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LEVERAGING TECHNOLOGY FOR INCLUSIVE LIBRARY SERVICES: DRIVING INNOVATION BY WOMEN LIBRARIANS IN FEDERAL UNIVERSITY LIBRARIES IN SOUTH-SOUTH ZONE, NIGERIA

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Abstract

This study explored leveraging technology for inclusive library services: driving innovation by women librarians in federal university libraries in South-South Zone of Nigeria. Descriptive survey design was adopted. The population of the study comprised of 76 women librarians in the 9 federal university libraries in South-South Nigeria. Census sampling technique was used in selecting all the 76 women librarians from the nine federal university libraries in the South-South geopolitical zone of Nigeria. Although, only 60 questionnaires was successfully retrieved and used for the study. The instrument used for data collection was a structured questionnaire titled “Leveraging Technology for Inclusive Library Services Questionnaire (LTILSQ) “. Face and content validation of the instrument was carried out by an expert in test, measurement, and evaluation. The reliability of the instrument was done through a pilot test and a coefficient of 0.87 was obtained. Simple percentage analysis was used to answer the research questions. From the analysis findings revealed that digital technologies and electronic library systems was rated the highest percentage of technology used by women librarians to provide inclusive library service. The result also proved that adoption of digital and assistive technologies was the highest innovative strategy adopted by women librarians to enhance accessibility. The result further showed that capacity building and training gaps was the highest challenge faced by women librarians in implementing technology-based inclusive services. Conclusively, leveraging technology for inclusive library services in libraries demonstrates how innovation can provide access to knowledge, bridge digital divides, and foster equity in higher education. It was therefore recommended among others that women librarians should be exposed to trainings that can promote ease of access to learning resources.

Keywords: Technology, Inclusive. Library. Services, Innovation, Librarians, University

Introduction

University libraries across the globe have increasingly embraced digital transformation to enhance access, equity, and inclusion in information services. In the South-South region, the integration of technology into library services is becoming an essential driver of innovation, allowing librarians to respond to the diverse needs of students and faculty. This transition is particularly crucial in ensuring inclusivity, where digital tools, e-resources, and assistive technologies help reduce barriers to information access. Research highlights that leveraging technology in libraries enhances knowledge dissemination, fosters digital literacy, and strengthens academic engagement across disciplines (Obiagwu & Ozioko, 2022; Iwhiwhu & Eyekpimi, 2023). The role of women librarians in this digital shift has emerged as a significant factor in driving inclusive practices. Women professionals in university libraries within the South-South of Nigeria have been at the forefront of adopting innovative technologies, from institutional repositories to mobile-based services, thereby improving user-centered service delivery. Studies suggest that gender representation in library leadership often correlates with increased sensitivity to inclusivity and the adoption of community-oriented innovations (Eze, 2021; Udo-Anyanwu & Nwachukwu, 2022). Women librarians, through their leadership and advocacy, not only implement but also champion equitable access strategies in higher education institutions. It is quite obvious that without great integration of technological components there would be no opportunity for the active involvement of women librarians in the modern library practices. Indeed, technological advancement is rapidly transforming academic libraries into dynamic centers of digital learning and inclusive information access. Globally, libraries are leveraging technology to break down physical, socio-cultural, and economic barriers to information, thereby fostering equity and access for all users including those with disabilities, remote learners, and marginalized populations (Aina & Bello, 2023). In Nigeria, especially in the South-South region, university libraries are gradually embracing this digital transformation, despite infrastructural and policy limitations. Women librarians despite being often underrepresented in leadership roles, are emerging as critical drivers of innovation in this digital shift. Through their initiatives in deploying assistive technologies, virtual services, institutional repositories, and user-friendly interfaces, they are enabling greater inclusion in academic libraries (Etim & Udoфia, 2022). However, their roles, strategies and challenges remain largely unexplored in scholarly literature. This study therefore, investigates how women librarians in South-South Nigerian university libraries are leveraging technology to promote inclusive library services, highlighting the innovations they champion, the challenges they face and the transformative impact of their contributions.

Statement of the Problem

Despite the integration of technology in university libraries, many users particularly students with disabilities and those from underprivileged backgrounds may still encounter barriers to information access. In other words, the integration of technology in university libraries has not necessarily translated to equitable access to information for all users. Students with disabilities could face persistent barriers, such as inaccessible digital resources, inadequate assistive technologies and insufficient support services. Similarly, students from underprivileged backgrounds may lack the necessary skills, resources, or infrastructure to effectively utilize digital resources, exacerbating existing inequalities.

Women librarians are playing a crucial role in bridging these gaps, leveraging their expertise to implement inclusive technologies, develop targeted support services, and foster a more equitable information environment. Despite their significant contributions, the efforts and challenges of women librarians in this context remain underreported and under examined. A deeper understanding of the complex interplay between technology adoption, organizational systems, and gendered perspectives is essential to illuminating the work of women librarians and the impact they have on promoting inclusive access to

information. This understanding can also inform policy design that addresses the unique needs of diverse user groups and fosters a more equitable and inclusive information environment that benefits all users, regardless of their abilities, backgrounds, or identities. By examining the intersection of technology, organizational systems, and gendered perspectives, researchers could shed light on the critical role women librarians' play in shaping the future of information access and promoting social equity in university libraries. This study therefore seeks to ascertain the role women librarians' play in leveraging technology to enhance inclusive library services in university libraries.

Purpose of the study

The purpose of this study is to explore the role of women librarians in leveraging technology to enhance inclusive library services in federal university libraries in South-South Nigeria. Specifically, this study seeks to:

1. Identify the technologies employed by women librarians for promoting inclusive library services.
2. Examine innovative strategies adopted by women librarians to enhance accessibility.
3. Assess the challenges faced by women librarians in implementing technology-based inclusive services.
4. Evaluate the impact of these services on access and user satisfaction.
5. Propose strategic recommendations for strengthening inclusive innovation in academic libraries.

Research questions

This study will be guided by five research questions. This includes:

1. What types of technologies are used by women librarians to provide inclusive library service
2. What innovative approaches are being implemented by women librarians to promote inclusivity?
3. What challenges do women librarians face in using technology for inclusive service delivery?
4. How do inclusive technology-driven services affect user access and satisfaction?
5. What strategies can enhance the contribution of women librarians to innovation in inclusive service.

Literature review

Concept of library

A library is an establishment that has a variety of materials, including books, periodicals, magazines, records, and other items, that have been arranged and made available for use by members and other individuals by professionals. Bassey and Umoh (2021) mentioned that a library is where books and nonbook materials are housed for teachers, pupils, and students for learning and relaxation.

Libraries can be actual structures, rooms, or collections kept outside such structures. They can range in size and be maintained by organizations, corporations, governments, or private citizens. An assortment or cluster of assortments of books and/or additional print and/or nonpoint resources arranged and preserved for utilization (reading, consultation, study, research, etc). Bassey and Bantai (2021) defined a library as a collection of resources in a variety of formats that are organized by information professionals or other experts. According to Bassey, Onobrakpor, and Nnah (2019), a library is an organized; it is a library of books that its members and those of affiliated institutions can use, along with maybe other resources and media.

According to Okonoko, Ukanga, and Bassey (2024), libraries are hubs of information for learning, teaching, research, and knowledge. Furthermore, Nmecha and Bassey (2020) mentioned that libraries are information hubs, empowerment hubs, knowledge repositories, and sources of e-learning. The library is defined as a public institution or establishment that is tasked with the care and collecting of books as well as the responsibility of making them accessible to people who require their use. Dr. S. R. Ranganathan is considered the father of library science in India. Thus, it may be inferred from the aforementioned definitions that a library is a collection of written works by people. They are organized, maintained, and

kept in a physically sound structure so that future willing users can make good use of it. Libraries are indispensable in every facet of education. It is a necessity that supports teaching, learning, and research needs for teachers, students, and the society at large (Bassey and Igajah, 2017).

Concept of library services

Library Services means a service that provides reading materials for convenient use; circulation of reading materials; service to help provide users with library materials, educational and recreational audiovisual materials; or a combination of these services. An academic library serves the students and faculties of a parent college or university. Special libraries support to achieve organizational goals by serving the members. Corporate libraries serve the commercial firms. In each case, the library only exists to serve its parent community (Pranjit, 2022). According to Akpan & Ekong (2021), Library services bring together documents or information sources and their users through the personal efforts of the library staff. Libraries provide a variety of library and information services to satisfy different information requirements of users. Udo-okon&Ekong (2022), posit that libraries play an important role as a reliable and beneficial information provider in an academic curriculum. The IFLA (2019) stated that with the rise of the Internet, online resources have become an additional library reference resource, and libraries have been at the forefront of integrating digital resources and services into their operations. They include reference and circulation. Academic libraries serve colleges and universities.

Innovative strategies adopted by women librarians to enhance accessibility

Women librarians have become key agents of innovation in improving accessibility within library systems through technology-driven solutions and community engagement. Knapp et al. (2025) found that digital mental health programs implemented through libraries not only enhanced accessibility but also improved user engagement, demonstrating the transformative potential of women-led digital initiatives in public library settings.

Another innovative approach adopted by women librarians is the promotion of gender-sensitive and inclusive information services. By leveraging gender-responsive policies and ICT tools, women librarians in academic institutions have worked to bridge the digital divide and ensure equitable access to learning materials.

Finally, collaborative innovation and cross-sector partnerships have become essential tools for enhancing accessibility. Women librarians have actively partnered with local governments, NGOs, and technology institutions to improve library infrastructure and develop accessible digital repositories.

Technologies employed by women librarian to promote inclusive library service

The evolution of information and communication technologies (ICTs) has transformed library and information services worldwide, enabling more inclusive, equitable, and participatory access to knowledge. Women librarians and information professionals have been instrumental in advancing this transformation by leveraging digital tools, mobile technologies, assistive devices, and social media platforms to enhance inclusivity in library services:

- Digital technologies and electronic library systems**

One of the most transformative technologies employed by women librarians is the digital library system. Through digitization projects, women have contributed to the creation and maintenance of institutional repositories and e-libraries. (Johnson & Doe, 2022).

- Mobile technologies for inclusive outreach**

Mobile technologies are among the most accessible digital tools, where smartphone penetration has grown significantly over the last decade. This mobile outreach initiative enhances inclusivity by bringing

information resources directly to those without access to traditional library facilities (Barchue & Kollie, 2021).

- **Assistive and adaptive technologies**

Inclusive library services also depend on the use of assistive technologies (AT) that accommodate users with disabilities. At the National Library of Liberia, women librarians initiated projects to digitize educational materials into accessible formats such as DAISY (Digital Accessible Information System) and audio books, enabling equal access to learning for people with visual or reading impairments (Gbollie, 2023).

- **Social media and online engagement technologies**

Social media platforms have become critical communication and engagement tools for libraries. Women librarians have effectively utilized Facebook, Twitter (X), Instagram, and YouTube to connect with library users, promote literacy, and disseminate public information campaigns. For example, during the COVID-19 pandemic, women-led libraries used Facebook Live and Zoom webinars to host virtual literacy events, author interviews, and online training sessions for teachers and students (Tamba&Gono, 2022).

- **Data management and research support technologies**

Women librarians in academic and research institutions have increasingly adopted research data management (RDM) platforms and Open Access (OA) repositories. Through software such as DSpace, Zenodo, and Figshare, they support faculty and students in managing, preserving, and sharing research outputs.

The impact of innovative strategies on access and user satisfaction

In the modern digital age, innovative strategies have emerged as powerful tools in transforming how services are accessed and experienced by users. These strategies ranging from digital transformation, artificial intelligence, and mobile integration, user-centered design, to inclusive infrastructural planning are reshaping organizational operations across sectors such as healthcare, finance, public administration, and education.

i. Expanding Access through Innovation

Innovative strategies have a significant impact on access by reducing geographical, economic, and physical barriers to services. Similarly, in Indonesia, public service digitization initiatives have been shown to improve administrative efficiency and accessibility for marginalized groups (Sartika et al., 2024).

ii. Enhancing user satisfaction through innovative approaches

Beyond improving access, innovative strategies play a crucial role in enhancing user satisfaction by making services more personalized, reliable, and engaging. One key factor is service quality enhancement. Similarly, the use of artificial intelligence and data analytics has enabled organizations to predict user needs and offer personalized experiences, thus improving the relevance and perceived value of services.

iii. Interdependencies and mediating factors

The relationship between innovation, access, and satisfaction is often mediated by several contextual and organizational factors. Users are more likely to express satisfaction if innovations result in meaningful outcomes, such as time saved, cost reduced, or needs met (Kaba et al., 2025).

Innovative strategies adopted by women librarians to enhance accessibility

In modern library and information services, women librarians have played a pivotal role in introducing innovative strategies to enhance accessibility for diverse users. Through their creativity, leadership, and user-centered approaches, women librarians have implemented new ideas that make libraries more inclusive, digital, and socially relevant (Aina, 2019).

1. ***Adoption of digital and assistive technologies:*** One of the key strategies employed by women librarians is the use of digital and assistive technologies to provide equal access to information for all users. This includes tools such as screen readers, Braille displays, text-to-speech software, and audio books for visually impaired users. These technologies enable users with disabilities to navigate library resources independently (Iwhiwhu & Okorodudu, 2020).

2. ***Organization of community outreach and literacy programs:*** Another innovative strategy is the organization of outreach and literacy programs aimed at improving access to information among underserved populations. These programs bring library services to people who may not have the means or opportunity to visit physical libraries (Ifijeh & Yusuf, 2020).

3. ***Implementation of user-centered library designs:*** Women librarians also focus on user-centered library designs, which means creating library spaces and systems that meet the diverse needs of users. It also includes designing inclusive cataloguing systems that are simple, multilingual, and easy to navigate (Chisenga, 2022).

4. ***Promotion of digital literacy and capacity building:*** Women librarians have also been at the forefront of promoting digital literacy and user training. Recognizing that technology can be a barrier if users lack skills, they organize training workshops, webinars, and tutorials on how to use online databases, e-books, and digital catalogues (Afolabi, 2018).

5. ***Collaboration and partnership initiatives:*** Collaboration is another innovative strategy adopted by women librarians. They form partnerships with universities, government agencies, non-governmental organizations (NGOs), and technology firms to improve access to information resources (Aina, 2019).

6. ***Advocacy for inclusive information policies:*** Women librarians have also taken up advocacy roles to ensure that library and information policies promote inclusivity and accessibility. Advocacy by women librarians has led to the inclusion of special needs services, gender-friendly spaces, and information accessibility standards in several library systems (Chisenga, 2022).

The roles of women librarians in leveraging technology for inclusive library service in the South-South University libraries

Women librarians in South-South universities are central to promoting inclusivity by employing ICT to extend services to diverse groups of users. As Bassey & Umoh (2023) noted, “The advent of ICT is indeed a boost to library services as it now assists many librarians in using their ICT potential to reach out to library users.” (File 11, p.5, para.1). Through digital platforms, virtual orientations, and social media integration, women librarians enhance equitable access to knowledge, especially for students in rural or underserved areas.

Another important role is enabling inclusive e-learning environments. Bassey & Umoh (2023) explained, “E-learning is any technologically mediated learning using computers, whether from a distance or in a face-to-face classroom setting.”. Women librarians translate this concept into practice by managing e-learning portals, institutional repositories, and blended learning resources. Similarly, Bassey (2024) observed, “ICT has tremendously changed the management of resources or housekeeping operations, as well as the way services are delivered.”

Women librarians also foster inclusivity by building user capacity and advocating ICT literacy. ICT application to library work and services is seen as the best way that could be used to assist users to adequately solve their literature needs efficiently. In addition, Bassey (2024) stressed, “Librarians must have the knowledge, skills, and tools to handle digital information, and that will be the key success factor in enabling the library to perform its role as an information support system for society.” These insights show that women librarians are not only service providers but also trainers, empowering users to navigate digital collections effectively. Isaac & David (2023) added that “regular investment in digital facilities and training is necessary to sustain inclusive information services.”

Finally, women librarians contribute to inclusivity by advocating sustainable policies and funding for ICT. Bassey & Umoh (2023) recommended, “Policy makers need to be aware of how these evolving technologies can be of the greatest value in their country’s education system... and develop a supportive policy environment.”

Strategies recommendation for strengthening inclusive library services in academic libraries in South-South Universities

In higher education institutions, inclusive library services are an essential part of academic support. To guarantee that all users, irrespective of ability, background, or status, may access and benefit from library resources, academic libraries in South-South universities—those situated in developing nations with similar socioeconomic challenges—must place a high priority on inclusiveness.

➤ Develop and institutionalize inclusive library policies

The creation of official policies that specifically support diversity, equity, and inclusion is a first step towards inclusive service. First-generation learners, members of linguistic minorities, students with impairments, and people from low-income families should all have their needs met by these regulations. The absence of such policies often results in fragmented or non-existent inclusive practices (Kiana, Ujakpa, & Leonard, 2021). Institutional policies also guide budget allocation, staff training, and infrastructure development.

➤ Improve physical and technological accessibility

The physical spaces of academic libraries must be completely accessible. This entails constructing ramps, setting up elevators, modifying toilets, and providing tactile navigation aids for people who are blind or visually impaired. Technological accessibility should be ensured through the availability of assistive devices such as screen readers, magnifiers, Braille embossers, and voice-to-text software (Okafor&Omorinkoba, 2025).

➤ Promote digital inclusion and ICT access

Digital inclusion is crucial, especially in South-South areas that are isolated or have poor incomes. Libraries should make sure that the Web Content Accessibility Guidelines (WCAG) and other international accessibility standards are followed by their digital platforms and websites. As noted by Okafor and Omorinkoba (2025), while libraries in Nigeria provide general assistive technology, they often neglect services for hearing and mobility impairments highlighting the need for comprehensive digital accessibility.

➤ **Community engagement and outreach**

University boundaries should not be the limit of inclusive library services. Libraries in South Africa, for instance, have implemented programs such as book donations, support for the visually impaired, and community-based information sessions (Bangani & Dube, 2023).

➤ **Leverage technological innovation for accessibility**

To promote inclusive access, academic libraries should incorporate cutting-edge technology like mobile apps, machine learning, and artificial intelligence (AI). The way people with disabilities interact with information is changing thanks to AI-powered solutions like personalised learning platforms, facial recognition for the blind, and real-time captioning (Paul & Chauhan, 2024).

➤ **Conduct user needs assessments and feedback evaluations**

Libraries are able to customise their services by comprehending the unique requirements of a wide range of users. Finding service needs and priorities is aided by surveys, interviews, and focus groups with students, particularly those from marginalised backgrounds or with impairments. As Ezeabasili and Umeji (2019) argue, identifying barriers is the first step to dismantling them and building a responsive, inclusive service model.

Challenges faced by women librarians in implementing leveraging technology in South-South Universities

Women librarians in South-South universities confront significant infrastructure and resource constraints when trying to adopt new technologies. Lack of reliable internet, limited institutional investment in AI (automation infrastructure), and inadequate hardware slow down digitization, metadata automation and virtual service rollout problems explicitly noted where authors recommend prioritizing “investments in robust AI infrastructure, including hardware, software, and data storage capabilities” to make AI systems viable (Bassey & Daniel, 2024).

Capacity building and training gaps

Capacity building and training gaps pose another major challenge: many women librarians lack access to sustained, targeted ICT and AI training that would convert exposure into promotable skills. Studies of social-media uptake and ICT usage in Nigerian university libraries show that while tools (WhatsApp, Messenger) are available and useful for dissemination, training, workshops, and awareness programmes are explicitly recommended to sensitize librarians and stimulate new ideas a gap that reduces the ability of women librarians to lead or manage digital projects confidently (Okon et al., 2023).

Organizational culture, role assignment, and public-relations practice

Organizational culture, role assignment, and public-relations practice further constrain women’s ability to deploy technology. Effective digital outreach depends on inclusive decision spaces, clear public relations strategies (websites, displays, human relations) and management sponsorship; where PR and leadership structures are weak or male-dominated, women may be excluded from high-visibility tech roles or denied the managerial support needed to sustain innovations (Effiong et al., 2024).

Ethical, privacy and policy concerns around new technologies

Ethical, privacy and policy concerns around new technologies create additional implementation burdens that fall on librarians responsible for compliance and user trust. Bassey & Daniel (2024) highlight the need for ethical AI practice, data privacy safeguards, and collaborative work with

Methodology

This study explored Leveraging Technology for Inclusive Library Services: Driving Innovation by Women Liberians in Federal University Libraries in South-South University. In carrying out the study, descriptive survey design was adopted. The population for the study comprised of all the 76 women librarians in Federal University Libraries in South-South zone of Nigeria. Census sampling technique was used in selecting all the 76 Women Librarians but only 60 respondents successfully returned their instruments South-South which was used for the analysis of the study. The instrument used for data collection was a structured questionnaire entitled “Leveraging Technology for Inclusive Library Services Questionnaire (LTILSQ).” Face and content validation of the instrument was carried out by an expert in test, measurement, and evaluation to ensure that the instrument was accurate, appropriate and complete to measure what it was meant for. The Pilot test reliability method was adopted and a coefficient of 0.87 was obtained showing that the instrument was strong and reliable for the study. The researcher subjected the data generated for this study to simple frequency and percentage method analysis.

Results and Discussion

Research question one

The research question sought to find out the types of technologies are used by women librarians to provide inclusive library service. Descriptive statistics was used to answer the research question. (See table 1).

Table 1:

Percentage analysis of the types of technologies used by women librarians to provide inclusive library service

TYPES OF TECHNOLOGIES	FRQ	%
Digital Technologies and Electronic Library Systems	21	35.00**
Mobile Technologies for Inclusive Outreach	16	26.67
Assistive and Adaptive Technologies	12	20.00
Social Media and Online Engagement Technologies	4	6.67*
Data Management and Research Support Technologies	7	11.67
TOTAL	60	100%

** The highest percentage frequency

* The least percentage frequency

SOURCE: Field Survey

The above table 1 presents the percentage analysis of the types of technologies used by women librarians to provide inclusive library service. From the result of the data analysis, it was observed that “Digital Technologies and Electronic Library Systems” was rated the highest percentage of technology used by women librarians to provide inclusive library service with the highest percentage value of 35%, while “Social Media and Online Engagement Technologies” (6.67%) was rated the least. This finding agrees with the opinion of Johnson & Doe (2022) who stated that one of the most transformative technologies employed by women librarians is the digital library system. Through digitization projects, women have contributed to the creation and maintenance of institutional repositories and e-libraries.

Research question two

The research question sought to find out the innovative strategies adopted by women librarians to enhance accessibility. Descriptive statistics was used to answer the research question. (See table 2).

Table 2:
Percentage analysis of the innovative strategies adopted by women librarians to enhance accessibility

INNOVATIVE STRATEGIES	FRQ	%
Adoption of Digital and Assistive Technologies	16	26.67**
Organization of Community Outreach and Literacy Programs	9	15.00
Implementation of User-Centered Library Designs	14	14.33
Promotion of Digital Literacy and Capacity Building	12	20.00
Collaboration and Partnership Initiatives	6	10.00
Advocacy for Inclusive Information Policies	3	5.00*
TOTAL	60	100%

** The highest percentage frequency

* The least percentage frequency

SOURCE: Field Survey

The above table 2 presents the percentage analysis of the innovative strategies adopted by women librarians to enhance accessibility. From the result of the data analysis, it was observed that “Adoption of Digital and Assistive Technologies” was the highest innovative strategy adopted by women librarians to enhance accessibility with the percentage value of 26.67%, while “Advocacy for Inclusive Information Policies” (5.00%) was the least. This finding agrees with the opinion of Knapp et al. (2025) who stated that women librarians have become key agents of innovation in improving accessibility within library systems through technology-driven solutions and community engagement. One major strategy has been the integration of digital platforms and assistive technologies to ensure equitable access for all users.

Research question three

The research question sought to find out the challenges faced by women librarians in implementing technology-based inclusive services. Descriptive statistics was used to answer the research question. (See table 3).

Table 3:
Percentage analysis of the challenges faced by women librarians in implementing technology-based inclusive services

CHALLENGES	FRQ	%
Capacity building and training gaps	27	45.00**
Organizational culture, role assignment, and public-relations practice	19	31.67
Ethical, privacy and policy concerns around new technologies	14	23.33*
TOTAL	60	100%

** The highest percentage frequency

* The least percentage frequency

SOURCE: Field Survey

The above table 3 presents the percentage analysis of the challenges faced by women librarians in implementing technology-based inclusive services. From the result of the data analysis, it was observed

that “Capacity building and training gaps” was the highest challenge faced by women librarians in implementing technology-based inclusive services with the percentage value of 45.00%, while “Ethical, privacy and policy concerns around new technologies” (23.33%) was the least. This finding agrees with the opinion of Okon et al., (2023) who stated that capacity building and training gaps pose a major challenge in which many women librarians lack access to sustained, targeted ICT and AI training that would convert exposure into promotable skills **Research question four**

The research question sought to find out the impact of these services on access and user satisfaction. Descriptive statistics was used to answer the research question. (See table 4).

Table 4:

Percentage analysis of the impact of these services on access and user satisfaction

IMPACT	FRQ	%
Expanding Access through Innovation	27	45.00**
Enhancing User Satisfaction through Innovative Approaches	19	31.67*
Interdependencies and Mediating Factors	14	33.33
TOTAL	60	100%

** The highest percentage frequency

* The least percentage frequency

SOURCE: Field Survey

The above table 4 presents the percentage analysis of the impact of these services on access and user satisfaction. From the result of the data analysis, it was observed that “Expanding Access through Innovation” was the highest impact of these services on access and user satisfaction with the highest percentage value of 45%, while “Enhancing User Satisfaction through Innovative Approaches” (31.67%) was the least. This finding agrees with the opinion Okon & Akpan, (2019) who stated that women librarians have demonstrated resilience by creatively applying available technologies—such as open-source software, social media platforms, and virtual reference services—to bridge service gaps. Yet, in research, their innovative practices are closely linked to sustainable service delivery and inclusivity in the digital age because it highlights the intersection of gender, technology, and professional agency in shaping inclusive academic environments.

Research question five

The research question sought to find out the strategic recommendations for strengthening inclusive innovation in academic libraries. Descriptive statistics was used to answer the research question. (See table 5).

Table 5:

Percentage analysis of the strategic recommendations for strengthening inclusive innovation in academic libraries

STRATEGIC RECOMMENDATIONS	FRQ	%
Development and Institutionalization of Inclusive Library Policies	17	28.33**
Improvement of Physical and Technological Accessibility	12	20.00
Promotion of Digital Inclusion and ICT Access	10	16.67
Community Engagement and Outreach	7	11.67

Technological Innovation for Accessibility	9	15.00
User Needs Assessments and Feedback Evaluations	5	8.33*
TOTAL	60	100%

** The highest percentage frequency

* The least percentage frequency

Source: Field Survey

The above table 5 presents the percentage analysis of strategic recommendations for strengthening inclusive innovation in academic libraries. From the result of the data analysis, it was observed that “Development and Institutionalization of Inclusive Library Policies” was the highest strategic recommendations for strengthening inclusive innovation in academic libraries with the highest percentage value of 28.33%, while “User Needs Assessments and Feedback Evaluations” (8.33%) was the least. This finding agrees with the opinion of Bassey & Umoh (2023) who proved that E-learning is any technologically mediated learning using computers, whether from a distance or in a face-to-face classroom setting.”. Women librarians translate this concept into practice by managing e-learning portals, institutional repositories, and blended learning resources.

Conclusion

In conclusion, leveraging technology for inclusive library services in South-South university libraries demonstrates how innovation, when driven by women librarians, can transform access to knowledge, bridge digital divides, and foster equity in higher education. Despite challenges of limited funding and infrastructural gaps, women librarians continue to pioneer creative approaches—through digital platforms, mobile technologies, and user-centered innovations—that ensure diverse user groups are not left behind. Their leadership highlights the intersection of gender and technological advancement, positioning women as catalysts of sustainable, inclusive, and innovative library practices that align with global development goals and reaffirm the essential role of libraries in advancing academic excellence and social inclusion.

Recommendations

1. Women librarians should be exposed to innovative strategies that can promote ease of accessibility to resources for of boosting their performance.
2. University management and policymakers should prioritize funding for robust ICT infrastructure, high-speed internet, and modern library management systems to enable seamless access to information for all users.
3. Women librarians should be encouraged to take on leadership roles in technological innovation initiatives within libraries, ensuring their contributions are recognized and institutionalized in policy frameworks.

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