



### Adoption of Contemporary Technology for Effective Service Delivery by Librarians in University Libraries in Edo and Delta States of Nigeria

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#### **Abstract**

*This study investigated the adoption of contemporary technologies and their impact on service delivery effectiveness in university libraries in Edo and Delta States, Nigeria. A simple random sampling procedure was used to select a total of 191 respondents that was used for the study. Data for the study were analysed using mean score of a 4-point Likert type scale and Pearsons Correlation analysis. Findings revealed that while the adoption of technologies had enhanced access to resources, streamlined cataloguing, and improved user experience, significant challenges such as funding limitations, skill gaps, and resistance to change persisted. The Pearson Correlation coefficients indicated a positive and significant relationship between technology adoption and service effectiveness, with coefficients of 0.535 for Edo State and 0.706 for Delta State, both significant at the 5% and 1% levels, respectively. The study concluded that increased investment in technological infrastructure and professional training was essential to overcome existing barriers and maximize the benefits of contemporary technologies in university libraries. These measures were crucial for enhancing service delivery and supporting academic progress in the region.*

**Keywords:** Contemporary technologies, University libraries, Service delivery, Edo State, Delta State, Technology Adoption

#### **1.1 Introduction**

The rapid advancement of technology has significantly influenced various sectors globally, and the field of library and information science is no exception. University libraries, traditionally known as repositories of printed materials, have been at the forefront of this transformation, integrating contemporary technologies to enhance their service delivery (Baro, Obaro & Aduba, 2019). In Delta and Edo States of Nigeria, the adoption of these technologies is

crucial for meeting the evolving needs of users and ensuring the continued relevance of library services in the digital age (Emiri, 2017). Library and Information Science (LIS) encompasses the study of how information resources are organized, managed, and disseminated. The integration of technology into LIS has led to the development of digital libraries, electronic databases, and various online services. These advancements have transformed how information is accessed and used, necessitating a shift in the roles and

skills of library professionals (Baro, Obaro & Aduba, 2019).

Contemporary technologies refer to modern tools and systems that improve the efficiency and effectiveness of various operations. In university libraries, such technologies include Integrated Library Systems (ILS), digital cataloguing, electronic document delivery, Radio Frequency Identification (RFID), cloud computing, and mobile applications (Ani, Ngulube & Onyancha, 2015). These technologies facilitate efficient management of library resources, enhance user access to information, and improve overall service delivery. An Integrated Library System (ILS) is a software solution that automates library functions such as cataloguing, circulation, acquisition, and inventory management. The implementation of ILS in university libraries has streamlined operations, reduced manual labour, and improved the accuracy and accessibility of library records (Ponelis & Adoma, 2018).

Digital cataloguing involves the creation of electronic records for library materials, making them easily searchable and accessible through online public access catalogues (OPACs). Electronic document delivery services enable users to access digital copies of library resources remotely, thereby extending the reach of library services beyond physical boundaries (John-Okeke & Anasi, 2022). RFID technology uses electromagnetic fields to identify and track tags attached to objects, facilitating efficient inventory management, security, and self-service checkouts in libraries (Baro, Obaro & Aduba, 2019). Cloud computing, on the other hand, provides scalable and flexible storage solutions, enabling libraries to host vast amounts of digital content and applications on remote servers, thus reducing the need for physical infrastructure (Okojie & Okiy, 2020). Mobile applications and social media platforms have become essential tools for

engaging with library users. Mobile apps offer convenient access to library services, allowing users to search catalogues, reserve materials, and receive notifications on their smartphones. Social media platforms, such as Facebook, X (Twitter), and Instagram, facilitate communication and interaction between libraries and their communities, promoting library events and services (Liu & Liu, 2023). The role of library professionals is evolving from traditional custodians of books to dynamic information managers and facilitators of knowledge. This evolution necessitates continuous professional development and training in emerging technologies to equip library staff with the skills required for effective service delivery in the digital era (John-Okeke & Anasi, 2022).

## 1.2 Statement of the Problem

The adoption of contemporary technology has become necessary due to the increasing needs by librarians for effective service delivery. Despite the critical role of contemporary or digital tools for effective library operations, there is a discernible gap in the implementation and utilization of these technologies among librarians in these States. These are lack of Digital Literacy Skills (DLS) in adopting contemporary technology for effective library service by many librarians acquiring these skills through informal methods such as trial and error or colleague assistance rather than formal training programs.

However, there is need for comprehensive training programs to enhance the digital literacy skills of librarians, ensuring that they can effectively use and integrate contemporary technologies into their service delivery. Second, there is limited research on the specific challenges and barriers to the adoption of contemporary technologies and other digital tools in university libraries in these states. Addressing these gaps requires targeted studies that focus on understanding the unique

needs of libraries in Edo and Delta States. While some studies have examined the adoption of digital technologies in Nigerian libraries, there is a paucity of research specifically focused on the comparative analysis of Edo and Delta States. Therefore, this study aims to provide a detailed assessment of the adoption of contemporary technology for effective service delivery by library professionals in university libraries in Edo and Delta State.

### 1.3 Objectives of the Study

The main objective of this study is to assess the adoption of contemporary technology for effective service delivery by library professionals in university libraries in Edo and Delta State. The specific objectives of the study are to;

- assess the current level of adoption of contemporary technologies in university libraries in Edo and Delta States;
- examine the effectiveness of contemporary technologies on service delivery in university libraries; and
- identify the challenges faced by library professionals in adopting contemporary technologies in university libraries.

### 1.4 Hypotheses of the Study

**H<sub>01</sub>:** There is no significant relationship between the level of adoption of contemporary technologies and the effectiveness of service delivery in university libraries in Edo State.

**H<sub>02</sub>:** There is no significant relationship between the level of adoption of contemporary technologies and the effectiveness of service delivery in university libraries in Delta State.

## 2.1 Literature Review

### Conceptual Clarification

#### Adoption of Integrated Library Systems (ILS)

Integrated Library Systems (ILS) play a crucial role in modern library operations, facilitating the management and dissemination of library resources. Omeluzor and Oyovwe-Tinuoye (2016) conducted a study to assess the adoption and use of ILS in academic libraries in Edo and Delta States. Their research indicated a significant disparity between the two states. In Delta State, there was a general non-use of ILS, while in Edo State, three out of four academic libraries had adopted such systems, with Koha ILS being the most prevalent. The study revealed that the use of ILS enhanced various aspects of library service delivery, including the accessibility, retrieval, and management of library materials.

#### ICT Skills and Cloud Computing

The possession of robust ICT skills by librarians is fundamental to the effective adoption and utilization of contemporary technologies. Daniels, Wiche, and Nsirim (2023) explored the ICT skills of librarians in Rivers State, a region comparable to Edo and Delta States.

**Cloud computing** represents a transformative technology that offers scalable and flexible solutions for data storage, management, and access. Akin and Durodolu (2021) discussed the potential of cloud computing in enhancing library operations. Their research indicated that cloud computing could provide efficient access to digital resources, facilitate collaboration among librarians, and streamline various library processes. Despite its potential, the adoption of cloud computing in Nigerian libraries, including those in Edo and Delta States, remains limited due to infrastructural challenges and a lack of awareness.

#### Artificial Intelligence (AI)

Artificial Intelligence (AI) technologies are gradually being integrated into academic libraries to automate routine tasks, provide personalized user experiences,

and enhance decision-making processes. Yusuf, Adebayo, Bello and Kayode (2022) highlighted the growing awareness of AI among Nigerian library professionals and its potential to revolutionize library services. However, the adoption of AI is still in its early stages, hampered by challenges such as a lack of technical expertise, insufficient funding, and inadequate infrastructure.

### **Social Media**

Social media platforms are increasingly being utilized by librarians to engage with users, promote library services, and facilitate information dissemination. Ogunbodede and Oghenetega (2020) conducted a study on the use of social media in university libraries in Edo and Delta States. They found that platforms such as Facebook, X (Twitter), and Instagram were effectively used to reach a wider audience, build community, and market library resources. The study underscored the importance of social media in modern library operations and its role in enhancing user engagement and service delivery.

## **2.2 Effectiveness of Contemporary Technologies on Service Delivery in University Libraries**

The integration of contemporary technologies in university libraries has revolutionized service delivery by enhancing access to information, improving operational efficiency, and increasing user satisfaction. The following are significant impact of these technologies on library services.

**i. Enhanced Access to Information:** Contemporary technologies have greatly improved access to information. Digital libraries and online databases enable users to access a vast array of resources remotely, overcoming geographical limitations and increasing the availability of information. Digital libraries provide users with access to scholarly articles, e-books, and other digital

resources from anywhere, thereby enhancing the accessibility and availability of information (Akin & Durodolu, 2021).

**ii. Operational Efficiency:** The implementation of Integrated Library Systems (ILS) has significantly improved the operational efficiency of university libraries. ILS streamline various library functions, such as cataloguing, circulation, and inventory management, allowing librarians to focus on more critical activities like user support and information literacy training. The adoption of ILS has led to improved management of library resources and enhanced service delivery (Omeluzor & Oyovwe-Tinuoye, 2016).

**iii. User Engagement and Satisfaction:** Social media platforms and mobile technologies have transformed user engagement. Libraries utilize social media to communicate with users, promote library events, and provide real-time updates on new acquisitions and services. Social media engagement creates a more interactive and responsive library environment, significantly improving user satisfaction. Mobile applications enable users to access library services, search catalogues, and reserve books from their smartphones, enhancing convenience and user experience (Ogunbodede & Oghenetega, 2020).

**iv. Personalized Services:** Artificial Intelligence (AI) technologies are increasingly being integrated into library systems to offer personalized services. AI-driven recommendation systems suggest relevant resources based on users' search history and preferences, thereby improving the user experience. AI technologies provide tailored information services, assist in reference queries, and automate information retrieval processes, meeting the specific needs of individual users (Yusuf et al., 2022).



**v. Professional Development:** The effectiveness of contemporary technologies is also reflected in the professional development of library staff. Continuous training in ICT skills enables librarians to effectively utilize modern technologies and provide better services. Regular training programs ensure that librarians are proficient in using web applications, digital tools, and cloud technologies, translating into more efficient and effective library services (Daniels, Wiche, & Nsirim, 2023).

**vi. Overcoming Geographical Barriers:** Contemporary technologies enable libraries to overcome geographical barriers and reach a broader audience. Virtual reference services, online tutorials, and digital repositories allow libraries to extend their services beyond physical boundaries. This capability is crucial in regions where access to educational resources is limited, supporting distance learning and providing equal access to information for all students and researchers (Akin & Durodolu, 2021).

### 2.3. Challenges

Despite the evident benefits of contemporary technologies in enhancing library services, several challenges persist in their adoption in Edo and Delta States. These challenges include inadequate funding, poor infrastructure, lack of technical expertise, and resistance to change.

**i. Inadequate Funding:** Inadequate funding is a significant challenge that hinders the adoption and integration of contemporary technologies in university libraries. The financial resources allocated to libraries are often insufficient to cover the costs of acquiring and maintaining advanced technological tools. Increased funding from government and university administrations is essential to support the technological advancement of libraries (Omeluzor &

Oyovwe-Tinuoye, 2016).

**ii. Poor Infrastructure:** Poor infrastructure, such as unreliable power supply, inadequate internet connectivity, and outdated hardware and software, significantly impedes the implementation and utilization of modern technologies. Libraries in Edo and Delta States often struggle with frequent power outages and slow internet speeds, affecting their ability to offer reliable digital services. Investing in robust infrastructure is crucial for supporting technological advancements in libraries (Akin & Durodolu, 2021).

**iii. Lack of Technical Expertise:** The lack of technical expertise among library professionals affects the adoption of contemporary technologies. Many librarians in Edo and Delta States lack the necessary skills and knowledge to effectively use and manage advanced technological tools. Continuous professional development and training programs are essential to equip librarians with the necessary skills to leverage contemporary technologies (Daniels, Wiche, & Nsirim, 2023).

**iv. Resistance to Change:** Resistance to change is a common challenge in the adoption of new technologies. Some librarians may be reluctant to embrace contemporary technologies due to fear of the unknown, comfort with traditional methods, or a lack of understanding of the benefits these technologies can offer. Overcoming resistance to change requires a strategic approach that includes awareness campaigns, training, and demonstration of the benefits of new technologies (Yusuf et al., 2022).

### v. Theoretical Framework

The integration of contemporary technology in university libraries is essential for modernizing library operations and enhancing service delivery. To understand

**Table 1: Population of the study and sample size**

State	Name of University	Professionals	Para-professionals	Total	52% of population
Delta	<b>Federal Universities</b>				
	Federal University of Petroleum Resources, Effurun	13	14	27	14
	University of Maritime Technology, Okerenkoko	9	6	15	8
	<b>State Universities</b>				
	Delta State University Abraka	26	51	77	40
	University of Delta. Agbor	14	5	19	10
	Dennis Osadebay University, Asaba	18	5	23	12
	Delta State University of Science and Technology, Ozoro	9	6	15	8
	<b>Private Universities</b>				
	Novena University, Ogume	8	3	11	6
	Admiralty University, Ibusa	6	4	10	5
	Michael and Cecilia Ibru University Agbara-Otor	2	4	6	3
	Western Delta University, Oghara	6	4	10	5
	Edwin Clark University, Kiagbodo	4	4	8	4
<b>Sub total</b>		<b>115</b>	<b>106</b>	<b>221</b>	<b>115</b>
Edo					
	University of Benin, Benin City	27	58	85	44
	<b>State Universities</b>				
	Ambrose Alli University, Ekpoma	8	20	28	15
	<b>Private Universities</b>				
	Igbenedion University, Okada	7	2	9	5
Bensson Idahosa University, Benin City	10	14	24	12	
<b>Sub total</b>		<b>52</b>	<b>94</b>	<b>146</b>	<b>76</b>
<b>Total</b>		<b>167</b>	<b>200</b>	<b>367</b>	<b>191</b>

#### 4.1 Results and Discussions

#### 4.2 Level of adoption of contemporary technologies in university libraries in Edo and Delta States

Table 2 shows the level of adoption of contemporary technologies in university libraries in Edo and Delta States. In Edo, artificial intelligence has a mean of 1.7, while

Delta's mean is 1.6. Both states have equal means for internet facilities (3.1). Search engines are more used in Delta (3.5) than Edo (2.6). CD/DVD-ROM is higher in Delta (3.2) than Edo (2.2). Edo leads in connected computers (3.2) over Delta (2.7). Library software shows a mean of 2.9 in Edo and 3.1 in Delta. Online databases are more adopted in Delta (2.6) than Edo (1.9). Projectors have

equal means (2.6) in both States. E-books/journals are slightly higher in Edo (3.3) than Delta (3.2). Online catalogues are more utilized in Edo (3.0) than Delta (mean 1.9). Delta adopts 3D printers more (3.2) than Edo (2.5). Security cameras have similar means around 3.1-3.2. GPS applications are higher in Delta (3.3) than Edo (2.5). OPAC is equally

adopted in both States (3.1). MARC shows similar means around 2.4-2.5. Edo leads in book delivery robots (mean 3.2) over Delta (2.9). Direct image reprography machines have similar means around 2.8-2.9. Radio/recordings have a lower mean in Edo (1.9) compared to Delta (3.0).

**Table 2: Level of adoption of contemporary technologies in university libraries in Edo and Delta States**

Contemporary technologies	Edo State (n = 76)		Delta State (n = 115)	
	Mean	Standard deviation	Mean	Standard deviation
Artificial intelligence	1.7	0.996	1.6	0.883
Internet facilities	3.1	0.766	3.1	0.607
Use of search engines	2.6	1.298	3.5	0.726
CD/DVD-ROM	2.2	1.117	3.2	0.671
Connected computers	3.2	0.933	2.7	1.203
Library software	2.9	1.001	3.1	0.888
Online database	1.9	1.011	2.6	0.954
Projectors	2.6	1.076	2.6	1.031
e-books/journals	3.3	0.913	3.2	0.969
Online catalogues	3.0	0.879	1.9	1.044
3D printers	2.5	1.273	3.2	1.009
Security cameras	3.1	0.811	3.2	0.880
GPS applications	2.5	1.253	3.3	0.976
Online Public Access catalogue (OPAC)	3.1	0.991	3.1	1.015
Machine readable catalogues (MARC)	2.4	1.250	2.5	1.254
Book delivery robots	3.2	0.929	2.9	0.856
Direct image reprography machine	2.8	1.139	2.9	0.975
Radio/recordings	1.9	1.003	3.0	0.873

#### 4.3 Effectiveness of contemporary technologies on service delivery in university libraries

The result in Table 3 shows the effect of contemporary technologies on the effectiveness of service delivery in university libraries in Edo and Delta States. In Edo, enhanced access to resources has a mean of 2.7, while Delta's mean is 3.1. Streamlined cataloguing and classification shows a mean of 2.5 in Edo and 2.8 in Delta. Improved user experience has means of 2.5 in Edo and 2.6 in

Delta. Digital lending and e-books have equal means of 3.0 in both states. Remote access to services is higher in Edo (3.3) compared to Delta (3.2). Enhanced collaboration and communication has a mean of 3.2 in Edo and 2.9 in Delta. Data management and analytics is higher in Edo (3.2) than Delta (2.5). Cost efficiency shows a mean of 3.1 in Edo and 2.7 in Delta. 24/7 availability is higher in Edo (3.3) compared to Delta (2.2). Integration with academic systems has a mean of 3.2 in Edo and 2.3 in Delta.

**Table 3: Effectiveness of contemporary technologies on service delivery in university libraries**

Effect of contemporary technologies on the effectiveness of service delivery	Edo State (n = 76)		Delta State (n = 115)	
	Mean	Standard deviation	Mean	Standard deviation
Enhanced Access to Resources	2.7	1.396	3.1	1.233
Streamlined Cataloguing and Classification	2.5	1.179	2.8	1.051
Improved User Experience	2.5	1.232	2.6	1.114
Digital Lending and E-books	3.0	0.842	3.0	0.839
Remote Access to Services	3.3	0.961	3.2	0.940
Enhanced Collaboration and Communication	3.2	0.883	2.9	1.007
Data Management and Analytics	3.2	1.079	2.5	1.019
Cost Efficiency	3.1	1.064	2.7	1.093
24/7 Availability	3.3	1.085	2.2	1.175
Integration with Academic Systems	3.2	1.024	2.3	1.308

#### 4.4 Challenges faced by library professionals in adopting contemporary technologies in university libraries

The result in Table 4 shows the challenges faced by library professionals in adopting contemporary technologies in university libraries in Edo and Delta States. Funding limitations have a mean of 3.3 in both states. Skill gaps show a mean of 3.0 in Edo and 3.1

in Delta. Resistance to change has a mean of 3.3 in Edo and 3.5 in Delta. Infrastructure issues show means of 3.2 in Edo and 3.1 in Delta. Cyber security risks have means of 3.2 in Edo and 3.3 in Delta. Vendor dependence has equal means of 3.1 in both states. Interoperability challenges show a mean of 3.3 in Edo and 2.6 in Delta. Privacy concerns have a mean of 3.2 in Edo and 2.6 in Delta.

**Table 4: Challenges faced by library professionals in adopting contemporary technologies in university libraries**

Challenges faced by library professionals in adopting contemporary technologies in university libraries	Edo State (n = 76)		Delta State (n = 115)	
	Mean	Standard deviation	Mean	Standard deviation
Funding limitations	3.3	0.986	3.3	0.714
Skill gaps	3.0	0.892	3.1	0.607
Resistance to change	3.3	0.920	3.5	0.739
Infrastructure issues	3.2	0.887	3.1	0.731
Cybersecurity risks	3.2	1.064	3.3	0.803
Vendor dependence	3.1	1.067	3.1	0.906
Interoperability challenges	3.3	1.046	2.6	0.972
Privacy concerns	3.2	1.061	2.6	1.041

#### 4.5 Relationship between the level of adoption of contemporary technologies and the effectiveness of service delivery in university libraries in Edo State

Table 5 shows the relationship between the level of adoption of contemporary technologies and the effectiveness of service

delivery in university libraries in Edo State. The Pearson Correlation coefficient is 0.535, indicating a moderate positive relationship. This correlation is significant at the 5% level of probability, with a significance (2-tailed) value of 0.034.



**Table 5: Relationship between the level of adoption of contemporary technologies and the effectiveness of service delivery in university libraries in Edo State**

		Effectiveness
Adoption	Pearson Correlation	0.535**
	Sig. (2-tailed)	0.034
	N	76

\*\* is significant at 5% level of probability

#### 4.6 Relationship between the level of adoption of contemporary technologies and the effectiveness of service delivery in university libraries in Delta State

Table 6 shows the relationship between the level of adoption of contemporary technologies and the effectiveness of service delivery in university libraries in Delta State. The Pearson Correlation coefficient is 0.706, indicating a strong positive relationship. This correlation is significant at the 1% level of probability, with a significance (2-tailed) value of 0.004.

**Table 6: Relationship between the level of adoption of contemporary technologies and the effectiveness of service delivery in university libraries in Delta State**

		Effectiveness
Adoption	Pearson Correlation	0.706
	Sig. (2-tailed)	0.004
	N	115

\*\*\* is significant at 1% level of probability

### 5.1 Discussion of Findings

#### 5.2 Level of adoption of contemporary technologies in university libraries in Edo and Delta States

The study revealed that both States show low adoption of Artificial Intelligence (AI), with means of 1.7 and 1.6 respectively. This aligns with Chidiadi and Chemezie (2023), who noted that AI technologies are underutilized in Nigerian libraries due to inadequate funding and technical expertise. Conversely, the high adoption of internet facilities in both States (mean = 3.1) reflects the essential role of internet connectivity in modern library services.

The study also shows varied adoption levels for other technologies. Delta State exhibits higher adoption of search engines ( 3.5) and CD/DVD-ROMs ( 3.2) compared to Edo State, suggesting a more robust use of these tools in Delta. This supports George, Okwu, and Ogunbodede (2022), who found a significant link between digital literacy skills

and job performance, emphasizing the importance of effective search tools. On the other hand, the high adoption of e-books/journals in both States ( 3.3 in Edo and 3.2 in Delta) corroborates Mishra (2019), who observed high engagement with digital resources in academic settings.

The results from the study also revealed differences in the adoption of emerging technologies such as 3D printers and GPS applications, with Delta State leading in both categories. This reflects the findings of Saibakumo (2021), who noted that while adoption is low overall, there is a growing readiness for emerging technologies. The relatively high scores for security cameras in both States indicate their importance in enhancing library security, as noted by Baro, Obaro, and Aduba (2019). The variations in technology adoption underscore the need for tailored interventions to address specific challenges and improve the overall effectiveness of service delivery in university libraries.

### **5.3 Effectiveness of contemporary technologies on service delivery in university libraries**

The study reveals variations in the perceived effectiveness of contemporary technologies on service delivery in university libraries between Edo and Delta States. For enhanced access to resources, Delta State (3.1) scores higher than Edo State (2.7), indicating a better perception of technology's role in this aspect. This finding resonates with Chidiadi and Chemezie (2023), who reported that despite the under-utilization of contemporary technologies in some Nigerian libraries, these technologies significantly benefit service delivery.

Regarding streamlined cataloguing and classification, Delta State (2.8) also surpasses Edo State (2.5). This trend is consistent with George, Okwu, and Ogunbodede (2022), who found that digital literacy skills positively influence job performance among librarians, suggesting that higher digital proficiency in Delta State may contribute to more effective cataloguing and classification processes. Similarly, improved user experience shows marginal differences, with Delta State (2.6) slightly ahead of Edo State (2.5), underscoring the importance of continuous digital skill development as highlighted by Oyovwe-Tinuoye, Omeluzor, and Patrick (2021).

The impact of contemporary technologies on remote access to services and digital lending is notably significant in both states, with high mean scores (Edo State: 3.3 and Delta State: 3.2). This suggests a widespread acknowledgment of the importance of digital resources, a sentiment echoed by Saibakumo (2021), who emphasized the need for incorporating emerging technologies into academic libraries. However, the effectiveness of these technologies in areas like 24/7 availability and integration with academic systems shows considerable disparity, particularly with Edo State rating higher for 24/7 availability (3.3) compared to Delta State (

2.2), pointing to potential infrastructural differences impacting service delivery.

### **5.4 Challenges faced by library professionals in adopting contemporary technologies in university libraries**

The study revealed that funding limitations showed identical mean scores for both states (3.3), indicating a universally significant barrier. This challenge is echoed in the findings of Chidiadi and Chemezie (2023), who identified inadequate funding as a critical issue hampering the optimal utilization of contemporary technologies in Nigerian libraries. Skill gaps also present a challenge, with Delta State (3.1) slightly surpassing Edo State (3.0), suggesting a need for continuous training and skill development, as advocated by Oyovwe-Tinuoye, Omeluzor, and Patrick (2021).

Resistance to change is notably higher in Delta State (3.5) compared to Edo State (3.3), reflecting potential cultural or organizational barriers in embracing new technologies. This aligns with George, Okwu, and Ogunbodede (2022), who emphasized the importance of fostering a positive attitude towards digital literacy and technological adoption among librarians. Infrastructure issues also remain a considerable challenge, with both states reporting high mean scores (Edo State: 3.2 and Delta State: 3.1), underscoring the need for improved technological infrastructure to support contemporary library services.

Challenges such as cybersecurity risks and vendor dependence have similar mean scores across both states, highlighting common concerns regarding the security and reliability of digital systems. Interestingly, Edo State (3.3) reports higher interoperability challenges compared to Delta State (2.6), suggesting differences in the integration of various technological systems. Privacy concerns also show a disparity, with Edo State (3.2) perceiving it as a more significant challenge than Delta State (2.6). These findings are

consistent with the literature, such as Akor, Joshua, and Idika-Mba (2016), who identified various technological and infrastructural challenges in Nigerian university libraries.

### **5.5 Relationship between the level of adoption of contemporary technologies and the effectiveness of service delivery in university libraries in Edo State**

The study revealed that the Pearson correlation coefficient of 0.535 indicates a moderate positive relationship between technology adoption and service effectiveness. This suggests that higher levels of adoption of contemporary technologies are associated with more effective service delivery in the libraries. The significance value (Sig. 2-tailed) of 0.034, being less than the 0.05 threshold, confirms that this relationship is statistically significant at 5% level of probability.

These findings align with the empirical literature, such as the study by Oyovwe-Tinuoye, Omeluzor, and Patrick (2021), which highlighted that ICT skills and technology adoption positively influence job performance and service delivery in libraries. Similarly, George, Okwu, and Ogunbodede (2022) found a significant relationship between digital literacy skills and job performance among librarians, underscoring the importance of technological proficiency for effective library services. This correlation emphasizes the need for continuous investment in contemporary technologies and skill development to enhance library service delivery in Edo State.

### **5.6 Relationship between the level of adoption of contemporary technologies and the effectiveness of service delivery in university libraries in Delta State**

According to the result of the study, the Pearson correlation coefficient of 0.706 indicates a strong positive relationship between technology adoption and service effectiveness. This suggests that higher levels of adoption of

contemporary technologies are strongly associated with more effective service delivery in the libraries. The significance value (Sig. 2-tailed) of 0.004, being less than the 0.01 threshold, confirms that this relationship is statistically significant at the 1% level.

These findings are consistent with empirical studies such as those by Oyovwe-Tinuoye, Omeluzor, and Patrick (2021), which highlighted the positive impact of ICT skills on job performance and service delivery. Similarly, George, Okwu, and Ogunbodede (2022) demonstrated a significant relationship between digital literacy skills and job performance, emphasizing the crucial role of technological adoption in enhancing library services. The strong correlation in Delta State underscores the critical need for ongoing investment in contemporary technologies and skill development to achieve optimal service delivery in university libraries.

### **Conclusion and Recommendations**

The study concludes that contemporary technologies play a crucial role in enhancing the effectiveness of service delivery in university libraries in Edo and Delta States. Technologies such as internet facilities, e-books/journals, and digital lending have significantly improved access to resources, streamlined cataloguing and classification processes, and elevated the overall user experience. Remote access to services and enhanced collaboration and communication have been pivotal in modernizing library operations. Despite these advancements, several challenges impede the full adoption of contemporary technologies. Funding limitations remain a significant barrier, preventing libraries from acquiring and maintaining the latest technological resources. Skill gaps among library professionals highlight the need for ongoing training and professional development. Additionally, resistance to change, infrastructure issues, and

cybersecurity risks pose substantial obstacles. The study shows a positive and significant relationship between the level of technology adoption and the effectiveness of service delivery in both states. These findings reveal the importance of increased investment in technological infrastructure and comprehensive training programs for library professionals.

Based on the results of the study, the following recommendations are made:

- University administrators and government officials should allocate more financial resources to acquire and maintain advanced technological resources and upgrade IT infrastructure. This includes securing grants, partnerships, and ensuring reliable internet connectivity and modern computer systems.
- Library management and training institutions should implement ongoing training programs for library professionals to bridge skill gaps and develop strategies to manage resistance to change. Workshops, seminars, and clear communication about the benefits of new technologies will help staff adapt and embrace these advancements.
- IT departments and cybersecurity experts should strengthen cybersecurity protocols to protect digital resources and user data. Regular security audits, staff training on cyber threats, and comprehensive privacy policies will ensure user data protection and compliance with relevant regulations.

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