboration. However, the shift toward digital information environments has imposed a broader and more technologically oriented skill set. The information needs of library users are constantly changing therefore, libraries and their librarians need to adapt accordingly (Okusaga et al., 2021). Librarians are expected to be skilful in the use of modern information and communication technologies for core library functions, digital information management, professional development and interdisciplinary collaboration.

Cloud collaborative tools are one of many innovative technologies that improve workplace practices. They are services and software applications on the internet used for real-time communication, coordination, conferencing and knowledge sharing among several users in different locations (Amosun & Ogungbo, 2025). Cloud collaborative tools are highly beneficial to librarians in performing library tasks and services. They include: Google Workspace, Microsoft Teams, Zoom, Skype, telegram, Yahoo Mail, WPS Office. With the use of cloud collaborative tools, librarians can easily store documents online and access them from any device, they can collaborate with multiple colleagues and simultaneously edit files, leave comments, or contribute to shared projects. Librarians can organise meetings and assign tasks to others without being in the same location. They can track changes to documents saved online and restrict who has access to them. Additionally, cloud collaborative tools enhance organizational efficiency by supporting virtual meetings, task assignment, and increasing online visibility and awareness of current professional trends (Odunewu & Haliso, 2019).

In accordance with Ranganathan's fifth law of library science, which states that the library is a growing organism. Librarians are expected to constantly evolve to meet the demands of modern academic libraries, where emphasis is placed on digitization, data management, open access publishing and technological innovation. Librarians should be flexible, tech-savvy, and capable of engaging in interdisciplinary collaboration using modern technologies. It is on this background that the present study seeks to examine the use of cloud collaborative tools by librarians in academic libraries. Studies have been carried out in recent times on the use of social media and other innovative technologies by library professionals in Nigerian Libraries (Odunewu & Haliso, 2019, Okusaga et al., 2021, Isiaka, et al., 2024). This study is however specific to Lagos State University, being the most digitally advanced University in Nigeria with the largest library in West Africa (LASU 2025). It examines the technical abilities of academic librarians in the university and their alignment with the Institutions advanced digital environment.

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ISSN: 3121 9144

Research Questions

1. What are the cloud collaborative tools used by librarians in Lagos State University?
1 What is the extent of use of cloud collaborative tools for social and recreational activities by librarians in Lagos State University?
2 What is the extent of use of cloud collaborative tools for knowledge and professional development by librarians in Lagos State University?
3 What are the motivating factors of the use of cloud collaborative tools by librarians in Lagos State University?
4 What are the challenges encountered by librarians in Lagos State University while using cloud collaborative tools?

Literature Review

Collaboration In Librarianship

Collaboration has been an essential part of librarianship which allows libraries share resources, expertise, and services to enhance access to information and improve user satisfaction. Traditional collaboration methods such as: interlibrary loans, cooperative cataloguing, shared collection development, and joint training have provided the foundation for professional networking and service delivery, particularly before the widespread adoption of digital tools (Ukaegbu & Okwu, 2023). Although innovative technologies have redefined collaborative practices, traditional models are still relevant, especially in Lagos State University where interpersonal relationships and informal communication are central to library operations.

Interlibrary loan (ILL) is among the earliest forms of collaboration in libraries. This method has allowed academic libraries expand their services beyond local collections to meet users' research needs. Reciprocal lending and document delivery which is usually based on personal relationship among librarians have boosted the collection of many libraries especially where financial constraints exist. Library consortia involving joint efforts by libraries to cooperatively acquire costly e-resources and negotiate better terms with publishers is another traditional model of collaboration (Babarinde & Onifade, 2019). Librarian-faculty collaboration is also a traditional method of collaboration. Alabi (2018) found that in higher institutions across Lagos State, librarian-faculty collaboration tends to occur informally, driven by the initiative of individual librarians rather than institutional policy. Other traditional methods include: physical participation in associations, committees and conferences.

The gradual shift from traditional to digital collaboration represents an evolution in the profession of librarianship. Traditional forms of collaboration served as a foundation for the adoption of modern, technology-driven systems such as **cloud collaborative tools.** The roles of librarians have significantly changed in recent times. In addition to a degree in Library Science and traditional skills such as cataloging and reference services, professional librarians are now required to have digital literacy skills, technological adaptability, and collaborative abilities (Corrall, Kennan, & Afzal, 2013).

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Although traditional collaboration methods remain a cornerstone of librarianship, emerging technologies such as cloud collaborative tools provide the **technical infrastructure** for broader, more efficient professionalism. According to Tenopir et al. (2015), librarians are playing increasingly active roles in research data management, digital scholarship, and open access publishing. These areas are highly dependent on the use of cloud collaborative tools. Librarians are transitioning from being only managers of physical collections to facilitators of digitization and information literacy which includes creating and managing online databases, promoting online visibility, organizing webinars and global collaboration. In Nigeria, librarians are gradually embracing the use of digital technologies to support remote collaboration, virtual service delivery, and digital content management, although challenges related to infrastructure, training and attitudinal factors still exist. (Adewojo & Mayowa-Adebara, 2016; Igwe, & Onuoha, 2020, Edewor, 2021).

Cloud Collaborative Tools In Academic Libraries

Cloud collaborative tools (CCTs) have become essential digital infrastructures that support information sharing, communication, and task coordination across institutions. In academic libraries, these tools are increasingly used to facilitate teamwork among librarians, improve service delivery, and support research and academic collaboration (Amosun & Ogungbo, 2025). Integrating cloud collaborative tools in libraries enables digital transformation which promotes flexibility, increases innovation and quick response to the needs of library users. Cloud collaborative tools encompass a wide array of platforms such as Google Workspace, Microsoft 365, Telegram, Zoom, and WPS, which allow multiple users to work on shared documents in real time, conduct virtual meetings, manage projects, and maintain asynchronous communication. These tools are especially relevant for libraries interested in increased online visibility and partnership, and libraries adapting to remote and hybrid work models following the COVID-19 pandemic. (Luo & Hostetler, 2021).

Cloud collaborative tools offer a wide range of benefits in academic libraries. They provide backup and data recovery services, constant access to information, easy installation and maintenance as no server is required to use these tools (Sivankalai, 2021). CCTs tools foster real-time communication and collaboration, enabling multiple librarians to work on documents simultaneously, provide feedback, and monitor progress. This is particularly useful in collection development, policy drafting, and planning educational and research activities. (Morrison, 2019). Similarly, CCTs support asynchronous collaboration, which is essential for part-time or remote staff, staff in branch libraries and multi-campus institutions. Cloud collaborative tools also enable libraries to provide smart library services in form of digital collections, automated book check-out and return services, virtual reference services and hybrid collaborative work spaces.

Research on the adoption of cloud-based technologies in academic libraries indicates a growing awareness and utilization among librarians. A study by Igwe and Onuoha (2020) revealed that Nigerian academic librarians are increasingly leveraging cloud tools for professional communication, collaborative cataloging, and information dissemination. Similarly, Olajide

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and Oyeniran (2022) found that cloud tools enhance knowledge sharing and reduce redundancy in administrative and research workflows. CCTs such as Google Docs, Microsoft Teams, and Zoom can be used for internal meetings, document sharing, and student engagement. These platforms promote teamwork, minimize geographical barriers, and streamline workflows. However, studies have shown that their effective use depends largely on digital literacy, institutional support, and the availability of stable internet connectivity (Adewumi & Adeniran, 2021).

Challenges To The Use Of Cloud Collaborative Tools

Despite their numerous advantages, the use of cloud collaborative tools is not without challenges. In many Nigerian academic libraries, issues such as inadequate ICT infrastructure, inconsistent internet access, and limited technical expertise hinder optimal usage of CCTs (Edewor, 2021). High cost of data, high costs of technological devices, high cost of power and its erratic supply which are a reflection of the difficult economic condition in the country also negatively affect the use of CCTs (Sivankalai, 2021). Furthermore, data privacy and data security as well as service provider stability are major considerations in the deployment of cloud-based services (Al-Samarraie & Saeed, 2018; Amosun & Ogungbo, 2025). According to Okike and Asogwa (2020), institutional policies and leadership support are critical in overcoming these barriers and ensuring effective use of cloud collaborative tools.

Methods

The study adopted descriptive survey research design. The population comprised of professional and para-professional librarians in Lagos State University Library. Total enumeration technique was used to cover all professional and para-professional library staff in Lagos State University Library. A structured questionnaire titled Use of Cloud Collaborative Tools by Library Staff (UCCTLS) was used to collect data for the study. The data collected were analyzed using descriptive statistics.

Results

A. Demographics

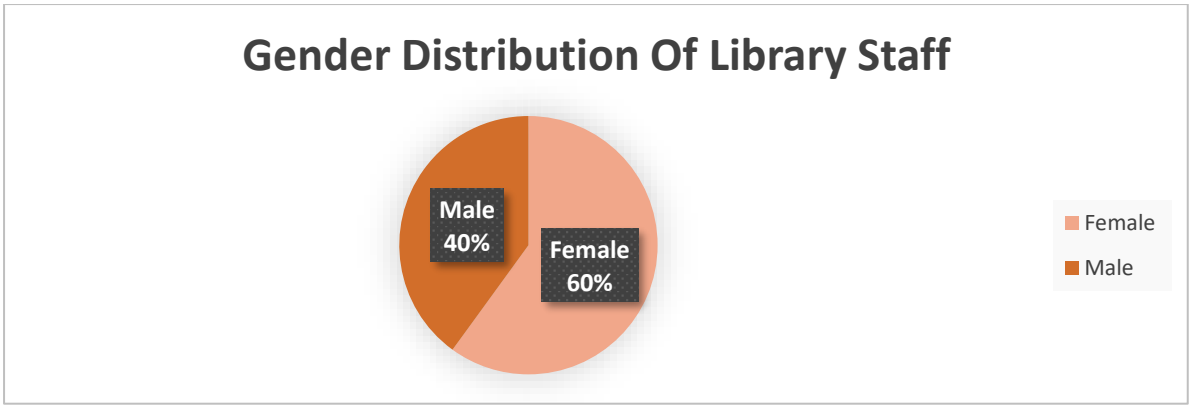


Figure 1: Pie Chart Showing Gender Distribution Of Library In Lagos State University

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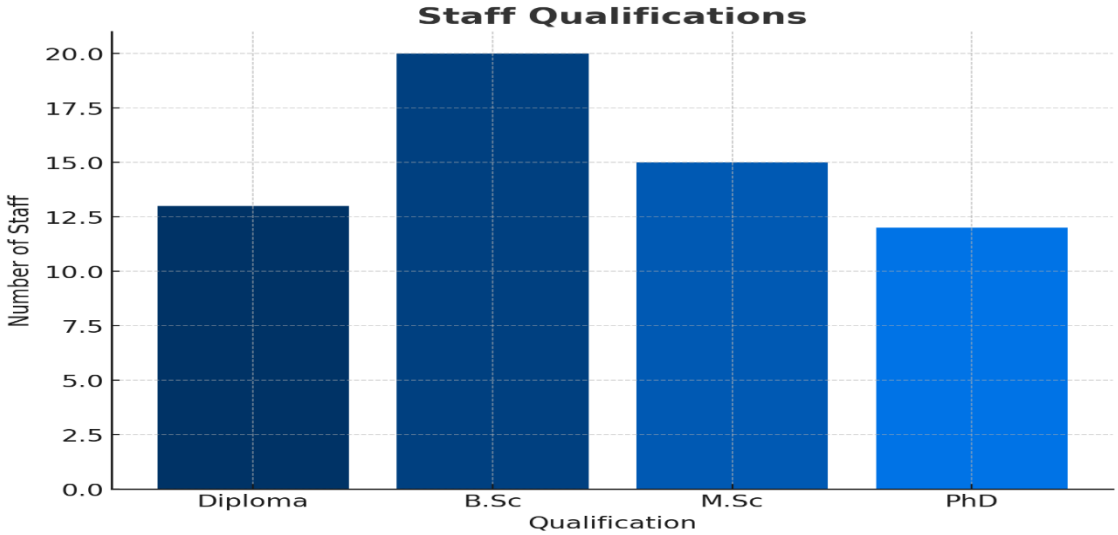
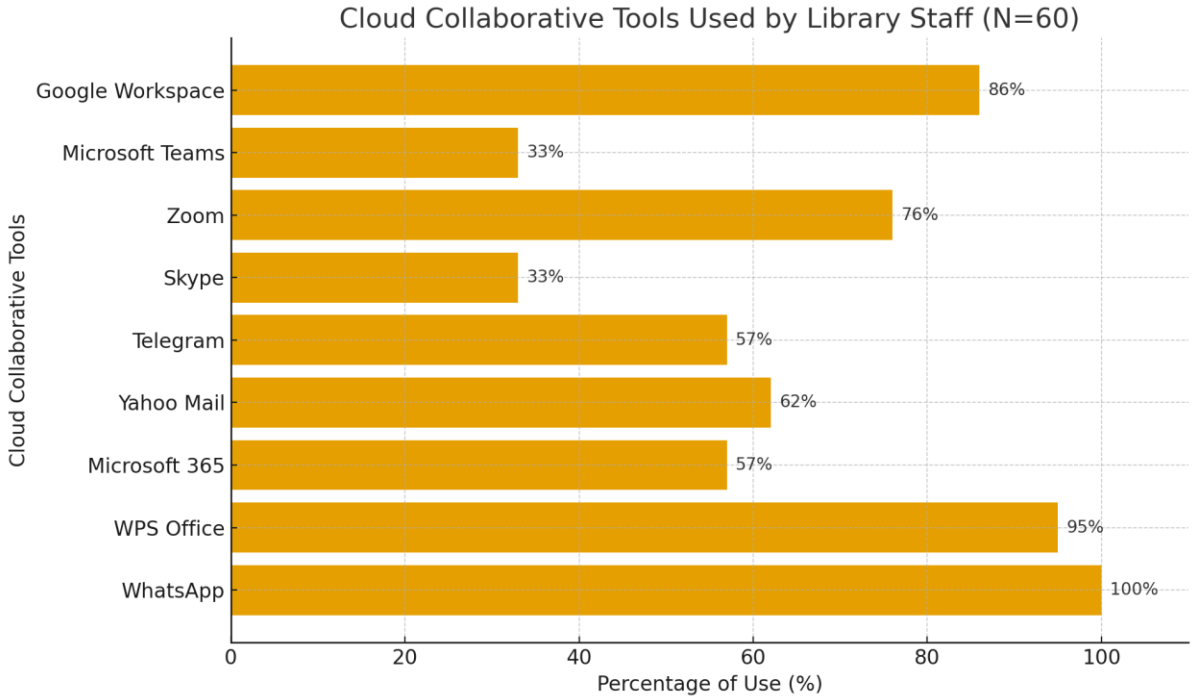


Figure 2: Qualifications of Library Staff

B. Research Questions

1. Cloud collaborative tools used by library staff in Lagos State University



As indicated in the chart above, the cloud collaborative tools used by library staff of Lagos State University are: WhatsApp (100%), WPS Office (95%), Google Workspace (86%), Zoom (76%), Yahoo mail (62%), Telegram (57%) and Microsoft 365 (57%). Microsoft Teams and Skype are the least used at 33% each.

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2. Use of cloud collaborative tools for social and recreational activities by library staff in Lagos State University

Table 2: Use of cloud collaborative tools for social and recreational activities

Use for Social and Recreational Activities	Very High Extent	High Extent	Moderate Extent	Low Extent	Mean $\bar{x}$	Std Dev.
I am able to establish relationships and collaborate with colleagues through cloud collaborative tools	40 66.7%	17 28.6%	3 4.8%	0 0%	3.62	0.59
I use cloud collaborative tools for informal discussions	37 61.9%	23 38.1%	0 0%	0 0%	3.62	0.49
I use cloud collaborative tools to create my social identity	3 4.8%	43 71.4%	14 23.8%	0 0%	2.82	0.50
I participate in virtual social gatherings using cloud collaborative tools	17 28.6%	29 47.6%	3 4.8%	11 19%	2.82	1.03
I use cloud collaborative tools to join interest-based groups or forums within the library community	26 42.9%	31 52.4%	0 0%	3 4.8%	3.33	0.73
I share recreational content with colleagues via cloud collaborative tools	14 23.8%	23 38.1%	6 9.5%	17 28.6%	2.56	1.14
I use cloud collaborative tools to coordinate recreational group activities	17 28.6%	23 38.1%	20 33.3%	0 0%	2.95	0.79
Average mean					**3.10**	**0.75**

Decision rule: $\bar{x} < 2.5$ = Low; $\bar{x} = 2.5 – 2.7$ = Moderate; $\bar{x} = 2.8$ and above = High.

As indicated in Table 2, the highest use of cloud collaborative tools was for establishing relationships & collaboration with colleagues and for informal discussions. Cloud collaborative tools are highly used for joining interest-based forums, coordinating recreational activities, creating social identity and participating in virtual gatherings. The result, however, indicates moderate use of these tools to share recreational content. This suggests that library staff use cloud collaborative tools primarily for professional and social interactions rather than purely recreational activities. The overall mean of 3.10 indicates that library staff use cloud collaborative tools to a high extent.

3. Extent of use of cloud collaborative tools for knowledge and professional development by library staff in Lagos State University

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Table 3: use of cloud collaborative tools for knowledge and professional development

Use for Knowledge & Professional Development	Very High Extent	High Extent	Moderate Extent	Low Extent	Mean $\bar{x}$	Std Dev.
I have made significant contributions to my profession while using cloud collaborative tools	29 47.6%	31 52.4%	0 0%	0 0%	3.48	0.50
My ability to use cloud collaborative tools effectively contributes to my professional development	37 61.9%	20 33.3%	0 0%	3 4.8%	3.52	0.75
I participate in online workshops, webinars, or training sessions via cloud collaborative tools	20 33.3%	29 47.6%	11 19.1%	0 0%	3.15	0.71
I use these tools to collaborate with professionals in my field for research purposes.	17 28.6%	29 41.6%	14 23.8%	0 0%	3.05	0.72
I use cloud collaborative tools for academic group discussions	26 42.9%	20 33.3%	3 4.8%	11 19%	3.02	1.11
I rely on cloud collaborative tools for professional updates and trends in the academic society	26 42.9%	34 57.1%	0 0%	0 0%	3.43	0.50
I access and share academic articles, documents, and presentations using cloud collaborative tools	28 47.6%	26 42.9%	6 9.5%	0 0%	3.37	0.66
I belong to professional communities or networks that interact through cloud collaborative tools	31 52.4%	6 9.5%	20 33.3%	3 4.8%	3.08	1.03
	Average mean				**3.26**	**0.80**

Decision rule: $\bar{x}$ < 2.5 = Low; $\bar{x}$ = 2.5 – 2.7 = Moderate; $\bar{x}$ = 2.8 and above = High.

As shown in Table 3, the overall average mean score of **3.26** indicates that the library staff agreed that these tools enhance their professional growth and collaborative practices. The highest-rated items include reliance on cloud collaborative tools for professional updates, contribution to profession and for professional updates and academic trends.

4. Motivating factors for the use of cloud collaborative tools by library staff in Lagos State University

Table 4: Motivating factors for the use of cloud collaborative tools

Reasons for Using Cloud Collaborative Tools	Very High Extent	High Extent	Moderate Extent	Low Extent	Mean $\bar{x}$	Std Dev.
Reference services	12 19.1%	37 61.9%	11 19.05%	0 0%	3.00	0.63
Selective dissemination of information	17 28.6%	34 57.1%	6 9.5%	3 4.8%	3.10	0.89
Discussion with users	40 66.7%	11 19.1%	6 9.5%	3 4.8%	3.48	0.93
Interaction with colleagues	26 42.9%	23 38.3%	3 4.8%	8 14%	3.10	1.08

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Announcements of library services, events /news	32 53%	14 23.5%	14 23.5%	0 0%	3.29	0.86
Advertise my library	17 28.6%	20 33.3%	6 9.5%	17 28.6%	2.62	1.15
Information literacy programs	11 19.05%	40 66.7%	9 14.3%	0 0%	3.05	0.60
Keeping track with trends in the library	14 23.8%	20 33.3%	20 33.3%	6 9.5%	2.95	0.94
			Average mean		**3.04**	**0.90**

Decision rule: $\bar{x}$ < 2.5 = Low; $\bar{x}$ = 2.5 – 2.7 = Moderate; $\bar{x}$ = 2.8 and above = High.

The results in Table 4 reveal that library staff use cloud collaborative tools for a variety of professional purposes, with an overall average mean of 3.04, indicating a generally high extent of use. The highest-rated activity was discussion with users, followed by announcements of library services, events/news. In contrast, advertising the library recorded the lowest mean, suggesting it is the least common reason for use among library staff. Overall, the findings suggest that cloud collaborative tools are widely applied for direct academic and service-related interactions, but less so for promotional activities.

5. Challenges encountered by library staff while using cloud collaborative tools

Table 5: Challenges encountered while using cloud collaborative tools

Challenges using cloud collaborative tools	Strongly Agree	Agree	Disagree	Strongly Disagree	Mean $\bar{x}$	Std Dev.
Receiving many messages at the same time	31 52.4%	17 28.6%	6 9.5%	6 9.5%	3.24	0.96
High expectation of availability	23 38.1%	31 52.4%	3 4.8%	3 4.8%	3.24	0.78
High cost of data	31 52.4%	26 42.9%	0 0%	3 4.8%	3.48	0.73
Limited skills to use the tools	9 14.3%	20 33.3%	23 38.4%	8 14%	2.48	0.92
Data security concerns	14 23.8%	43 71.4%	0 0%	3 4.8%	3.19	0.54
Social anxiety	9 14.3%	37 61.9%	11 19%	3 4.8%	2.86	0.78
Information integrity	34 57.1%	20 33.3%	6 9.5%	0 0%	3.48	0.68
			Average Mean		**3.14**	**0.86**

Decision rule: $\bar{x}$ < 2.5 = Low; $\bar{x}$ = 2.5 – 2.7 = Moderate; $\bar{x}$ = 2.8 and above = High.

The results in Table 5 indicate that library staff generally agreed with most of the identified challenges with an overall mean of **3.14**. The highest-rated challenges were **high cost of data** and **information integrity**, reflecting concerns about affordability and the reliability of shared information. Similarly, **receiving many messages at the same time** and **high expectation of availability** were significant challenges, each with a mean of 3.24. On the other hand, **limited**

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skills to use the tools had the lowest mean of 2.48, indicating that while some library staff face skill-related issues, this is a minor challenge compared to cost and information integrity

Discussion

Findings from this study have established that in Lagos State University Library, traditional collaboration practices such as committee meetings, staff training, and joint research have evolved into hybrid forms. Our librarians maximise tools like Google Workspace, WPS Office, WhatsApp and Zoom to coordinate library activities and share knowledge. The communication and networking skills developed through traditional collaboration have become necessary skills for using digital platforms effectively.

The results of this study revealed that WhatsApp (100%), WPS Office (95%), Google Workspace (86%), Zoom (76%), and Yahoo Mail (62%) are the most widely used cloud collaborative tools among the library staff of Lagos State University. These findings align with Nigerian and international studies reporting that librarians and academic staff show greater preference for familiar, low-cost, and easy-to-use cloud tools such as WhatsApp, Google Workspace, and Zoom (Adov & Mäeots, 2022; Edewor, & Ogoyibo, 2024; Isiaka, et al., 2024). The predominance of WhatsApp signifies that the tool has become a default medium of communication and collaboration in Nigerian higher education due to its user-friendliness and affordability.

The study found that cloud collaborative tools were used to a high extent for social and recreational activities, especially for establishing relationships, collaborating with colleagues, and engaging in informal discussions. This is consistent with findings that WhatsApp and Telegram play dual roles as both academic and social platforms, supporting peer bonding and informal learning (Elom, et al., 2025). Similarly, Onyebuchi (2021, as cited in Ani & Edem, 2019) highlighted that cloud-based platforms help to combine professional and social interactions, making them hybrid spaces.

Results further indicated a high extent of use of cloud collaborative tools for professional development, particularly in contributions towards the profession, receiving professional updates, and collaborating for research and resource sharing, participation in virtual workshops and webinars, and membership in professional bodies. These findings are consistent with Ahmad et al. (2012), who emphasized the role of ICT in fostering continuous professional growth, and with Aloysius, et al., (2025), who reported strong competence among librarians in Nigeria's South-South and South-East regions in applying cloud-based tools for professional tasks.

The study also revealed that the motivating factor for use of cloud collaborative tools are: discussions with users, announcements of library services/events, selective dissemination of information, interactions within the library, information literacy programs, reference services and following library trends were strong motivating factors for the use of cloud collaborative tools. These findings align with Dumbiri, et al., (2024) who reported that librarians use cloud-

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based platforms information sharing, collaboration and reference services. Similarly, Ajayi, (2023) found that librarians in Ekiti State valued cloud computing for improving library service delivery.

The challenges encountered by library staff are: receiving many messages at the same time, high expectation of availability, high cost of data, limited skills to use cloud collaborative tools, data security concerns, social anxiety and information integrity. With the most significant being high cost of data, information integrity, receiving many messages at the same time, and high expectations of availability. These challenges mirror broader economic and infrastructural issues in Nigeria. For instance, AllAfrica (2025) reported that the price of mobile data has drastically increased, with a 15 GB plan rising from N2,000 to N6,000, significantly affecting affordability for Nigerians. Concerns about information integrity are also reflected in Amosun & Ogungbo (2025), who identified data security as a major challenge in the use of cloud collaborative tools. Furthermore, studies at the University of Ibadan by Durodolu et al., (2024) confirmed that poor or slow internet reduces productivity and job satisfaction among library staff. Interestingly, limited digital skills (mean = 2.48) were not seen as a significant challenge, corroborating Aloysius (2025) and Amosun & Ogungbo (2025), who showed that librarians generally possess adequate technological skills to use cloud collaborative tools. To the library staff, social anxiety and technological skills were regarded as insignificant challenges affecting the sue of cloud collaborative tools.

Lagos State University (LASU) has consistently positioned itself as one of Nigeria's leading institutions in digital innovation and technological advancement. Through strategic investments in ICT infrastructure, e-learning platforms, and digital service delivery, the university continues to enhance teaching, research, and administrative efficiency. This study affirms that Lagos State University is a digitally progressive institution with a strong commitment to the adoption and integration of innovative technologies, and the University Library is in alignment with this digital transformation.

Library staff at Lagos State University are making adequate use of cloud collaborative tools, especially for social/professional interaction, knowledge access, and library service delivery. Challenges, predominantly cost of data, information integrity, and expectations persist, but many align with those identified in recent Nigerian and international studies. Addressing these will require institutional investment in infrastructure, well-structured training, and policies to support sustainable, equitable, and secure usage. Although efforts are being put in place for continuous use of technology, the study recommends increased institutional support, through constant power supply and internet infrastructure. increased digital literacy training for all staff and maintenance culture on existing infrastructure. These would promote effective and sustained use of cloud collaborative tools in Nigerian academic libraries.

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ISSN: 3121 9144

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