# Adoption of Innovative Technologies as Correlate of Information Service Delivery in University Libraries in Kwara State, Nigeria

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***Abstract***
*This study aims to explore the use of innovative technologies as a correlate of information service delivery in university libraries in Kwara State. The study adopted a descriptive survey research design. Seven (7) university libraries in Kwara State were selected. The population for the study was fifty-two (52) librarians in the seven (7) selected universities in Kwara State. The total enumeration technique was used. The questionnaire was used for the data collection. Four (4) research questions were answered. The collected data was analysed and the results showed that, innovative technologies are adopted to increase awareness of existing technologies, keep pace with the changing information landscape, and meet the expectations of users; supporting knowledge management fostering innovation, and contributing to the development of library staff. Cloud computing and RFID were two innovative technologies that have been deployed in libraries. Challenges affecting the adoption of innovative technologies for information service delivery in university libraries were: a lack of adequate support, technical expertise and integration issues with existing library systems*

**Keywords:** Adoption, Innovative Technologies, Information Service Delivery, University Libraries.

## Introduction

In the digital age, university libraries are increasingly reliant on innovative technologies to enhance information service delivery and meet evolving user needs (Akeriwa et al., 2015). To stay relevant, academic libraries must actively address challenges in the adoption and delivering innovative resources and services (Ikenwe & Udem, 2022). The adoption of technologies like Artificial Intelligence (AI), the Internet of Things (IoTs), cloud computing, Big Data, and chatbot technology significantly impacts information service delivery, contributing to academic success in the library(Omeluzor et al., 2021). Social media-based library services, a key application of innovative technologies, are globally used for user engagement, providing timely information access, and fostering communication (Omeluzor et al., 2021). Mobile technologies are also used for implementing social media-based services in libraries (Akeriwa et al., 2015). AI, a transformative technology, has the potential to revolutionise information service delivery in university libraries by enhancing information retrieval, decision-making, and user experiences (Okunlaya et al., 2022). Despite its potential, AI adoption in university libraries remains relatively low, necessitating strategic planning to fully leverage its benefits. Similarly, the Internet of Things (IoTs) holds promise for transforming service delivery in university libraries through smart systems, real-time resource monitoring, and personalised user experiences.

However, challenges like platform compatibility, data security, and user expectations must be addressed for effective IoT integration into library services (Eiriemiokhale & James, 2023).

The adoption of innovative technologies in university libraries faces challenges such as insufficient ICT infrastructure (lack of IT facilities, poor funding, and unreliable power supply), low ICT skills among staff, resistance to change, high technology acquisition and maintenance costs, and a lack of training and support. Academic libraries strive to deliver high-quality services aligned with the evolving information landscape (Fresnido & Marmol, 2014). To overcome this challenge, university libraries increasingly embrace innovative approaches and technologies for enhanced service delivery (Igbinovia & Okuonghae, 2021).

The quality of library services delivered significantly influences the satisfaction and overall effectiveness of the users (Mohindra & Kumar, 2015). Recognizing the impact of user satisfaction, academic libraries focus on key service delivery dimensions, including the library environment, collection, staff, and services (Sriram & Rajev, 2014). Additionally, the discoverability of services, especially qualitative research support, is crucial in academic libraries as they expand research services. However, there is a research gap in addressing the discoverability of qualitative research services on academic library websites. This emphasizes the need for strategic planning to ensure the visibility and accessibility of services, including qualitative research support (Cain, Cooper, Demott, & Montgomery, 2019).

Adoption of these technologies to enhance interlibrary loan and document delivery services is vital for resource sharing among academic libraries, exemplified by consortia like CALIS in China, enhancing service delivery and meeting information needs (Yao & Zeng, 2012). The Internet of Things (IoTs) holds the potential to innovate service delivery in academic libraries, offering smart systems and real-time resource monitoring. Despite its promise, IoTs face challenges like delivery speed, platform compatibility, user expectations, and data security (Igbinovia & Okuonghae, 2021). Service delivery in university libraries is multifaceted, demanding continuous improvement. Quality library services, discoverability, interlibrary loan, accessibility for users, and emerging technologies like IoT are crucial. (Ojobor, 2021). Leveraging innovative technologies and addressing challenges can optimize university libraries' service delivery, contributing to academic success.

**Statement of the Problem**

The digital transformation era has prompted university libraries to embrace innovative technologies, such as RFID, and social media, to enhance information service delivery. While these technologies offer opportunities for more efficient services and improved user experiences, some challenges hinder their adoption. These include but are not limited to insufficient ICT infrastructure, poor funding, unreliable power supply, and low ICT skills among library staff pose several challenges. Resistance to change and the high costs of technology acquisition and maintenance further impede successful integration (Okunlaya et al., 2022). To fully leverage the potential benefits of innovative technologies, strategic plans and frameworks prioritising technology integration into service delivery models are crucial (Okunlaya et al., 2022). Overcoming challenges necessitates a comprehensive understanding of the associated benefits

and limitations. Collaboration with stakeholders, including IT professionals, library associations, and university management, is essential to secure resources and support for technology adoption (Yeh & Walter, 2016). The need for university libraries to adapt to the digital era and cater to evolving user needs has highlighted the significance of innovative technologies. Despite the recognised benefits, challenges in infrastructure, funding, skills, and resistance to change must be addressed through strategic planning and collaborative efforts to maximize the positive impact of these technologies on information service delivery.

**Objectives of the Study**

The main objective of the study was to examine the use of innovative technologies in the transformation of library and information service delivery to users. The specific objectives were to:

i. determine the adoption of innovative technologies for information service delivery in university libraries in Kwara State;
ii. describe the types of innovative technologies in university libraries in Kwara State;
iii. examine the purpose of adopting innovative technologies in university libraries in Kwara State; and
iv. investigate the challenges affecting the adoption of innovative technologies in university libraries in Kwara State.

**Literature Review**

Godin (2018) broadly defines innovation as new ideas challenging the status quo, spanning fields like science, technology, management, and education. However, contemporary discourse often narrows innovation to technological innovation (Timmermans & Blok, 2018). In geotechnical engineering, innovative design optimizes construction processes and enhances sustainability, contributing to cost efficiency (Schomberg & Blok, 2018). A study on China's manufacturing industry found environmental regulation affects technological innovation differently across stages, providing policy recommendations (Yuan et al., 2016). The role of intellectual capital in driving technological innovation and firm performance emphasizes the positive impacts of human and structural capital and the negative impacts of relational capital (Xu et al., 2019).

The positive connotation of innovation evolved in the 19th century within a context celebrating progress and utility (Godin, 2015). Initially, innovation did not exclusively relate to technology and the market but gradually evolved into our contemporary techno-economic understanding of innovation. In computer science and bibliometrics, visualized analysis identifies research hotspots and trends in the innovation chain, emphasizing issues like communication technology, blockchain, nanotechnology, and sustainable development (Gao et al., 2022). Information professionals' behaviours and competency growth impact the delivery of goods and services (Omekwu, 2016).

Social media platforms like Facebook and Twitter enhance knowledge creation and exchange in information service delivery. Libraries leverage social media to share knowledge, facing challenges like financial support and proper platform use (Awurdi, 2019). Quality online shopping logistics services significantly affect customer satisfaction (Choi et al., 2019). E-service delivery, involving interactive information flow, is vital for convenience and efficiency (Abdul & Zohurul, 2015). Health management information systems (HMIS) impact healthcare service delivery, providing reliable information for

decision-making (Kilimo et al., 2022). Data plays a crucial role in sectors like urban water service delivery, enabling organizations to identify areas for improvement and make informed decisions (Steyn, 2022). The adoption of innovative technologies in university libraries reflects a broader shift towards knowledge facilitation in librarianship (Lankes, 2019). Innovative technologies currently being adopted and used in university libraries include AI, robotics, big data, blockchain, cloud computing, IoTs, virtual reality (VR), augmented reality (AR), and chatbots. These technologies revolutionise information services, enhancing user experiences, improving access to resources, and streamlining library operations. Some of the innovative technologies are discussed in the following section.

**Artificial Intelligence (AI)**

AI is a transformative technology with potential applications in university libraries, drawing attention to its capacity to enhance information services and streamline operations (Cox et al., 2019). Research by Cox, Pinfield, and Rutter (2019) explores AI's impact on library functions, including search, resource discovery, scholarly publishing, and learning. Despite its potential benefits, challenges such as decision intelligibility, data quality, and job concerns are acknowledged. Pooja and Sheth (2023) stress the significance of data science in AI's context, particularly its relationship with big data and informed decision-making, emphasizing the need for clear definitions in data science principles.

**Robotics**

Robotics in university libraries is gaining attention for its potential to enhance services and user experiences. Lin et al. (2014) developed a service robot for a children's library, employing a design-based approach to motivate and guide patrons, particularly children, in resource discovery. Mobile robots assist students in navigating library spaces. Oladokun et al. (2023) explore the implications of robotic technologies for Nigerian university libraries, highlighting the use of robots for real-time browsing of printed items through a web interface, showcasing potential automation and efficiency in library processes.

Chatbots as a subset of Robotic offer efficient and personalized support in university libraries, providing immediate assistance and reducing waiting times for users (Liu et al., 2019). They handle routine queries, free up library staff for more complex needs, and offer personalized recommendations based on user behaviour. While chatbots enhance user experiences, challenges like accurate knowledge bases and natural language processing limitations need attention. University libraries increasingly adopt innovative technologies to enhance services and meet evolving user needs. This literature review explores the purposes of these technologies, drawing on various studies. They facilitate efficient academic communication, supporting knowledge management and fostering innovation within university libraries (Goddard, 2020). Innovative technologies transform library spaces into collaborative environments, exemplified by makerspaces that encourage interdisciplinary collaboration (Masenya, 2023). Meeting the changing information landscape and user expectations is another purpose, allowing libraries to respond to disruptive innovations and remain relevant (Yeh & Walter, 2017). Furthermore, these technologies contribute to developing new roles and skills for library staff, such as "embedded"

librarian roles involving active engagement with users in research and teaching activities (Tait et al., 2016).

**Big data technology**

Big data integration in university libraries is a compelling area with transformative potential for enhancing services delivery and decision-making (Ahmad, JianMing, & Rafi, 2019). Embedded librarianship opportunities allow leveraging big data for purposes like data management planning, collection, curation, and archiving, aiding libraries in understanding evolving user needs, reshaping services, and enhancing operational procedures.

**Blockchain technology**

Blockchain technology integration in university libraries is gaining attention for its potential to enhance security, privacy, and operational efficiency. Initially developed for Bitcoin, blockchain offers decentralized attributes, addressing challenges in security, privacy, and data integrity in library operations (Yli-Huumo et al., 2016). Recognised benefits include decentralization, persistence, anonymity, and audibility. Blockchain's potential benefits make it intriguing for university libraries, improving communication among library communities, enhancing user data privacy, and serving as a tool for secure and transparent transactions in electronic materials. Integration with biometrics can enhance library-access recognition, management efficiency, and security.

**Cloud computing**

Cloud computing is a transformative technology with the potential to revolutionise various industries, including university libraries, by enhancing storage capabilities, collaboration, and operational efficiency. Recognized benefits include scalable and reliable data management, crucial for addressing challenges in the information explosion (Dattatray, 2019). Shehu, Kassim, and Husin (2023) reviewed empirical studies on cloud computing adoption in Anglophone West African university libraries, revealing varying acceptance levels and emphasizing the need for further exploration of adoption factors in different regions. Challenges in cloud computing adoption include data security, confidentiality, and reliance on service providers. Islam et al. (2023) identified data security, confidentiality, and reliance as barriers, underscoring the importance of training library personnel for effective cloud computing resource utilization.

**Internet of Things (IoTs) technology**

The integration of Internet of Things (IoT) technology in university libraries is gaining attention for its potential to enhance efficiency, and services, and create smart library environments. IoT involves interconnected devices collecting and exchanging data. Combining blockchain with IoT can improve performance by providing security, transparency, reliability, and traceability (Sadawi et al., 2021). The integration of Artificial Intelligence (AI) with IoT aims to increase resilience and support automation in cyber-physical systems. Additionally, there is an increased focus on models, infrastructures, and frameworks of IoT in academic and technical papers.

Exploring integrations with related systems like the Industrial Internet of Things and Industry 4.0 enhances IoT capabilities (Radanliev et al., 2021).

**Virtual Reality (VR)**

Virtual reality (VR) holds promise for enhancing learning and engagement in university libraries by providing immersive environments for students. It fosters interactive learning experiences, promoting information literacy skills and improving critical thinking. VR enables collaboration, resource sharing, and discussions, creating an interactive learning environment (Katz et al., 2020). In university libraries, VR is utilized for virtual tours, exhibitions, and accessing multimedia content. It supports collaborative learning in virtual spaces or classrooms. However, challenges such as cost and accessibility need consideration, as VR implementations can be expensive and may require attention to ensure inclusivity for all students, including those with disabilities (Li et al., 2019).

The dearth of comprehensive studies on the use of innovative technologies in university libraries is a significant challenge. Despite the increasing interest in technologies, little has been done on scientific research and evidence-based practices which hampers their informed adoption (Wójcik, 2016). This scarcity of research makes decision-making challenging for libraries seeking to utilize these technologies. The swift pace of technological advancements is another obstacle, demanding continuous adaptation and the implementation of these technology's customer value strategies for improved experiences (Weinstein & Mcfarlane, 2017).

**Methodology**

In this study, a descriptive survey research design was employed to gather opinions and views from individuals. The research design encompasses the overall plan and structure guiding data collection and analysis. It specifies the methods and procedure to achieve research objectives and address questions, including decisions on the research approach (quantitative, qualitative, or mixed method) and methods. The population of the study refers to the entire group of individuals or objects under investigation. In this case, professional librarians from various universities in Kwara State were the focus. The universities included Al-Hikmah University, Kwara State University, Landmark University, Ojaja University, Summit University, Thomas Adewumi University, and the University of Ilorin. The study employed a total enumeration sampling technique, for all 52 librarians from the University libraries used for the study. The study employed a survey research technique. A questionnaire served as the research instrument, comprising different sections aimed at gathering demographic data. (Section A), featured items on the use of innovative technologies for information service delivery. (Section B), featured items that identify types of innovative technologies adopted. (Section C), contained items on the purpose of using these technologies. (Section D), contained item that explores the challenges faced. Each section adopted a four-point Likert scale (SA = 1 to SD = 4) response format. The questionnaire was personally administered by the researcher, facilitating responses through the placement of ticks in the appropriate columns. The researcher developed the questionnaire, and three experts from the Department of Library and Information Science validated it for relevance,

content, and clarity. The instrument was refined based on their critical input. The data collection involved personally delivering the questionnaire, titled "Innovative Technologies and Information Service Delivery in University Libraries," to choose libraries with the support of an introduction letter. Completed questionnaires were promptly retrieved to prevent loss and ensure data accuracy. Participants were assured that collected data would be used solely for research purposes. Statistical Product and Service Solution (SPSS) version 26 was employed for descriptive data analysis with a questionnaire as an instrument, utilising tables, simple percentages, and frequency counts in descriptive analysis.

**Result**

**Table 1: Distribution of the respondents based on institution**

| S/N | Name of University | Frequency | Percentage % |
|---|---|---|---|
| 1. | Al-Hikmah University. | 7 | 15.9 |
| 2. | Kwara State University. | 10 | 22.7 |
| 3. | Landmark University. | 4 | 9.1 |
| 4. | Ojaja University. | 1 | 2.3 |
| 5. | Summit University. | 2 | 4.5 |
| 6. | T homas Adewumi University. | 1 | 2.3 |
| 7. | University of Ilorin. | 19 | 43.2 |
| | **Total** | **44** | **100** |

Table 1 showed that 7(15.9%) of the respondents were from Al-Hikmah University, 10(22.7%) of the respondents were from Kwara State University, 4(9.1%) of the respondents were from Landmark University, 1(2.3%) of the respondents were from Ojaja University, 2 (4.5%) of the respondents were from Summit University, 1(2.3%) of the respondents were from Thomas Adewumi University, and 19 (43.2%) of the respondents were from University of Ilorin. This implies that the majority of the respondents were from the University of Ilorin.

**Table 2: Distribution of the respondents based on Demographic profile**

| 1tems | Components | Frequency | Percentage |
|---|---|---|---|
| Gender | Male. | 24 | 54.5 |
| | Female. | 20 | 45.5 |
| | **Total** | **44** | **100** |
| Age | 25-34 years. | 11 | 25.0 |
| | 35-44 years. | 16 | 36.4 |
| | 45-54 years. | 15 | 34.1 |
| | 55-64 years. | 2 | 4.5 |
| | **Total** | **44** | **100** |
| Qualification | Diploma | - | - |
| | BSc | 12 | 27.3 |
| | M.Sc | 25 | 56.8 |
| | PhD | 7 | 15.9 |
| | **Total** | **44** | **100** |
| Experience | 1-5 years. | 14 | 31.8 |
| | 6-10 years. | 18 | 40.9 |
| | 11-20 years. | 5 | 11.4 |
| | 20 years and above. | 7 | 15.9 |
| | **Total** | **44** | **100** |

Table 2: shows the analysis of the demographic variables of the respondents starting from gender: The majority, 24(54.5%) of the respondents were male while 20(45.5%) of the respondents were female. The majority, 16(36.4%) of the respondents were within the age range of 35-44 years, followed by, 15(34.1%) of the respondents within the age of 45-54 years, and 2(4.5%) of the respondents were within the age range of 55-64. The majority, 25(56.8%) of the respondents were M.Sc. holders, followed by 12(27.3%) of the respondents who were B.Sc. holders and 7(15.9%) of the respondents who were PhD holders. The majority, 18(40.9) of the respondents were within 6-10 years of experience, followed by 14(31.8%) of the respondents were within 1-5 years of experience, and 7 (15.9%) of the respondents were within 20 and above years of experience.

**Table 3: Distribution of the respondents based on their familiarity with innovative technologies**

| S/N | Familiarity | Frequency | Percentage (%) |
|---|---|---|---|
| 1 | Very familiar. | 16 | 36.4 |
| 2 | Familiar. | 26 | 59.1 |
| 3 | Somewhat familiar. | 2 | 4.5 |
| 4 | Not familiar. | - | - |
| | **Total** | **44** | **100** |

Table 3 showed that 16(36.4%) of the respondents were familiar with innovative technologies, 26(59.1%) of the respondents were familiar with innovative technologies and 2(4.5%) of the respondents were somewhat familiar with innovative technologies. This implies that the majority of the respondents were familiar with innovative technologies.

**Table 4**: **Distribution of the respondents based on training to use innovative technologies**

| S/N | Training | Frequency | Percentage (%) |
|---|---|---|---|
| 1 | Yes. | 40 | 90.9 |
| 2 | No. | 4 | 9.1 |
| | **Total** | **44** | **100** |

Table 4 shows that 40(90.9%) of the respondents have received training on innovative technologies and 4(9.1%) of the respondents have not received any training on the use of innovative technologies. This implies that the majority of the respondents have received training on innovative technologies.

**Table 5**: **Distribution of the respondents based on their perception of the impact of innovative technologies**

| S/N | Perceived Impact | Frequency | Percentage (%) |
|---|---|---|---|
| 1 | Positively. | 42 | 95.5 |
| 2 | Negatively. | 2 | 4.5 |
| 3 | No impact. | - | - |
| | **Total** | **44** | **100** |

Table 5 showed that 42(95.5%) of the respondents positively perceived the impact of innovative technologies and 2(4.5%) of the respondents negatively perceived the impact of innovative technologies. This implies that the majority of the respondents positively perceived the impact of innovative technologies on information service delivery.

**Research question 1: Use of innovative technologies for information service delivery in university libraries in Kwara State, Nigeria**

**Table 6: Frequency and percentage scores of adoption of innovative technologies for information service delivery in university libraries in Kwara State, Nigeria**

| S/N | Use of innovative technologies | SA | A | D | SD |
|---|---|---|---|---|---|
| 1 | Innovative technologies are being adopted for the use of e-books. | 20(45.5%) | 22(50.0%) | 2(4.5%) | - |
| 2 | Innovative technologies are adopted to increase awareness of existing technologies and their application in library routines. | 19(43.2%) | 24(54.5%) | 1(2.3%) | - |
| 3 | Innovative technologies are adopted to enhance access to scholarly materials and improve service delivery. | 13(29.5%) | 25(56.8%) | 5(11.4%) | - |
| 4 | Innovative technologies are adopted to facilitate knowledge creation in university library communities. | 17(38.6%) | 23(52.3%) | 4(9.1%) | - |

As shown in Table 6, the adoption of innovative technologies for information service delivery in university libraries: 22(45.5%) of the respondents agreed that innovative technologies are being used for the adoption of e-books; 24(54.5%) of the respondents agreed that innovative technologies are adopted to increase awareness of existing technologies and their application in library routines; 25(56.8%) of the respondents agreed that innovative technologies are adopted to enhance access to scholarly materials and improve service delivery. This implies that the majority of the respondents agreed that innovative technologies are used to enhance access to scholarly materials and improve service delivery.

**Research question 2: Types of innovative technologies in university libraries in Kwara State, Nigeria**

**Table 7: Frequency and percentage scores of the types of innovative technologies in university libraries in Kwara State, Nigeria**

| S/N | Types of Innovative Technologies | SA | A | D | SD |
|---|---|---|---|---|---|
| 1 | RFID is being used in library services to enhance service delivery. | 16(36.4%) | 20(45.5%) | 7 (15.9%) | 1(2.3%) |
| | | | | | |
| | | | | | |
| 4 | Cloud computing is an innovative tool adopted for library service. | 17(38.6%) | 18(40.9%) | 6(13.6%) | 3(6.8%) |
| | | | | | |

As shown in Table 7, the types of innovative technologies for information service delivery in university libraries were: 20(45.5%) of the respondents agreed RFID is being adopted in library services to enhance service delivery; 21(47.7%) of the respondents agreed that virtual reality is adopted for learning and engagement in university libraries; but 29(65.9%) of the respondents

disagreed that Internet of Things (IoTs) is adopted for quality services delivery in university libraries while 18(40.9%) of the respondents strongly agreed that Cloud computing is an innovative tool adopted for library service. This implies that the majority of the respondents agreed that RFID, Virtual reality and Cloud computing were adopted for quality service delivery in university libraries.

**Research question 3: Purpose of adopting innovative technologies in university libraries in Kwara State, Nigeria**

**Table 8: Frequency and percentage scores of the purpose of Adopting innovative technologies in university libraries in Kwara State, Nigeria**

| S/N | Purpose | SA | A | D | SD |
|---|---|---|---|---|---|
| 1 | To facilitate communication and information exchange among researchers and scholars. | 29(65.9%) | 15(34.1%) | - | - |
| 2 | Supporting knowledge management and fostering innovation. | 31(70.5%) | 13(29.5%) | - | - |
| 3 | Transform the library space into a collaborative and creative environment. | 28(63.6%) | 16(36.4%) | - | 4(9.1%) |
| 4 | Keeping pace with the changing information landscape and meeting the expectations of users. | 30(68.2%) | 14(31.8%) | - | - |
| 5 | Contribute to the development of new roles and skills for library staff. | 32(72.7%) | 12(27.3%) | - | - |

As shown in Table 8, the purpose of adopting innovative technologies for service delivery in university libraries was: 30(68.2%) of the respondents strongly agreed that keeping pace with the changing information landscape and meeting the expectations of users; 31(70.5%) of the respondents strongly agreed that supporting knowledge management and fostering innovation; 32(72.7%) of the respondents strongly agreed that contribute to the development of new roles and skills for library staff. This implies that the majority of the respondents strongly agreed that the purpose of using innovative technologies for service delivery is to contribute to the development of new roles and skills for library staff.

**Research question 4: Challenges affecting the use of innovative technologies for information service delivery in university libraries in Kwara State, Nigeria**

**Table 9: Frequency and percentage scores of the challenges affecting the adoption of innovative technologies for information service delivery in university libraries in Kwara State, Nigeria**

| S/N | Challenges | SA | A | D | SD |
|---|---|---|---|---|---|
| 1 | Lack of financial resources allocated to innovation in university libraries. | 24(54.5%) | 20(45.5%) | - | - |
| 2 | Resistance to change and fear of failure within university libraries. | 30(68.2%) | 14(31.8%) | - | - |
| 3 | Lack of adequate support or technical expertise poses a challenge for university libraries. | 13(29.5%) | 31(70.5%) | - | - |
| 4 | Data security and privacy concerns. | 14(31.8%) | 30(68.2%) | - | - |
| 5 | Integration issues with the existing library system. | 12(27.3%) | 32(72.7%) | - | - |

As shown in Table 9, the challenges affecting the adoption of innovative technologies for information service delivery in university libraries were: 30(68.2%) of the respondents strongly agreed that resistance to change and fear of failure within university libraries; 31(70.5%) of the respondents agreed that lack of adequate support or technical expertise poses a challenge for university libraries; 32(72.7%) of the respondents agreed that the Integration issues with existing library system. This implies that the majority of the respondents agreed that the challenges affecting the use of innovative technologies for information service delivery are Integration issues with existing library systems.

**Discussion of the findings**

The types of innovative technologies for information service delivery in university libraries are cloud computing and RFID The results tally with the findings of Cox, Pinfield, and Rutter (2019) and Ahmad, JianMing, and Rafi (2019) who identified cloud computing and other technologies to develop expertise in handling and analysing large amounts of data to provide value-added services to library users.

The findings revealed that the purpose of adopting innovative technologies for service delivery in university libraries is: to keep pace with the changing information landscape and meet the expectations of users; support knowledge management and foster innovation; to contribute to the development of new roles and skills for library staff. The results of this study tally with the findings of Yeh and Walter (2017) who emphasised the need for university libraries to respond to disruptive innovations and technological changes. By embracing service innovation and accelerating the adoption of new technologies, libraries can remain relevant and continue to serve the information needs of their users.

From the findings, challenges affecting the adoption of innovative technologies for information service delivery in university libraries are resistance to change and fear of failure within university libraries; lack of adequate support or technical expertise poses a challenge for

university libraries; and Integration issues with existing library systems. The results of this study tally with the findings of Bieraugel (2015) who highlighted the lack of financial resources allocated to innovation in university libraries as one of the major challenges. The absence of sufficient funding can impede the adoption of innovative technologies, as libraries may not have the necessary resources to invest in new technologies or to support the training and development of staff in using these technologies.

## Conclusion

The findings of this study shed light on the crucial role that innovative technologies play in shaping information service delivery within university libraries in Kwara State, Nigeria. The study highlighted three primary applications of innovative technologies: the adoption of e-books, the promotion of awareness surrounding IoT technologies, and the utilisation of these advancements to improve accessibility to scholarly resources. These applications represent significant strides towards modernising and optimising information services within the academic landscape. The array of innovative technologies identified in university libraries encompassed cloud computing and RFID. These technologies are poised to revolutionise how information is accessed and disseminated within these institutions.

## Recommendations

Based on the research findings, several key recommendations emerge to enhance the integration and utilisation of innovative technologies in university libraries:

5. Promote institutional support for the adoption of technology by advocating for greater financial and infrastructural investment, addressing concerns related to resistance to change and fear of failure. This support will empower libraries to confidently explore and implement new technologies.
6. Prioritise knowledge management and innovation by promoting the adoption of innovative technologies that facilitate knowledge management practices, with the ultimate goal of cultivating a culture of innovation within university libraries.

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