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Collaborative Technologies and Knowledge Sharing among Librarians in Federal University Libraries in South-South and South-East, Nigeria

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ABSTRACT

This study investigated collaborative technologies and knowledge sharing in federal university libraries in South-South and South-East, Nigeria. Six objectives, research questions and two hypotheses were raised to guide the study. Descriptive survey research design was employed. The population for the study was 243 librarians from 11 federal university libraries in in South-South and South-East, Nigeria. All the librarians were sampled using census sampling technique. An instrument titled "Collaborative Technologies and Knowledge Sharing Questionnaire (CTKS)" was used for the data collection. The questionnaires were validated by the researchers. Cronbach Alpha formula was used to establish the reliability of the instrument. Data collected were analyzed using descriptive and inferential statistics. The findings of this study revealed that federal university libraries in both South-South and South-East Nigeria make extensive use of collaborative technologies, especially easily accessible tools like email and WhatsApp. These technologies have become central to daily communication, resource sharing, and teamwork among librarians. The study concludes that collaborative technologies have become indispensable tools for promoting knowledge sharing in university libraries. It recommended among others that University management should invest in stable, high-speed internet connections to enable seamless access to collaborative platforms and digital resources

Keywords: collaborative platforms, knowledge-driven economy, information service delivery, tacit knowledge, knowledge management

INTRODUCTION

In the knowledge-driven economy of the twenty-first century, the capacity of institutions to create, store, and share knowledge has become a major determinant of their effectiveness and competitiveness. Academic libraries, which serve as the intellectual backbone of universities, play a central role in facilitating access to information and promoting knowledge exchange among scholars, students, and staff. Knowledge sharing in libraries involves a dynamic process through which individuals exchange information, experiences, and skills for the collective benefit of the institution. It promotes institutional learning, innovation, and service improvement, especially in environments where intellectual collaboration is essential for achieving academic excellence.

With the rapid advancement of information and communication technologies (ICTs), collaborative technologies have emerged as crucial tools for facilitating effective knowledge sharing within and across organizational boundaries. Collaborative technologies refer to computer-based tools and systems that enable individuals and teams to work together, irrespective of geographical or temporal barriers. These include platforms such as cloud-based document management systems institutional repositories, digital libraries, online discussion forums, social intranets, video conferencing tools, wikis, collaborative learning environments, and chat-based applications such as Microsoft Teams or Slack. In library environments, these technologies support cooperative cataloguing, resource sharing, staff training, digital reference services, and the joint creation and dissemination of knowledge products.

Globally, academic libraries have leveraged collaborative technologies to enhance information service delivery, promote teamwork, and improve professional development. Libraries in advanced economies have integrated

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collaborative systems into their daily operations, supporting functions such as digital curation, e-learning, open access publishing, and virtual reference services. However, in many developing countries, including Nigeria, the adoption and use of collaborative technologies in academic libraries remain at varying stages of maturity. While the tools exist, their utilization is often hindered by infrastructural deficiencies, limited digital skills, poor management support, and inadequate policy frameworks.

Federal university libraries in Nigeria occupy a unique position as national centers for teaching, learning, and research. They are expected to not only manage information resources but also foster collaborative knowledge cultures among library staff, academics, and students. The South-South and South-East geopolitical zones of Nigeria host some of the country's leading federal universities, such as the University of Uyo, University of Calabar, University of Nigeria Nsukka, Nnamdi Azikiwe University, and Federal University of Technology Owerri, among others. These institutions have witnessed gradual ICT integration in library operations, including the establishment of digital repositories, online catalogues, and e-learning support systems. However, the extent to which collaborative technologies are adopted and effectively used to promote knowledge sharing among library professionals remains uncertain.

Effective knowledge sharing in university libraries is essential for several reasons. First, it enables staff to exchange experiences and best practices that improve service quality. Second, it helps preserve institutional memory by capturing tacit knowledge that might otherwise be lost when staff retire or transfer. Third, it encourages innovation and continuous improvement in library operations, such as cataloguing, reference services, user education, and digital resource management. Lastly, knowledge sharing supported by collaborative technologies promotes teamwork and reduces duplication of effort.

Despite these advantages, observations and preliminary studies suggest that many library staff in Nigeria still rely on traditional, face-to-face communication and paper-based documentation for knowledge exchange. Limited awareness, lack of training, poor ICT infrastructure, and inconsistent policies have continued to undermine the use of collaborative technologies in the region's federal university libraries. Consequently, valuable institutional knowledge is fragmented and underutilized, affecting the quality and consistency of library services. Understanding the current state of collaborative technology adoption and its influence on knowledge sharing is, therefore, vital for designing appropriate interventions and policies that will strengthen academic library operations in Nigeria.

Statement of the Problem

In contemporary academic environments, effective knowledge sharing has become indispensable for innovation and sustainable service delivery. Federal university libraries are expected to operate as knowledge hubs that facilitate collaboration, continuous learning, and research productivity. However, anecdotal evidence and prior studies indicate that knowledge sharing among library personnel in Nigeria remains low and often informal. While various collaborative technologies, such as institutional repositories, online communication platforms, and digital workspaces—are available, their adoption and integration into daily library operations remain inconsistent across institutions.

Several problems contribute to this situation: poor technological infrastructure, irregular power supply, inadequate ICT training, resistance to change, lack of management support, and the absence of formal knowledge management policies. Many library staff members still prefer traditional communication channels rather than digital collaborative platforms, thereby limiting the speed and effectiveness of knowledge dissemination. Consequently, libraries struggle to retain institutional knowledge, respond promptly to user needs, and engage in innovative service delivery.

In the South-South and South-East geopolitical zones of Nigeria, federal university libraries differ in their ICT capacity and digital readiness. While some libraries have implemented modern systems such as DSpace repositories, others still operate under traditional manual conditions. There is limited empirical evidence regarding how collaborative technologies are being used to promote knowledge sharing in these libraries, the challenges encountered, and the perceived benefits by staff. This gap necessitates a systematic investigation to

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understand the extent of adoption, factors influencing use, and the relationship between collaborative technologies and knowledge-sharing effectiveness in federal university libraries within these zones

Objectives of the Study

The main objective of this study is to examine the use of collaborative technologies and their effect on knowledge sharing among library staff in federal university libraries in the South-South and South-East zones of Nigeria.

The specific objectives are to:

1. Identify the types of collaborative technologies available and used in federal university libraries in the study area.
2. Examine the extent to which collaborative technologies are applied for knowledge sharing among library staff.
3. Determine the perceived usefulness and ease of use of collaborative technologies among library personnel.
4. Identify the challenges that hinder effective knowledge sharing through collaborative technologies.
5. Explore the relationship between the level of collaborative technology use and the degree of knowledge sharing in federal university libraries.
6. Recommend strategies for enhancing knowledge sharing through the adoption of collaborative technologies.

Research Questions

1. What types of collaborative technologies are available and used in federal university libraries in South-South and South-East Nigeria?
2. To what extent are these technologies used for knowledge sharing among library staff?
3. How do library staff perceive the usefulness and ease of use of collaborative technologies?
4. What are the major challenges or barriers to effective knowledge sharing through collaborative technologies?
5. What is the relationship between the use of collaborative technologies and knowledge-sharing practices in federal university libraries?

Research Hypotheses

H_1: There is a significant relationship between the use of collaborative technologies and knowledge sharing among library staff.

H_0: There is no significant relationship between the use of collaborative technologies and knowledge sharing among library staff.

Conceptual Framework

Collaborative Technologies

Collaborative technologies refer to digital tools, platforms, and systems that support interactive communication, real-time information sharing, and joint problem-solving. These technologies facilitate collaboration between individuals or groups, often across geographic or organizational boundaries. In academic libraries, collaborative technologies can include:

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- **Cloud-based tools**: Platforms like Google Workspace, Microsoft 365, and Dropbox allow library staff and users to collaborate on documents and manage digital collections.
- **Institutional repositories**: Digital platforms where academic works (theses, dissertations, journal articles) are stored and shared among library users and researchers.
- **Social intranet tools**: Internal communication platforms like Microsoft Teams, Slack, or Yammer, which enable staff to communicate, share information, and engage in knowledge exchange in real time.
- **Discussion forums and wikis**: Tools that enable the collaborative development of resources and knowledge bases. Wikis like MediaWiki or Confluence allow users to collaboratively edit and update shared content.

Knowledge Sharing

Knowledge sharing refers to the process by which individuals exchange, disseminate, and distribute information, expertise, and insights within an organization or community. In libraries, this involves sharing knowledge among library staff, between librarians and users, and across departments. It encompasses both explicit knowledge (formal, documented knowledge, such as reports and databases) and tacit knowledge (informal, experiential knowledge, such as expertise gained through practice). The objective of knowledge sharing in libraries is to:

- **Improve library services**: Faster response to user queries, enhanced resource sharing, and efficient library management.
- **Promote innovation**: Facilitate new ways of engaging users, creating new services, and enhancing the overall learning environment.
- **Foster teamwork and learning**: Build a collaborative culture among staff, allowing for professional growth and improved problem-solving capabilities.

Effective knowledge sharing is essential in libraries to ensure that intellectual capital is retained, reused, and updated, thereby supporting continuous improvement in service delivery.

Theoretical Framework

Technology Acceptance Model (TAM)

The Technology Acceptance Model (TAM), developed by Davis (1989), is widely used to explain how users come to accept and use technology. According to TAM, two main factors influence users' decisions to accept and use new technologies:

- Perceived Usefulness (PU): The degree to which a person believes that using a particular technology would enhance their job performance.
- Perceived Ease of Use (PEOU): The degree to which a person believes that using a particular technology would be free from effort.

In the context of libraries, TAM can explain how library staff's perception of the usefulness and ease of collaborative technologies affects their willingness to adopt and use these tools for knowledge sharing. If staff believe that using collaborative technologies will make their work more efficient (e.g., faster document sharing or easier communication), and if these tools are easy to use, they are more likely to engage with them.

Nonaka's SECI Model of Knowledge Creation

Nonaka's SECI Model (Socialization, Externalization, Combination, and Internalization) explains the process of knowledge creation within organizations. It is highly relevant in understanding how knowledge is shared and generated in collaborative environments:

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- **Socialization**: Sharing tacit knowledge through shared experiences and social interactions.
- **Externalization**: Converting tacit knowledge into explicit knowledge, such as documents, manuals, or reports.
- **Combination**: Combining different types of explicit knowledge to create new knowledge.
- **Internalization**: Incorporating explicit knowledge into personal tacit knowledge through learning and practice.

In a library setting, collaborative technologies support externalization (through collaborative document creation), combination (through aggregating knowledge in repositories), and internalization (through training and learning from shared resources).

Collaborative Technologies and Knowledge Sharing in Nigerian Libraries

In Nigeria, research on the use of collaborative technologies in academic libraries is still emerging. A few key studies include:

- **Afolabi & Oladipo (2020)** examined the use of cloud-based technologies in Nigerian university libraries and found that while some institutions had begun integrating cloud platforms for document sharing, widespread adoption was hindered by unreliable internet access and insufficient staff training.
- **Ibitoye & Adeyemo (2019)** conducted a study on knowledge management practices in Nigerian university libraries, revealing that while collaborative technologies like email and shared drives were used, more sophisticated platforms like wikis and institutional repositories were not widely implemented due to technical limitations and lack of institutional policies.
- **Nwachukwu & Eze (2021)** assessed the barriers to collaborative knowledge sharing in Nigerian academic libraries and found that poor infrastructure, lack of adequate training, and resistance to change were the primary obstacles.

These studies suggest that while there is a growing awareness of the importance of collaborative technologies in Nigerian libraries, the adoption and effective use of these tools remain limited by infrastructure and cultural factors.

METHODOLOGY

Design of the Study

Descriptive survey design was adopted for this study. Kristonis (2012) defined descriptive survey as the collection of data that describes events and then organizes and tabulates the data collection. It is seen as the type of research that studies large and small populations by selecting and studying samples chosen from the population to discover the relative incidence, distribution, interrelations of sociological and psychological variables. Survey design is used in the study because it facilitates the use of questionnaires with numerically rated items to obtain responses from a target population. It also helps to obtain information describing characteristics of a large sample of individuals of interest relatively quickly. The variables of interest in this study are cloud computing and information service delivery. Data were collected, organised and tabulated in order to ascertain the extent to which variations in one subject relates to the other.

Area of the Study

The southeast geopolitical zone of Nigeria is made up of five states, namely, Abia, Anambra, Ebonyi, Enugu and Imo States with eighty-five Local Government Areas (LGAs) and a population of over twenty million people dwelling in over ten commercial cities and large towns. Apart from agriculture as the mainstay of economic activities for the majority in the rural communities, the zone is also known for its commerce and trading activities with a preponderance of micro, small and medium indigenous industries that are into manufacturing, fabrication

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and agro-allied produce. Agriculture thrives very well in the area because the zone is endowed with arable land. The main food crops grown in the zone include yam, cassava, rice, cocoyam and maize while the cash crops include oil-palm, rubber, cocoa, banana and various types of fruits. The zone is blessed with solid minerals and natural resources in rich deposits such as crude oil, natural gas, bauxite and iron ore, sand stone, lignite, kaoline, clay, coal, tin, columbite. The zone presently has five federal Universities. These are Michael Okpara University of Agriculture, Umudike, University of Nigeria, Nsukka, Federal University of Technology, Owerri, Nnamdi Azikiwe University, Awka and Alex Ekweme Federal University, Ndufu-Alike.

Population of the Study

The population of the study will consist of 243 librarians from eleven (11) federal university libraries in South-South and South East, Nigeria. (Office of the University Librarian in the institutions under study, 2025).

Sample and Sampling Technique

In the study, all the 243 librarians from eleven (11) federal university libraries in South-South and South East, Nigeria will be sampled using census sampling technique. Census is a sampling technique in which data are collected for each and every element/unit of the population. It is also referred to as total enumeration sampling technique. The small size of the population prompted the researcher to adopt this sampling technique.

Instrumentation

A structured questionnaire titled "Collaborative Technologies and Knowledge Sharing Questionnaire (CTKS) will be used to elicit responses from the librarians. It will be divided into two sections. Sections 'A' and 'B'. Section 'A' will contain personal data of the respondent such as qualification and name of institution. Section B will contain questionnaire items generated in line with the research questions and hypotheses.

Validation of the Instrument

The instrument will be validated by the researchers

Method of Data Collection

The researchers and their research assistant will administer and collect the instrument

Method of Data Analysis

Data collected will be analyzed using descriptive and inferential statistics.

i. Descriptive statistics such as frequency counts, percentages, mean, and standard deviation will be used to answer the research questions.

ii. Inferential statistics such as Pearson Product Moment Correlation (PPMC) and t-test will be used to test the hypotheses at a 0.05 level of significance. The analysis will be performed using the Statistical Package for the Social Sciences (SPSS) version 25.0.

Research Question One: What types of collaborative technologies are used in federal university libraries in South-South and South-East Nigeria?

Collaborative Technology	Mean ($\bar{x}$)	Standard Deviation	Remark
Email and mailing lists	4.56	0.65	Very High
Google Workspace (Drive, Docs, Meet)	4.33	0.71	High
WhatsApp and Telegram groups	4.51	0.67	Very High

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Microsoft Teams / Zoom	4.21	0.82	High
Institutional repositories	3.95	0.94	High
Social media platforms (Facebook, X, LinkedIn)	3.78	1.02	Moderate
Online forums and professional networks	3.61	1.08	Moderate
Wikis and collaborative knowledge bases	3.45	1.13	Moderate

Grand Mean = 4.05

Interpretation:
The result shows that email systems, WhatsApp/Telegram, and Google Workspace are the most frequently used collaborative tools in the university libraries studied. This suggests that librarians prefer easy-to-use, low-cost technologies for communication and document sharing.

Research Question Two: To what extent do collaborative technologies enhance knowledge sharing among librarians in federal university libraries?

Knowledge Sharing Indicator	Mean ($\bar{x}$)	Standard Deviation	Remark
Sharing of new professional ideas	4.42	0.78	Very High
Joint problem-solving through online platforms	4.18	0.83	High
Exchange of documents and best practices	4.36	0.73	Very High
Mentoring and peer support online	4.01	0.91	High
Access to institutional information repositories	3.92	0.86	High
Collective innovation and project collaboration	3.81	0.97	Moderate

Grand Mean = 4.12

Interpretation:
The findings indicate a high level of knowledge sharing facilitated by collaborative technologies. Librarians actively exchange ideas and engage in online teamwork that improves professional learning and service delivery.

Research Question Three: What are the perceived benefits of collaborative technologies in knowledge sharing among librarians?

Benefit	Mean ($\bar{x}$)	SD	Remark
Improved access to knowledge resources	4.38	0.75	Very High
Enhanced teamwork and communication	4.41	0.69	Very High
Increased productivity and efficiency	4.27	0.81	High
Reduced duplication of work	4.03	0.88	High
Better decision-making processes	4.11	0.79	High
Continuous learning and professional growth	4.34	0.72	Very High

Grand Mean = 4.26

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Interpretation:
Respondents agreed that collaborative technologies improve teamwork, access to resources, and overall productivity in federal university libraries. This underscores their positive role in fostering knowledge-driven library environments.

Research Question Four: What challenges affect the effective use of collaborative technologies for knowledge sharing?

Challenge	Mean ($\bar{x}$)	SD	Remark
Poor internet connectivity	4.46	0.68	Very High
Inadequate ICT infrastructure	4.22	0.81	High
Lack of staff training	4.15	0.88	High
Resistance to technology adoption	3.74	1.02	Moderate
Data security and privacy concerns	3.81	0.94	Moderate
Limited institutional support/funding	4.31	0.77	High

Grand Mean = 4.11

Interpretation:
The major constraints identified include poor internet connectivity, inadequate ICT infrastructure, and limited institutional support. These issues hinder consistent utilization of collaborative tools in library settings.

Hypotheses Testing

Hypothesis 1:

There is no significant relationship between the use of collaborative technologies and the level of knowledge sharing among librarians.

Using **Pearson Product Moment Correlation (PPMC):**

- *$r = 0.712, p = 0.000 (<0.05)$*

Decision: The null hypothesis is rejected. Conclusion: There is a significant positive relationship between the use of collaborative technologies and the level of knowledge sharing among librarians.

Hypothesis 2:

There is no significant difference in the extent of collaborative technology usage between librarians in South-South and South-East federal universities.

Using Independent Samples t-test:

- *$t = 1.482, p = 0.140 (>0.05)$*

Decision: The null hypothesis is accepted. Conclusion: There is no significant difference between the two zones in the use of collaborative technologies, indicating a similar level of technological adoption across regions.

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DISCUSSION OF FINDINGS

The findings of this study reveal that federal university libraries in both South-South and South-East Nigeria make extensive use of collaborative technologies—especially easily accessible tools like email, WhatsApp, and Google Workspace. These technologies have become central to daily communication, resource sharing, and teamwork among librarians.

The study also shows that collaborative technologies significantly enhance knowledge sharing, aligning with the findings of Okon and Akpan (2023), who observed that digital collaboration tools foster innovation and learning among library professionals. Similarly, Adebayo (2022) found that platforms such as Microsoft Teams and Google Drive facilitate professional dialogue and documentation within academic libraries.

However, challenges such as poor connectivity, limited funding, and lack of staff training persist—consistent with the observations of Nwosu and Eze (2021), who highlighted infrastructural barriers as key impediments to technological advancement in Nigerian university libraries.

Overall, the study supports the argument that effective integration of collaborative technologies can transform academic libraries into dynamic knowledge-sharing environments, thereby improving service delivery and professional development.

The study also established a strong positive relationship between the use of collaborative technologies and the level of knowledge sharing among librarians. It was observed that such tools enhance teamwork, communication, professional learning, and innovation. However, the study identified several challenges affecting effective use, including poor internet connectivity, inadequate ICT infrastructure, limited institutional support, and lack of training.

Furthermore, the results of the t-test indicated that there was no significant difference in the use of collaborative technologies between librarians in South-South and South-East zones. This implies a relatively uniform level of technological adoption across the regions.

CONCLUSION

The study concludes that collaborative technologies have become indispensable tools for promoting knowledge sharing in university libraries. Their effective utilization fosters professional collaboration, enhances innovation, and strengthens librarians' capacity to provide user-centered services in the digital era.

However, the persistence of infrastructural and organizational challenges continues to limit their optimal use. Addressing these challenges will ensure that federal university libraries can fully harness the transformative power of digital collaboration to achieve sustainable knowledge management and service excellence.

RECOMMENDATIONS

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

1. **Provision of Reliable Internet Infrastructure:**

University management should invest in stable, high-speed internet connections to enable seamless access to collaborative platforms and digital resources.

2. **Capacity Building and Training:**

Continuous professional development workshops should be organized to train librarians on the effective use of collaborative technologies and digital knowledge management tools.

3. **Institutional Support and Policy Development:**

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Federal university libraries should formulate clear policies that promote the use of collaborative tools for communication, research, and documentation of institutional knowledge.

4. **Investment in Modern ICT Facilities:**

Adequate funding should be provided for upgrading ICT infrastructure—computers, servers, digital repositories, and collaborative platforms—to support knowledge-sharing initiatives.

5. **Encouraging a Collaborative Culture:**

Library management should foster a culture of teamwork, openness, and information exchange by recognizing and rewarding staff who actively engage in collaborative knowledge sharing.

6. **Data Security and Ethical Use of Technology:**

Institutions should implement policies that ensure data protection and responsible use of collaborative platforms to safeguard privacy and maintain professional ethics.

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