Librarians' Perceived Ease-Of-Use And Usefulness Of Cloud Computing For University Library Services In Kwara State, Nigeria

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Abstract

***Problem Statement**: The university libraries' scenery has developed significantly over the past few decades, driven by rapid technological advancements and the increasing demand for digital resources. The use and integration of cloud computing in university libraries has effectively impacted and improved service delivery positively. In Kwara State, Nigeria, university libraries face infrastructure challenges amid rising digital demands, making cloud computing adoption critical for service enhancement. **Purpose**: The study explored the librarians' perceived ease-of-use and usefulness of cloud computing for university library services in Kwara State, Nigeria. **Method**: .The study utilizes a survey design approach; data were collected through a questionnaire from a sample of 116 librarians and library officers from all nine university libraries in Kwara State. The questionnaire was validated by 2 professionals in the field of Library and Information Science. The data collected were analyzed with the use of IBM SPSS v26 and presented with frequency tables and simple percentages. **Result**: The findings revealed the librarians' perceived ease-of-use of cloud computing for university library services, such as: it simplifies workflows; no errors when using it; it makes work faster and much easier; it is easy to get cloud computing to do what you want it to do; and its interface is friendly and easy to navigate. The findings further revealed the librarians' perceived usefulness of cloud computing for university library services, such as: it makes work more efficient and effective; it increases professional productivity; it helps in information dissemination and transfer of operation; and services of the library to the cloud will reduce costs. The findings also identified several perceived challenges of cloud computing for university library services, such as slow/poor internet connections, adaptability and dependency on outsiders, and data security and privacy problems, among others. **Conclusion**: The study concluded that cloud computing offers significant advantages, such as improved access to resources, cost savings, and enhanced collaboration in university libraries. Recommendations from the study include that the university libraries should try to tap and maintain the merits and benefits attached to the use of cloud computing to better provide effective services. This study contributes to the benefits of cloud computing adoption, usage, and integration into university library services, ultimately enhancing the role of librarians in information delivery and supporting academic excellence.*

***Keywords:** Cloud Computing; Ease-of-use; Usefulness; University Libraries; Perceived; Librarians.*

Abstrak

Permasalahan: Perpustakaan universitas telah mengalami perkembangan signifikan dalam beberapa dekade terakhir, dipicu oleh kemajuan teknologi yang pesat dan meningkatnya permintaan akan sumber daya digital. Penggunaan dan integrasi komputasi awan di perpustakaan universitas telah memberikan dampak efektif dan meningkatkan pelayanan secara positif. Di Negeri Bagian Kwara, Nigeria, perpustakaan universitas menghadapi tantangan infrastruktur di tengah meningkatnya kebutuhan digital, sehingga adopsi komputasi awan menjadi sangat penting untuk peningkatan layanan. **Tujuan**: Penelitian ini mengeksplorasi persepsi pustakawan terhadap kemudahan penggunaan dan manfaat komputasi awan untuk layanan perpustakaan universitas di Negeri Bagian Kwara, Nigeria. **Metode**: Penelitian ini menggunakan pendekatan desain survei; data dikumpulkan melalui kuesioner dari sampel 116 pustakawan dan petugas perpustakaan dari semua sembilan perpustakaan universitas di Negeri Bagian Kwara. Kuesioner divalidasi oleh dua profesional di bidang Ilmu Perpustakaan dan Informasi. Data yang dikumpulkan dianalisis menggunakan IBM SPSS

v26 dan disajikan dengan tabel frekuensi serta persentase sederhana. **Hasil**: Temuan penelitian mengungkapkan persepsi pustakawan tentang kemudahan penggunaan komputasi awan untuk layanan perpustakaan universitas, seperti: mempermudah alur kerja; tidak ada kesalahan saat menggunakannya; membuat pekerjaan lebih cepat dan jauh lebih mudah; mudah untuk mengoperasikan komputasi awan sesuai keinginan; serta antarmukanya ramah dan mudah dinavigasi. Temuan lebih lanjut menunjukkan persepsi pustakawan tentang manfaat komputasi awan untuk layanan perpustakaan universitas, seperti: membuat pekerjaan lebih efisien dan efektif; meningkatkan produktivitas profesional; membantu dalam penyebaran informasi dan transfer operasi; dan layanan perpustakaan ke cloud akan mengurangi biaya. Temuan juga mengidentifikasi beberapa tantangan yang dirasakan dalam penggunaan komputasi awan untuk layanan perpustakaan universitas, seperti koneksi internet yang lambat/jelek, adaptabilitas dan ketergantungan pada pihak luar, serta masalah keamanan data dan privasi, dan lainnya. **Kesimpulan**: Penelitian ini menyimpulkan bahwa komputasi awan menawarkan keuntungan signifikan, seperti peningkatan akses ke sumber daya, penghematan biaya, dan peningkatan kolaborasi di perpustakaan universitas. Rekomendasi dari penelitian ini adalah agar perpustakaan universitas berusaha memanfaatkan dan mempertahankan kelebihan dan manfaat yang terkait dengan penggunaan komputasi awan untuk memberikan layanan yang lebih efektif. Studi ini memberikan kontribusi terhadap pemahaman mengenai manfaat adopsi, penggunaan, dan integrasi komputasi awan dalam layanan perpustakaan universitas, yang pada akhirnya meningkatkan peran pustakawan dalam penyampaian informasi dan mendukung keunggulan akademik.

Kata kunci: Komputasi Awan; Kemudahan Penggunaan; Manfaat; Perpustakaan Universitas; Persepsi; Pustakawan.

I. INTRODUCTION

The landscape of university libraries has evolved significantly over the past few decades, driven by rapid technological advancements and the increasing demand for digital resources. Traditionally, university libraries have served as custodians of knowledge, housing vast collections of physical books, journals, and other academic resources. Isiaka et al. (2024) noted that incorporating information and communication technologies (ICTs) into library services has transformed traditional methods, enabling libraries to meet evolving user demands in the digital era. However, the digital age has turned university libraries into dynamic information hubs, where digital resources and online services play crucial roles in supporting academic research, teaching, and learning. Tomar (2021) noted that ICT has opened a new chapter in library communication and facilitated global access to information across geographical limitations.

Cloud computing, one of ICT's key innovations, stands out as a revolutionary tool with the potential to reshape university library operations. It offers efficient service delivery solutions, and its implementation can significantly enhance library service quality through visually appealing, user-friendly websites (Isiaka et al., 2024). Cloud computing enables libraries to store vast data amounts, provide remote resource access, and foster user and institutional collaboration. It helps libraries adapt to the evolving digital landscape by supplying necessary infrastructure and tools for technological advancements (Kayode et al., 2020). Cloud computing refers to delivering computing services including storage, processing, and software over the internet (the cloud), involving on-demand, scalable resources such as storage, servers, databases, software, and analytics (Gupta et al., 2013).

Background. The rapid advancements in information and communication technology have significantly transformed the landscape of library services globally. Among these

technological innovations, cloud computing has emerged as a pivotal tool for enhancing the efficiency, accessibility, and scalability of library operations and service delivery (Buyya et al., 2019). Cloud computing provides an alternative to on-premises data centers, enabling companies to develop commercial operations through cloud platforms, allowing users to utilize these stages accordingly (Stergiou et al., 2018). It enables the delivery of computing services over the internet, including servers, storage, databases, networking, software, and analytics (Isiaka et al., 2024).

Cloud computing refers to the delivery of computing services, including storage, processing, and software, over the internet (the cloud). This technology enables libraries to access and manage vast amounts of data without significant on-premises infrastructure. The National Institute of Standards and Technology (NIST, 2011) defined cloud computing as a model enabling ubiquitous, convenient, on-demand network access to a shared pool of configurable computing resources (e.g., networks, servers, storage, applications, and services). In cloud computing, the term "cloud" serves as a metaphor for the internet, based on its standardized cloud-like depiction in telephony schematics. Its services are provided on demand and scalable according to user needs, offering a flexible, cost-effective alternative to traditional on-premise infrastructure.

The adoption, usage, and integration of cloud computing in university libraries yield several benefits that significantly enhance services for students, faculty, researchers, and the host community. The major benefit of deploying cloud computing technologies in libraries is relatively low cost compared to functionality (Kroski, 2019). It reduces paperwork, lowers transaction costs, and minimizes hardware investments (and management resources). Academic libraries with large information volumes benefit from cloud storage security, as physical documents, hard drives/thumb drives, and digital devices can be misplaced, lost, or stolen (Hall-Coates, 2013). Primary advantages include remote access to resources like e-books, journals, and databases, enabling libraries to host digital collections accessible anytime, anywhere, overcoming geographical and physical barriers.

Problems. University libraries have traditionally served as custodians of knowledge, housing vast collections of physical books, journals, and other academic resources. However, the digital age has transformed them into dynamic information hubs, where digital resources and online services support academic research, teaching, and learning. Rapid advancements in information technology have significantly transformed library services worldwide. Cloud computing, one such technological advancement, enables university libraries to store vast amounts of data and provide remote access to resources. It refers to the delivery of computing services, including storage, processing, and software, over the internet (the cloud). This technology allows libraries to manage data without significant on-premises infrastructure. University libraries can thus offer digital repositories, online catalogues, and collaborative platforms to students, faculty, and researchers. Moreover, it centralizes resources, providing seamless access from any location at any time.

In many parts of Nigeria, especially Kwara State, university libraries face inadequate infrastructure, including unreliable internet and outdated hardware. These limitations hinder cloud computing platforms' optimal function (Okoye & Ugwuanyi, 2020). Several challenges impede adoption, including internet connectivity, unreliable power supply, and insufficient funding (Isiaka et al., 2024). Additional obstacles include lack of in-house experts, epileptic power supply, resource shortages, poor ICT infrastructure, hardware breakdowns, and inadequate internet (Kayode et al., 2020). Poor internet connection, unreliable power supply, and poor funding also challenge cloud computing use (Aiyebelehin et al., 2020). Librarians encounter issues such as data security, privacy concerns, and lack of knowledge about cloud technologies (Dime & Okeji, 2023). Addressing infrastructural challenges like enhanced connectivity and updated hardware improves ease-of-use (Okoye

& Ugwuanyi, 2020). Cloud services require stable power for sustainability (Ashima & Popli, 2016). Despite global prominence, cloud computing adoption in developing regions like Kwara State, Nigeria, warrants further exploration.

The successful adoption, usage, and integration of cloud computing in Kwara State university libraries depend on librarians' perceptions of its ease-of-use and usefulness. Librarians accustomed to traditional methods may resist, perceiving complexity or fearing job displacement (Ejedafiru, 2024). Increasing awareness through workshops, seminars, and demonstrations of benefits and success stories can improve perceptions (Okiy, 2014). Cloud computing has transformed many libraries in terms of operations and service delivery (Alabi et. al., 2024).

Previous Literature Review. The adoption and integration of cloud computing in academic libraries has been widely discussed, with studies examining its impact on services, implementation challenges, and adoption factors. Cloud computing facilitates collaboration between libraries and institutions by enabling resource sharing, such as digital archives and special collections, through cloud-based platforms, expanding materials available to users (Zhang et al., 2013). Security of library files, ease of access with fewer security concerns, efficiency as a virtual workspace, fast services requiring less investment, and improved information storage and retrieval represent key gains (Srivastava & Verma, 2015). University libraries can offer digital repositories, online catalogues, and collaborative platforms to students, faculty, and researchers. Cloud computing centralizes resources, providing seamless access from any location at any time.

Cloud computing use in university libraries is advanced in developed countries, enhancing service delivery, operational efficiency, and cost reduction (Breeding, 2015). In developing African countries like Nigeria, adoption remains nascent due to limited infrastructure, insufficient technical expertise, and data security concerns (Ocholla & Ocholla, 2019). The majority of the librarians mentioned lack of fund, no security and privacy of data, irregular staff training and development, and lack of cloud computing knowledge and awareness as challenges associated with adoption of cloud computing technologies in universities in Africa (Dime & Okeji, 2023).

Perceived ease-of-use, the degree to which individuals believe a technology requires minimal effort, influences cloud computing adoption (Idhalama & Fidelis, 2020). Central to the Technology Acceptance Model (TAM), it directly affects usage intention (Davis, 1989). Perceived ease-of-use predicts behavioral intention for cloud adoption among IT architects (Nassif, 2019). In university libraries, it relates to librarians' ability to learn and integrate cloud tools effortlessly (Kostanica et al., 2017; Ducevic, 2019). Respondents find cloud computing user-friendly for web-based library services (Kayode et al., 2020). Intuitive interfaces and clear documentation reduce perceived complexity (Breeding, 2012).

Perceived usefulness, the belief that a technology enhances job performance, drives adoption (Davis, 1989). Cloud computing reduces time for hardware, software, and resource procurement (Alotaibi, 2013). In libraries, it offers flexibility, such as transitioning from barcodes to RFID (Atilgan et al., 2015). Librarians value cloud backup for server crashes and unforeseen events (Hussaini et al., 2017). Benefits include scalability, cost-effectiveness, accessibility, and reduced traditional activities (Yuvaraj, 2016a). Collaborative resource sharing further enhances perceived usefulness (Zhang et al., 2013).

State of The Art. Cloud computing offers potential benefits for university libraries, including improved digital resource access, enhanced inter-library collaboration, streamlined operations, and cost savings from reduced physical infrastructure. Librarians' perceptions of ease-of-use and usefulness significantly influence adoption, usage, and integration into library services. Perceived ease-of-use refers to librarians' belief that cloud systems require minimal effort, influenced by technical skills, infrastructure, and platform user-friendliness (Pankowska et al., 2020).

Perceived usefulness involves librarians' beliefs about cloud computing's benefits for improving services, such as resource accessibility, cataloguing efficiency, and cost-effectiveness compared to traditional IT (Tarhini et al., 2017). Successful adoption in Kwara State university libraries depends on these perceptions, which determine technology embrace and utilization. Understanding them identifies adoption barriers and informs implementation strategies.

Purpose. This study, therefore, seeks to explore the perceptions of librarians in university libraries across Kwara State, Nigeria, regarding the ease-of-use and usefulness of cloud computing as well as infrastructure challenges hindering its adoption. The study aims to provide valuable insights into the factors that influence the adoption of cloud computing in this region by examining these perceptions, as well as the potential benefits and challenges associated with its use. The findings of this study could inform policy decisions and strategic planning for the use and integration of cloud computing in university library services, ultimately contributing to the enhancement of academic support services in Kwara State and beyond.

II. METHODS

This study employed a survey design to examine librarians' perceived ease-of-use and usefulness of cloud computing for university library services, effectively capturing quantitative attitudes through structured questionnaires for TAM validation (Davis, 1989). The research was conducted over six months, from January to June 2024. The population comprised 116 librarians and library officers across nine university libraries in Kwara State, Nigeria. Total enumeration was used due to the small population size, ensuring equal participation from all targeted respondents.

A self-constructed questionnaire, adapted from related studies, served as the data collection instrument, measured on a four-point Likert scale (strongly agree = 1 to strongly disagree = 4). Two PhD holders in Library and Information Science validated its face and content validity; their comments were incorporated. Researchers and two trained assistants administered 116 copies during work hours. Of these, 111 were retrieved and 108 deemed valid, yielding a 93.1% response rate. Unavailable respondents received copies for later completion; retrieval occurred after one week over a two-week period.

Data analysis utilized Statistical Package for the Social Sciences (SPSS) version 26.0, employing tables, frequency counts, and percentages to interpret responses.

III. RESULTS AND DISCUSSION

Based on the results presented in several table, the following section provides a detailed analysis to further interpret these findings and explain their implications for cloud computing adoption in university libraries in Kwara State.

Table 1.
Distribution of Questionnaire and Response Rate

Administered Questionnaire	Retrieved Questionnaire	Valid	Percertage (%)
116	111	108	93.1

Source: Study's Data, 2024

Table 1 shows the distribution of questionnaires and response rates across the participating university libraries in the study. A total of 116 copies of questionnaires were administered to the librarians and library officers in all the nine (9) universities libraries in Kwara State. A total of 111 copies were retrieved and 108 copies were valid, resulting to 93.1% as the response rate of the study. The high response rate of 93.1% indicates strong

participation and suggests that the data collected reliably represents librarians and library officers across the nine university libraries in Kwara State.

Table 2.

Demographic Details of the Respondents

University	Frequency	Percentage (%)
University of Ilorin	61	56.4
Kwara State University	13	12.0
Al-Hikmah University	13	12.0
Landmark University	9	8.3
Summit University	3	2.7
Ojaja University	4	3.7
Thomas Adewunmi University	2	1.8
Ahman Pategi University	2	1.8
Muhammed Kamaldeen University	1	0.9
Total	**108**	**100.0**
Highest Qualification	**Frequency**	**Percentage (%)**
ND	7	6.4
HND	13	12.0
BLIS	55	50.9
MLIS	24	22.2
PhD	9	8.3
Others	0	0.0
Total	**108**	**100.0**
Age	**Frequency**	**Percentage (%)**
30 and below	25	23.1
31 – 40	54	50.0
41 – 50	20	18.5
51 – 60	7	6.4
61 and above	2	1.8
Total	**108**	**100.0**
Gender	**Frequency**	**Percentage (%)**
Male	69	63.8
Female	39	36.1
Total	**108**	**100.0**
Years of Work Experience	**Frequency**	**Percentage (%)**
1 – 5	27	25.0
6 – 10	44	40.7
11 – 15	25	23.1
16 – 20	10	9.2
20 and above	2	1.8
Total	**108**	**100.0**

Career Status	Frequency	Percentage (%)
Librarian	73	67.5
Library Officer	35	32.4
Total	**108**	**100.0**

Source: Study's Data, 2024

Table 2 revealed the demographic information of the respondents. The results shows that out of the 108 respondents, 61 of them representing 56.4% are from University of Ilorin library, 13(12.0%) are from Kwara State University and Al-Hikmah University libraries respectively, 9(8.3%) are from Landmark University library, 4(3.7%) are from Ojaja University library, 3(2.7%) are from Summit University library, 2(1.8%) are from Thomas Adewunmi University and Ahman Pategi University libraries respectively and 1(0.9%) is from Muhammed Kamaldeen University library. This indicates that majority of the respondents are from University of Ilorin library while Muhammed Kamaldeen University library is the lowest. The table also shows that, out of the 108 respondents, 55(50.9%) has BLIS, 24(22.2%) has MLIS, 13(12.0%) has HND in LIS, while 9(8.3%) has PhD in LIS and 7(6.4%) has ND in LIS. This indicates that most of the respondents are BLIS holders while ND holders are the lowest at the time of conducting this study.

Furthermore, in the age range, 54(50.0%) are in the age range of 31-40, 25(23.1%) are in the age range of 30 and below, 20(18.5%) are in the age range of 41-50, 7(6.4%) are in the age range of 51-60 and 2(1.8%) are in the age range of 60 and above. It indicates that majority of the respondents are in the age range of 31 to 40 years while the lowest were within the age range of 60 years and above at the time of conducting this study. The table also shows that, 69(63.8%) are males, while the remaining 39(36.1%) are females. It indicates that more male respondents participated in the study than their female counterpart. It also shows the years of work experience of the respondents, 44(40.7%) has work experience of 6-10 years, 27(25.0%) has work experience of 1-5 years, 25(23.1%) has work experience of 11-15 years, 10(9.2%) has work experience of 16-20 years and 2(1.8%) has work experience of 20 years and above. This indicates that majority of the respondents has worked for 6-10 years while the lowest are 20 years and above at the time the study was conducted. Lastly, the table shows that from the 108 respondents, 73(67.5%) are librarians (professional librarians) while the remaining 35(32.4%) are library officers (para-professional librarians) at the period of conducting the study.

The demographic data in Table 2 shows that the majority of respondents came from the University of Ilorin, indicating its dominant representation in the study. Most respondents held BLIS and MLIS qualifications, suggesting a well-trained and professionally grounded workforce. The age distribution, largely concentrated between 31–40 years, reflects a relatively young and active professional group. Male respondents were more represented than females, and most participants had 6–10 years of work experience, indicating a moderately experienced workforce familiar with library operations. Additionally, the higher proportion of professional librarians compared to library officers suggests that the study captured insights from individuals with substantial professional expertise in librarianship.

Table 3.
Librarians' perceived ease-of-use of cloud computing for university library services in Kwara State, Nigeria.

Items	SA	A	D	SD
Cloud computing simplifies workflows.	87(80.6%)	19(17.6%)	2(1.9%)	0(0.0%)
No errors when using cloud computing.	65(60.2%)	41(38.0%)	2(1.9%)	0(0.0%)

It is easy to get cloud computing to do what you want it to do.	60(55.6%)	46(42.6%)	2(1.9%)	0(0.0%)
Interaction with cloud computing is easy to understand.	47(43.5%)	60(55.6%)	1(0.9%)	0(0.0%)
Cloud computing makes work faster and much easier.	62(57.4%)	45(41.7%)	1(0.9%)	0(0.0%)
No need to consult the user manual to cloud computing.	59(54.6%)	46(42.6%)	2(1.9%)	1(0.9%)
Cloud computing interface is friendly and easy to navigate.	60(55.6%)	46(42.6%)	1(0.9%)	1(0.9%)

Source: Study's Data, 2024

The results in table 3 showed the librarians' perceived ease-of-use of cloud computing for university libraries services in Kwara State such as cloud computing simplify workflows 87(80.6%); no errors when using cloud computing 65(60.2%); cloud computing makes work faster and much easier 62(57.4%); it is easy to get cloud computing to do what you want it to do and cloud computing interface is friendly and easy to navigate 60(55.6%) respectively. This implies that the librarians positively perceived the ease-of-use of cloud computing for university library services in Kwara State. This is because most of the respondents has background knowledge of librarianship and they are technologically orientated.

Table 4.
Librarians' perceived usefulness of cloud computing for university library services in Kwara State, Nigeria.

Items	SA	A	D	SD
Cloud computing makes work more efficient and effective.	78(72.2%)	29(26.9%)	1(0.9%)	0(0.0%)
Cloud computing provides an avenue for the removal of local storage.	57(52.8%)	50(46.3%)	1(0.9%)	0(0.0%)
Cloud computing facilitate quick access to data.	59(54.6%)	48(44.4%)	1(0.9%)	0(0.0%)
Cloud computing provides opportunity for collaboration and cooperative intelligence.	53(49.1%)	53(49.1%)	1(0.9%)	1(0.9%)
Cloud computing increase professional productivity.	67(62.0%)	40(37.0%)	1(0.9%)	0(0.0%)
Transfer of operation and services of library to the cloud will reduce costs.	60(55.6%)	46(42.6%)	1(0.9%)	1(0.9%)
Cloud computing helps in information dissemination.	62(57.4%)	45(41.7%)	1(0.9%)	0(0.0%)

Source: Study's Data, 2024

The results in table 4 showed the librarians' perceived usefulness of cloud computing for university libraries services in Kwara State such as cloud computing makes work more efficient and effective 78(72.2%); cloud computing increase professional productivity 67(62.0%); cloud computing helps in information dissemination 62(57.4%) and transfer of operation and services of library to the cloud will reduce costs 60(55.6%). This implies that the librarians positively perceived the usefulness of cloud computing for university library services in Kwara State. This is because most of the respondents see the potential benefits

of cloud computing to their work because they have adopted and been using other technology in the library.

Table 5.
Librarians' perceived challenges of cloud computing for university library services in Kwara State, Nigeria.

Items	SA	A	D	SD
Slow/Poor internet connections.	65(60.2%)	40(37.0%)	3(2.8%)	0(0.0%)
Epileptic/Unreliable power supply.	56(51.9%)	49(45.4%)	3(2.8%)	0(0.0%)
Lack of technical skills of library personnel.	10(9.3%)	16(14.8%)	70(64.8%)	12(11.1%)
Technical problems associated with the use of cloud computing.	12(11.1%)	38(35%)	57(52.8%)	1(0.9%)
Financial constraints.	43(39.8%)	60(55.6%)	3(2.8%)	2(1.9%)
Data security and privacy problem.	60(55.6%)	28(25.9%)	10(9.3%)	10(9.3%)
Adaptability and dependency on outsiders.	62(57.4%)	27(25.0%)	10(9.3%)	9(8.3%)
Parent Institution support problem.	3(2.8%)	10(9.3%)	57(52.8%)	38(35%)

Source: Study's Data, 2024

The results in table 5 showed the librarians' perceived challenges of cloud computing for university libraries services in Kwara State such as slow/poor internet connections 65(60.2%); adaptability and dependency on outsiders 62(57.4%) and data security and privacy problem 60(55.6%) among others. This implies that the use of cloud computing will impact library services if these challenges are addressed. However, the librarians the agree to some challenges such as parent institution support problem 3(2.8%); lack of technical skills of library personnel 10(9.3%) and technical problems associated with the use of cloud computing 12(11.1%). This indicates that these are not part of perceived challenges of cloud computing for university library services in Kwara State. Slow/poor internet connections is the challenge that has the highest rating among others, this is because, in Kwara State and Nigeria as a whole we have low internet bandwidth.

Discussion of Research Findings. The study's results indicate that respondents with BLIS and MLIS degrees have higher proportion in the frequency distribution. Also, University of Ilorin library has the highest respondents. Additionally, male respondents have a larger ratio compared to the female respondents, Furthermore, the age range of 31-40 years has the highest response rate among the participants. In context of years of work experience, respondents with 6-10 years of experience have the highest ratio in the frequency distribution.

The findings of the study revealed the librarians' perceived ease-of-use of cloud computing for university libraries services in Kwara State. These include cloud computing simplifies workflows, no errors when using cloud computing. Furthermore, cloud computing makes work faster and much easier, it is easy to get cloud computing to do what you want it to do and cloud computing interface is friendly and easy to navigate. The findings align with a report by (Kayode et al., 2020), that respondents find cloud computing easier to use and also user friendly for delivering Web-based library services. Furthermore, (Kostanica et al., 2017) reported that ease-of-use is one of the factors of the adoption of cloud computing. This is corroborated by (Ducevic, 2019), who reported that one of the most important aspects to consider when considering cloud computing services is simplicity of use. Similarly, (Breeding, 2012) highlighted in his study, the importance of

intuitive interfaces and clear documentation in reducing the perceived complexity of cloud services for librarians. This is implying that the adoption of cloud computing for university libraries in Kwara State will be smooth and stressless because the librarians perceived its ease-of-use due to their high level of digital knowledge. (Alshahrani & Ally, 2017) stated that librarians with higher levels of digital literacy are more likely to perceive cloud computing as easy to use, thereby facilitating its adoption.

The study also revealed the librarians' perceived usefulness of cloud computing for university libraries services in Kwara State. These include cloud computing makes work more efficient and effective; cloud computing also increase professional productivity. Additionally, cloud computing helps in information dissemination and transfer of operation and services of library to the cloud will reduce costs. The findings align with a study by (Atilgan et al., 2015), which highlighted some of the usefulness and advantages of cloud computing, such as the flexibility to select auto-identification technology and the smooth transition from barcode systems to Radio-Frequency Identification (RFID) technologies. Similarly, (Almaiah et al., 2020), their study identified cloud computing usefulness as one of the factors influencing the adoption of cloud computing by academic libraries. Furthermore, (Isiaka et al., 2024) reported that librarians employ cloud computing for online file storage, collaborative writing, and providing information resources to users. They further reported that cloud computing serves as a repository for research outputs, manages emails, offers file-sharing services, and stores documents. This is corroborated by (Yuvaraj, 2016a), who highlighted several usefulness and benefits of cloud platforms such as scalability to accommodate changing needs, cost-effectiveness, and increased accessibility, resulting in reduced involvement in traditional library activities. Also, (Zhang et al., 2013) stated that the usefulness of cloud computing enables libraries to expand their offerings and improve service delivery through partnerships. This is implying that the adoption and use of cloud computing for university libraries in Kwara State will be improve the running of library operations and services as the librarians has already perceived its usefulness.

The study's findings identified various challenges perceived by the librarians in Kwara State. These includes slow/poor internet connections, adaptability and dependency on outsiders and data security and privacy problem. The findings align with a study by (Isiaka et al., 2024), they revealed internet connectivity, unreliable power supply, and insufficient funding for the library are the challenges hindering the adoption of cloud computing for library services. Similarly, (Dime & Okeji, 2023) also identified several challenges encountered by librarians in adopting cloud computing technologies such as security and privacy of data, lack of knowledge and awareness about cloud computing technologies among others. This is corroborated by (Kayode et al., 2020) they identified lack of in-house expert, unreliable and epileptic power supply, lack of resources, among others are all significant challenges facing cloud computing adoption for Web-based service delivery in academic libraries in Kwara State. Similarly, (Aiyebelehin et al., 2020) identified poor Internet connection, unreliable power supply, and poor funding of the library are some of the major challenges facing the use of cloud computing services by the librarians.

In developing countries like Nigeria, the perceived ease-of-use of technology is often challenged by the lack of adequate infrastructure. (Okoye & Ugwuanyi, 2020) pointed out that the lack of reliable internet connectivity and outdated hardware in many Nigerian university libraries are significant barriers to the perceived ease-of-use of cloud computing. Therefore, the successful adoption of cloud computing in such contexts may require targeted interventions to improve infrastructure. While cloud computing offers significant advantages, such as improved access to resources, cost savings, and enhanced collaboration, its adoption in developing regions like Kwara State, Nigeria, is influenced by a range of factors, including perceived ease-of-use, perceived usefulness, infrastructural limitations, and data security concerns. Understanding and addressing these factors is crucial for

developing strategies that can facilitate the successful adoption and integration of cloud computing into university library services, ultimately enhancing their ability to support academic research, teaching and learning.

IV. CONCLUSION

The study emphasis the transformative opportunity cloud computing presents for university libraries such as offering scalable, cost-effective, and flexible solutions for managing resources and services. It also verifies the ease-of-use, usefulness and challenges associated with its adoption, particularly in developing regions like Nigeria. Some of the verified ease-of-use of cloud computing are: it simplifies workflows and error free. The study also outlines the usefulness of cloud computing such as it helps in information dissemination and transfer of operation and services of library to the cloud. Cloud computing offers significant advantages, such as improved access to resources, cost savings, and enhanced collaboration, its adoption in developing regions like Kwara State, Nigeria. However, it attached with several challenges, as the study also identified challenges hampering the universal adoption of cloud computing such as slow/poor internet connections, adaptability and dependency on outsiders and data security and privacy problem. It is to note that there are no significant differences in perceptions between male and female respondents, also there are no significant differences in perceptions between work-experienced librarians and the librarians that are new in the profession.

Sequel to the study's findings, the following recommendations were generated: (i) The university libraries should try to tap and maintain the merits and benefits attached to the use of cloud computing to better provide effective services. (ii) There should be friendly interface creation by cloud service providers geared at the continuous ease-of-use and user friendliness of cloud computing. (iii) The parent organization should provide the library with alternate power supply and reliable internet facilities with fast speed and high broadband. (iv) The library management should seek financial support from the government and agencies to invest in the necessary facility for the successful usage of cloud computing for library services.

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