

Librarians' Digital Skills and Utilisation of Innovative Technologies for Library Service Delivery in Public University Libraries in Rivers State

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Implying

Abstract

The study investigated librarians' digital skills and the utilisation of innovative technologies for library services delivery in university libraries in Rivers State. Descriptive survey research design was used for the study. The population was 39 librarians from university libraries in Rivers State. Census sampling technique was used to select the entire population. Questionnaire was used for data collection. The data was analyzed using simple percentage. The study revealed that librarians possessed social media skills, internet fundamental skills, digital communications skills, use online databases, and digital preservation skills. The services rendered were information literacy services, current awareness services, digital reference services, selective dissemination of information and virtual assistance. The innovative technologies used for library service delivery were library smartphones, application packages and mobile applications but not Chabot Block chain and Virtual/augmented reality indicating low usage of innovative technologies for service delivery. There was positive influence of digital skills on the utilization of innovative technologies for library services delivery. The challenges faced in the adoption of innovative technologies for library services included reluctance of staff to adopt innovative technologies for library service delivery, lack of state-of-the-art infrastructure, inadequate digital skills, digital divide, and poor internet connectivity. The study recommended prioritization of continuous professional development for enhanced skills.

Keywords: Digital skills, innovative technologies, library service delivery, university library, virtual/augmented reality.

Introduction

In the digital age, the role of librarians has evolved significantly, expanding beyond traditional activities to include the management and effective utilization of digital resources and advanced technologies. University libraries have transformed into dynamic hubs of knowledge, driven by the continuous integration of innovative technologies. These advancements, ranging from integrated library management systems to enhanced digitization techniques and artificial intelligence-driven services, have revolutionized library operations. They have enhanced resource discovery, facilitated collaborative research, and broadened the scope of services available to patrons (Malgard et al., 2022). However, the successful adoption and utilization of these

technologies are heavily dependent on the digital skills and adaptability of librarians, who must continually update their expertise to meet the demands of a rapidly evolving technology.

The need for digital skills is formidable. Digital skills for librarians encompass a range of competencies necessary to effectively navigate, manage, and leverage digital information systems and tools. Digital skills cover the competencies essential for utilising the potential of innovative technologies effectively, proficiency in utilizing digital tools, platforms, and resources to access, evaluate, create, and disseminate information (Omehia et al. 2021). The skills include internet fundamental skills, digital communications skills, digital preservation skills, database skills, integrated library management skills. They are necessary for utilization of innovative technologies.

Innovative technologies encompass a diverse array of tools, platforms, and solutions aimed at revolutionizing library services and operations (Omeluzor et al. 2020). These technologies include integrated library systems, digital repositories, online databases, artificial intelligence and machine learning. By harnessing technologies, librarians can redefine the academic librarianship, foster a culture of digital innovation and excellence within university libraries (Omehia et al. 2021). As university libraries continue to embrace innovative technologies and digital transformation, the need for comprehensive study in this domain becomes increasingly apparent. Understanding the intersection of librarians' digital skills and the integration of innovative technologies, is essential for informing future practices, policies, and investments in university libraries. Through empirical research, theoretical frameworks, and case studies, scholars can elucidate best practices, identify emerging trends, and address challenges inherent in the digitalization of university libraries. The digital skills and utilization of innovative technologies among library staff are instrumental in shaping the future of academic librarianship. As these professionals continue to adapt and innovate in response to evolving technological landscapes, they serve as catalysts for academic excellence, fostering a culture of digital literacy, innovation, and inclusivity within the academic community.

Statement of the Problem

The widespread adoption of digital technologies in everyday life is reshaping how librarians' access, utilize, and manage knowledge. Librarians are now required to process complex information, necessitating critical and systematic thinking to make decisions based on various forms of evidence. To keep pace with rapid technological advancements in the workplace, librarians must continually update their knowledge and skills. More importantly, leveraging the opportunities presented by digital technologies demands the acquisition of specific competencies, including foundational internet skills, digital communication, digital preservation, database management, and integrated library management skills. These skills are essential for effectively utilizing innovative technologies in library and information services. The challenge lies in harnessing these competencies to enhance service delivery. Although digital technologies in library services are not new, the digital proficiency of librarians remains a concern. While existing studies have explored digital skills and the use of innovative technologies, there is a notable gap in literature specifically addressing these issues within university libraries in Rivers State. This study seeks to bridge that gap.

Objectives of the Study

The aim of the study is to determine librarians' digital skills and the utilisation of innovative technologies in university libraries in Rivers State. The specific objectives are to:

1. Identify the digital skills possessed by librarians in university libraries in Rivers State
2. identify the service rendered by librarians
3. investigate the innovative technologies used by librarians
4. Discover the influence of librarians' digital skills on delivery of innovative service delivery
5. discover the challenges faced by librarians in the use of innovative technologies for library service delivery.

Research Questions

The following research questions will guide the study

1. what are the digital skills possessed by librarians in university libraries in Rivers State?
2. what are the services rendered by librarians in university libraries in Rivers State?
3. what are the innovative technologies used by librarians for library service delivery?
4. what is the influence of digital skills on delivery of innovative services delivery?
5. what are the challenges faced by librarians in the use of innovative technologies for library service delivery?

Literature Review

Digital skills, encompassing a broad spectrum of capabilities from basic computer use to advanced programming, are increasingly essential in today's society. These skills enable individuals to effectively utilize digital devices, communication applications, and networks to access and manage information. Basic digital literacy, such as operating computers and smartphones, using the internet, and handling office software, forms the foundation upon which more specialized skills are built. According to the European Commission, digital skills are not only critical for employment but also for social inclusion and active participation in an increasingly digital world (Ben-Youssef, 2022). The skills include internet fundamental skills, digital communications skills, digital preservation skills, database skills, integrated library management skills.

Internet fundamental skills, which encompass the ability to effectively navigate, evaluate, and utilize online resources, are crucial for the use of innovative technology in libraries. These skills enable librarians to proficiently manage digital collections, facilitate user access to e-resources, and support online research and learning platforms (Nsirim & Okeke, 2024). Proficiency in the use of Internet is essential for utilizing integrated library systems (ILS), digital asset management systems (DAMS), and discovery tools that enhance resource discoverability and accessibility. Additionally, Wiche et al. (2024) that these skills allow librarians to stay current with emerging

technologies, implement effective digital literacy programs, and provide virtual reference services, thereby enhancing the overall user experience and ensuring the library remains a vital resource in the digital age

Another notable digital skill required by librarians in the use of innovative technologies is digital communication skills. This involve the ability to effectively use various digital platforms and tools for information exchange, interaction, and collaboration are essential in the context of innovative technology use in libraries (Omu, 2023). These skills enable librarians to engage with users through digital channels such as email, social media, online chat, and video conferencing, enhancing user support and outreach. It facilitates the promotion of library services, resources, and events, ensuring that users are well-informed and can easily access assistance. Igwela and Nsrin (2020) stressed that these skills support collaboration and participation in professional networks, fostering continuous learning and the adoption of best practices in using innovative technologies such as digital learning platforms, virtual reference services, institutional repositories and integrated library systems. Ultimately, strong digital communication skills contribute to a more dynamic and responsive library environment that meets the evolving needs of its users.

Furthermore, digital preservation skills are essential for librarians as innovative technologies proliferate. These skills involve the knowledge and techniques required to maintain and protect digital information over the long term. These skills enable librarians to implement strategies for the sustainable management of digital resources, including the use of digital preservation systems, metadata standards, and file format migration techniques. By ensuring the integrity, accessibility, and usability of digital collections, librarians can safeguard valuable digital content against technological obsolescence and data loss (Opara et al. 2023). Proficient digital preservation skills are essential for managing institutional repositories, digitized archives, and other digital collections, thereby enhancing the library's role as a custodian of knowledge in the digital age.

Database skills are also imperative in the face of emerging technologies. These skills encompass the ability to manage, organize, and retrieve vast repositories of digital information using sophisticated database systems. Database skills are essential to utilise innovative technology in libraries. Daniels et al. (2023) noted that digital skills enable librarians to effectively organize, retrieve, and analyze large volumes of information, ensuring efficient access to library resources. Further, proficiency in database management systems (DBMS) allows librarians to maintain and optimize integrated library systems (ILS), digital repositories, and electronic resource management systems. This includes tasks such as cataloging digital resources, managing metadata, performing data integrity checks, and creating user-friendly search interfaces. Strong database skills ensure that libraries can offer reliable information services, and enhancing user access to comprehensive and well-organized digital collections.

Integrated library management skills have also become formidable skills for librarians to effectively manage library housekeeping activities. These skills include the knowledge and abilities required to effectively utilize integrated library management systems (ILMS), which streamline and automate various library functions such as cataloging, circulation, acquisitions, and

user services (Omehia et al. 2021). In the context of innovative technology, these skills enable librarians to manage both physical and digital collections efficiently, ensuring seamless access to resources for users. Proficiency in ILMS allows librarians to analyze user data, generate reports, and optimize workflows, enhancing the overall operational effectiveness of the library. Moreover, integrated library management skills support the implementation of new technologies, such as discovery tools and digital resource management systems, enabling librarians to create a consistent and user-friendly experience that meets the evolving needs of patrons in a rapidly changing information environment. These skills facilitate the use of innovative technologies.

Innovative technologies refer to novel advancements and applications of technology that significantly improve or transform processes, products, or services. These technologies often introduce new capabilities or enhance existing ones, leading to increased efficiency, productivity, or user experience. According to Omu (2020) innovation in technology is the process by which new products or new forms of existing products are created through technical improvements, leading to new ways of solving problems and meeting needs. Innovative technologies are often characterized as disruptive technologies, which significantly alter the way businesses, industries, or entire markets function. These technologies challenge established norms and practices, leading to paradigm shifts in various sectors. Yue and Shen (2022) define disruptive innovation as a technology that brings to market a very different value proposition than had been available previously, often by creating a new market and value network. Innovative technologies encompass emerging and cutting-edge solutions that leverage advancements in fields such as artificial intelligence, biotechnology, quantum computing, and nanotechnology (Omehia et al, 2021).

These technologies include integrated library systems, digital repositories, online databases, artificial intelligence and machine learning. According to Nsirim (2020) Integrated Library Systems (ILS) as innovative technology are comprehensive platforms that automate the management of library functions such as cataloging, circulation, acquisitions, and serials management. Modern ILS solutions are often cloud-based, offering real-time updates and remote access. They enable librarians to manage collections more efficiently and provide patrons with seamless access to library resources. Another notable innovative technology is the institutional repositories. These are platforms that store and provide access to digital content, such as e-books, journals, theses, and multimedia. These repositories use metadata standards and digital object identifiers (DOIs) to ensure that content is easily discoverable and accessible. Digital libraries like HathiTrust and Europeana offer vast collections of digitized materials, while institutional repositories like DSpace and Fedora enable organizations to manage and preserve their scholarly output (March et al., 2019). Furthermore, Artificial Intelligence (AI) and Machine Learning (ML) are innovative technologies that are revolutionizing library services by enhancing resource management, improving user experiences, and streamlining operational processes. Libraries increasingly leverage these advanced technologies to optimize their functions and offer more personalized services to patrons. Internet of Things (IoT) is also an innovative technology which involves interconnected devices that collect and exchange data. In libraries, IoT technologies enhance service delivery through smart devices and sensors. For example, RFID (Radio Frequency

Identification) systems streamline the checkout and return processes, track inventory, and reduce theft (Nsirim, 2020). Environmental sensors monitor and control conditions in special collections and archives, ensuring optimal preservation environments. By harnessing innovative technologies, librarians in South-South Nigeria can redefine the academic librarianship, foster a culture of digital innovation and excellence within university libraries.

Chukueke and Idris (2023) correlated the digital literacy skills of librarians in academic libraries in Taraba State, Nigeria and their services delivery shows that digital literacy skills possessed by the librarians was low as they were only skillful in using the Internet to search and communicate information, conduct website evaluation and use Boolean logic, among other skills. However, numerous services were provided. Furthermore, there is a positive very low and insignificant relationship between digital literacy of librarians and services delivery in academic libraries. Similarly, Tarigha (2023) investigated basic computer skills and library services delivery in university libraries in Bayelsa State and discovered that there is a significant relationship between internet fundamental skills, mobile technology skills, desktop publishing skills and social media skills, and library service delivery. Also, Ilesanmi (2023) examined the Information and Communication Technology (ICT) skills of librarians for service delivery in private universities with particular reference to Southern Nigeria and revealed that librarians have acquired basic ICT skills and were versatile in its application for social communication, Internet searches. In their study on Librarians' ICT skills and Effective Library Service Delivery in University Libraries in Rivers State, Nigeria, Daniels et al., (2023) revealed that there is a significant relationship between digitization skills and effective library services delivery. The study recommended that library management should regularly organize training and retraining for librarians on ICT skills particularly web application skills, library networking skills, cloud technology skills, social media skills and digitization skills.

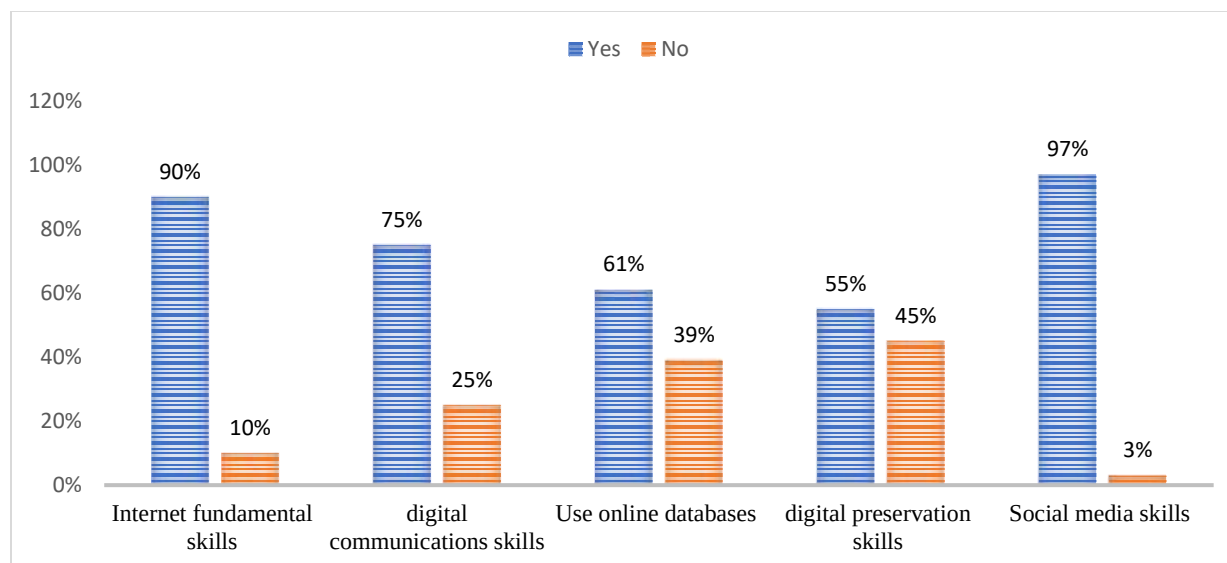
Methodology

Descriptive survey research design was used for the study. The population was 39 librarians from three university libraries in Rivers State. They are Ignatius Ajuru University of Education (11), Rivers State University, Port Harcourt and University of Port Harcourt. Census sampling technique was used to select the entire population. Questionnaire was used for data collection and 34 copies of the questionnaire were found valid for analysis. The data was analyzed using simple percentage and mean score.

Results and Discussion

Digital skills possessed by library staff

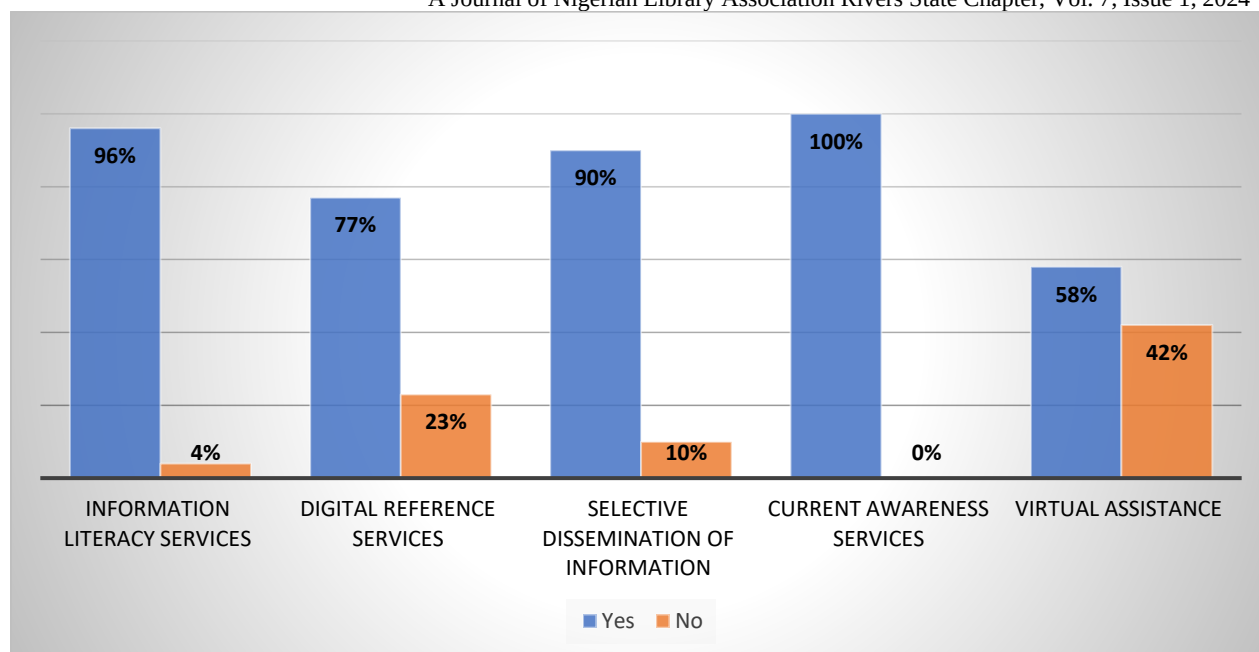
Digital skills possessed by library staff	Yes	No
Internet fundamental skills	90%	10%
digital communications skills	75%	25%
Use online databases	61%	39%
digital preservation skills	55%	45%
Social media skills	97%	3%



The result indicates that the digital skills possessed by librarians were social media skills, internet fundamental skills, digital communications skills, Use online databases, and digital preservation skills. The study is in line with the study of Tarigha (2023) on basic computer skills and library services delivery in university libraries in Bayelsa State and noted the skills by librarians to include computer literacy skills information literacy skills, web literacy skills and social media literacy skills

The services rendered in the university libraries in Rivers State?

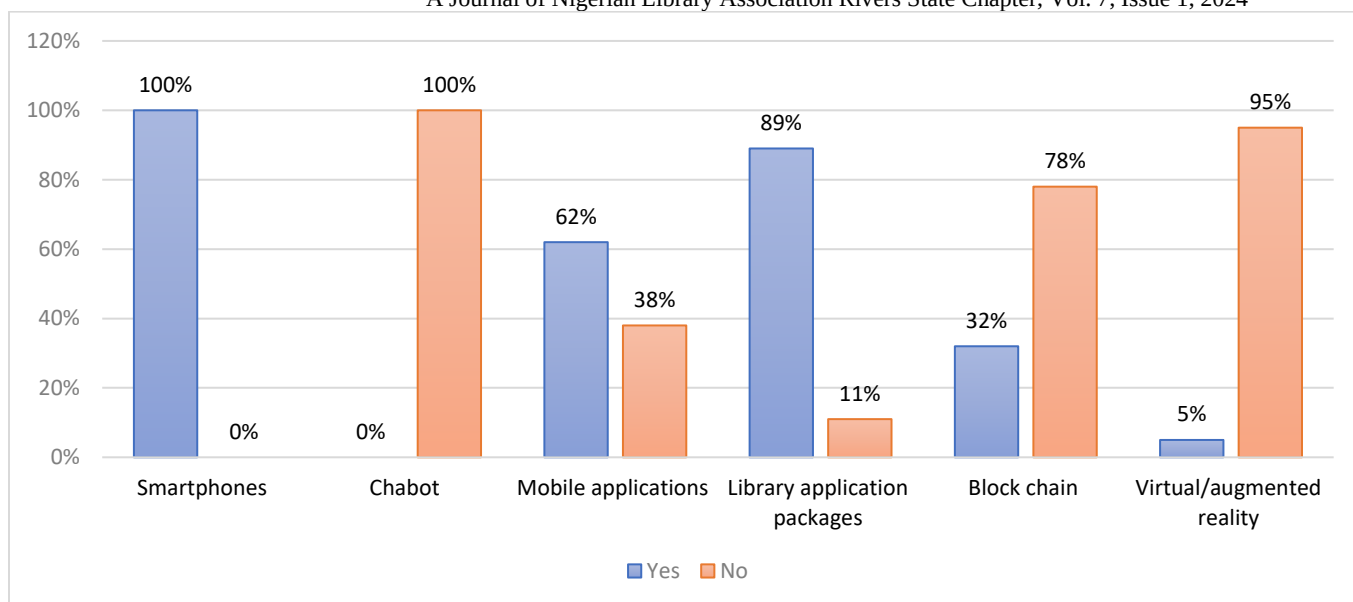
Item	Yes	No
Information literacy services	96%	4%
Digital reference services	77%	23%
Selective dissemination of information	90%	10%
Current awareness services	100%	0%
Virtual assistance	58%	42%



The result shows that the services rendered by librarians in university libraries in Rivers State were information literacy services, current awareness services, digital reference services, selective dissemination of information and virtual assistance. This finding is in line with the study of Chukueke and Idris (2023) on digital literacy skills of librarians in academic libraries in Taraba State and service delivery and discovered that various services were rendered in university libraries including current awareness services and reference services.

Innovative technologies used for service delivery

Items	Yes	No
Smartphones	100%	0%
Chabot	0%	100%
Mobile applications	62%	38%
Library application packages	89%	11%
Block chain	32%	78%
Virtual/augmented reality	5%	95%
Total	48%	52%



The result shows the innovative technologies used for library service delivery were smartphones, library application packages, and mobile applications. On the other hand, Chabot, Block chain, Virtual/augmented reality were not used. The total percentage of 48% indicates that innovative technologies were poorly used for service delivery in university libraries in Rivers State

Influence of digital skills on delivery of innovative services delivery

Digital skills enable me to:	Mean	Decision
render innovative services in the library	2.7	Accept
improve on library services	3.0	Accept
apply innovative technologies in library services delivery	2.8	Accept
answer users query virtually	2.6	Accept
assist users with ICT facilities	3.0	Accept
Grand Mean	2.8	Accept

The result shows that digital skills enable librarians to improve on library services, assist users with ICT facilities, apply innovative technologies in library services, render innovative services in the library and answer users queries virtually. The grand mean of 2.8 indicates that digital skills have positive influence on the utilization of innovative technologies for library services delivery. The study corroborates with the study of Ilesanmi (2023) on the Information and Communication Technology (ICT) skills of librarians for service delivery in private universities with particular reference to Southern Nigeria and revealed that the acquisition of ICT skills by librarians in Southern Nigeria private universities is relevant to their delivery of improved library services

Challenges faced in the use of innovative technologies for library service delivery

Item	Yes	No
Inadequate digital skills	97%	3%
Digital divide	25%	75%
Poor internet connectivity	59%	41%

Lack of state-of-the-art infrastructure	89%	11%
Reluctance of staff to adopt innovative technologies for library service delivery	70%	30%

The result shows that the challenges faced in the adoption of innovative technologies for library services included reluctance of staff to adopt innovative technologies for library service delivery lack of state-of-the-art infrastructure, inadequate digital skills, digital divide, and poor internet connectivity. The study is in line with Omehia et al., (2021) on Librarians' ICT competencies and utilisation of emerging technologies in academic libraries in Rivers State and noted the challenges to include poor internet connectivity, lack of skilled staff among others

Conclusion

This study concludes that digital skills significantly influence the utilization of innovative technologies for library service delivery. While librarians possess fundamental digital competencies, such as social media usage, internet navigation, digital communication, and database management, the adoption of advanced technological tools like blockchain, chatbots, and virtual/augmented reality remains limited. This indicates a need for further development in digital proficiency to fully harness the potential of innovative technologies for enhanced service delivery. Furthermore, the challenges faced by the library, including reluctance to adopt new technologies, inadequate infrastructure, and poor internet connectivity, are significant barriers to progress. Addressing these issues through improved training, investment in state-of-the-art infrastructure, and enhancing internet accessibility is crucial for the library to stay competitive and meet the evolving demands of its users. The study underscores the importance of continuous improvement in digital skills and the adoption of cutting-edge technologies to ensure efficient and effective library services in the digital age.

Recommendation

1. University libraries should prioritize continuous professional development for library staff for more advanced competencies.
2. university should allocate resources to upgrade its technological infrastructure. This will not only support the implementation of advanced library services but also encourage the adoption of innovative technologies by addressing key operational challenges.
3. Library management should focus on diversifying its services to include information repackaging and virtual assistance. These additions will help meet the evolving needs of users, improve service efficiency, and enhance the overall user experience in the digital era.
4. To overcome staff reluctance in adopting innovative technologies, the library should create an environment that encourages experimentation and innovation. Incentives such as recognition programs, mentorship, and collaborative projects can motivate staff to embrace and integrate new technologies into library operations more effectively.

5. Regular training on emerging technologies such as blockchain, chatbots, and virtual/augmented reality should be implemented to increase staff proficiency and confidence in using these tools for library services.

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