



Conference Proceedings of

**FEDERAL UNIVERSITY DUTSINMA
LIBRARY COMPLEX**

in Collaboration with

**DEPARTMENT OF LIBRARY AND INFORMATION
SCIENCE, FEDERAL UNIVERSITY DUTSINMA
KATSINA STATE, NIGERIA**

and

**GOVERNMENT DIVISIONAL PUBLIC
LIBRARY KOTA (RAJASTHAN) INDIA**

**A PUBLICATION OF
FEDERAL UNIVERSITY DUTSINMA LIBRARY COMPLEX**

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ACKNOWLEDGEMENT

The local organizing committee of Federal University Dutsinma Library Complex 1st International Conference hereby extends their profound appreciation to the Vice Chancellor Federal University Dutsinma for honoring and accepting to be the chief-host of this great maiden occasion. Our gratitude and appreciation also goes to all our special guests, keynote speaker, lead paper presenters within and outside the country for their tireless efforts towards the successful conduct of this conference. Our profound gratitude also goes to all those who supported this conference in one way or the other. To our presenters that made their contributions physically or virtually, we say thank you all and God bless.

**WELCOME ADDRESS BY THE CHAIRPERSON OF THE LOCAL ORGANIZING
COMMITTEE DR. HAJARA YAKUBU (CLN)**

The Chief Host, Our Able Vice Chancellor, Professor Arma'yau Hamisu Bichi (FSS, FASN, OON),
The Registrar and other Principal Officers of this prestigious institution, Federal University Dutsin-Ma,
Katsina State,

Staff and Students

Distinguished Ladies and Gentle Men

Assalamu Alaikum and a very good morning to you all. All praise is due to Allah, the Most Beneficent, the Most Merciful, Peace and Blessings of Allah be upon His Messenger, Prophet Muhammad, his entire households and his companions. I am highly elated for this wonderful opportunity bestowed on me to address you this morning in this August occasion "The first International Conference/Workshop organised by FUDMA Library Complex in collaboration with the LIS Department and Public Library, Kota, India.

FUDMA Library Complex has come a long way in publishing scholarly articles in a reputable journal known as FUDIJSIM (FUDMA International Journal of Library Science and Information Management). The nurture of an idea of the FUDMA Library 1st International Conference/workshop is the culmination of the intellectuals among Library Complex and LIS Department scholars.

Of course, without the permission and support of the Vice Chancellor and the entire management, it wouldn't have been possible. Therefore, I on behalf of the LOC, appreciate our erudite, amiable, enviable and indefatigable VC, in the person of Prof. Armayau Hamisu Bichi. His tenure has elevated the status of FUDMA Library Complex in terms of expansion of the library buildings, creation of Faculty and Departmental libraries, regular procurement of information resources (prints and electronics), enhancement of staff via training and retraining as well as increment in number of users. This in line with the fifth out of the five laws of Librarianship propounded by S. R. Ranganathan which has been withstanding the test of time: "Library is a growing organism". Library has to be dynamic by adopting and adapting as well as accommodating the paradigm shift/revolutionary changes brought by information and communication technologies (ICT). Hence, the birth of this international conference.

The theme of this international conference, "Emerging Information, Knowledge System and Globalisation in Education (ICEIKSGE) is a focal point on the contemporary issues in LIS and Library Practice. Its sub-themes cover a wider spectrum in both LIS and Librarianship. The topics presented and discussed, will go a long way in spurring more research studies in the field of LIS and library practice. It is with the hope that this maiden international conference will be an annual event of magnitude clamouring for chain of continuity.

Research paves the way to unravel a hidden treasure of knowledge. Research is a process of identifying a problem and attempting to proffer a solution through scientific information gathering and analysis. Therefore, research in LIS is an attempt for problem identification, proffering solutions on the contemporary issues related to library, information resources and services for documentation and posterity.

I use this medium to thank you all for gracing this event and pray fervently that may Allah (SWT) return you back safely to your various destinations.

Long live FUDMA and Dutsin-Ma LGA!

Long live Katsina State!!

Long Federal Republic of Nigeria!!!

**WELCOME ADDRESS BY THE UNIVERSITY LIBRARIAN, FEDERAL
UNIVERSITY DUTSINMA DR. UKASHATU HAMZA MUSA AT THE 1ST
INTERNATIONAL CONFERENCE/WORKSHOP ON EMERGING
INFORMATION, KNOWLEDGE SYSTEM AND GLOBALIZATION IN
EDUCATION (ICEIKSGE-2023)**

The Vice chancellor, our mentor, our leader, the Deputy Vice Chancellor Academic, The Registrar Federal University Dutsinma, the University Librarian Al 'Qalam University, Katsina, University Librarian Federal University of Technology Minna and also our keynote speaker, Dr. Deepak Shrivastava Kumar of Government Public Divisional Library Kota, the HOD Library and Information Science and Member of academic Board, FUDMA, my dear colleagues, researchers, library Stack holders, online participant to this international workshop/conference from other countries, ladies and gentlemen, all other protocols duly observed, good morning and may peace, mercy, and blessings of Allah be upon you all. It is indeed my singular honor and privilege to stand before you this morning in order to start our four (4) days first (1st) International Conference/workshop on **EMERGING INFORMATION, KNOWLEDGE SYSTEM AND GLOBAL SERVICES IN EDUCATION** which comprises:

- ✓ Paper Presentation
- ✓ Basic practical aspect in case of workshop

This conference/workshop is organized in such a way that the scholars, researchers and practitioners will discuss with the new trend in librarianship and learn new and modern technologies in library and information services.

The conference theme is well chosen and resonate (related) closely with the changes and challenges faced the library and the librarians. Let me quickly remind you that the world of librarians has gone through a fundamental change. Though the information technology and modernization have knocked at our door. Therefore, we need to accept the transformation or innovation that come to our profession. To the best of my knowledge, experience and my staying as university librarian, this is the first time in which the FUDMA library stockholders and DLIS are brought together to organized an international workshop/conference in collaboration with Government Divisional Public Library India in order to increase the visibility and productivity of the library and the university in general, and move the system forward. Furthermore, looking at the challenges in our disposal, the library stockholders has carefully decided to covers a wide range of interesting topics related to all theoretical and practical aspects of these Sub-themes Changing Role of Libraries in the Digital Environment, Social media and applications in libraries, Digital preservation and Intellectual property, Mobile information services, Web Technologies and its applications, Big data and data science, Role of Libraries in the service of society, Information literacy, Embedded librarianship, Citation Analysis, Emerging Technologies in Library Services, E-Resources Management, Knowledge Organization and Ontologies , Metadata standards and protocols, Mobile Technology and its Application in Library Services, Artificial Intelligence and Decision Support Systems, Cloud Computing and Library Services, Knowledge Management and Knowledge Innovation, Information communication technology and KM, Role of Libraries in teaching, LIS Education and Research, Research ethics and Plagiarism.

Chairman, Ladies and Gentleman, it is my belief that the conference has enough package that will address some issues facing the library and librarians.

I wish to express our profound gratitude to NLA Chairman Katsina state Chapter, also the University Librarian UMYUK Katsina for your support to the development of library services across the state.

I warmly welcome my distinguished colleagues, the University librarian of Al'Qalam University Katsina, Dr. AA Ladan, Dr. Katamba UL FUTMINNA for honoring our invitation.

To the Vice Chancellor, Sir, let me use this opportunity to thank you and your management for your continued support to the development of FUDMA library complex. Sir, you have indeed shown a good understanding of the role of the FUDMA Library complex toward the development of this university. I assure you that, the library we will continue to work and support your mission and vision of this great institution.

Chairman, distinguished ladies and gentleman, I have a great pleasure to welcome specially a man carefully chosen and singled out for the keynote Address at this conference. He is a current University Librarian FUT Minna, within the short period of time, He shares a strong interest in the conference theme Emerging Information, Knowledge System and Globalization in Education. We are very proud to have you as a partner in progress. And in sha Allah, we will like to collaborate with your library. You are highly welcome.

To our distinguished Guests who have graciously honored our invitation, I say thank you for being part this occasion.

To all participants who have travelled from far and near, we really appreciate you all for your esteemed presence at this occasion.

I would like to offer my warmest congratulations to the Conference Organizing Committee for a wonderful job and making this conference reality, you really deserve a commendation letter from management.

Chief Host **Prof Armayaú H. Bichi (FSS, FASN, OON),**
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AWARENESS, PERCEPTION AND READINESS OF UNIVERSITY LIBRARIES ON THE USE OF SMART PHONE TECHNOLOGIES FOR INFORMATION SERVICE DELIVERY IN UNIVERSITIES IN NORTH-WESTERN NIGERIA: HYPOTHETICAL APPROACH

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Abstract

The study investigated the extent of awareness, perception, and readiness of university libraries for the use of smartphone technologies for information service delivery in universities in northern Nigeria. The study was guided by three research hypotheses. The population of the study consisted of 671 librarians in 20 universities in North-western Nigeria. The study employed a survey design using the quantitative method to elicit information from the respondents in all 20 universities in North-West Nigeria. A multistage sampling procedure was used to select a sample size of 226 librarians from the population of 671 within the 20 universities. A structured questionnaire was used for data collection. Out of 226 copies of the questionnaire administered, 183 copies were filled out, returned, and found usable. The data were analyzed using descriptive and inferential statistics. Hypotheses tested revealed a significant relationship between librarians' awareness of smartphones and information service delivery ($f = 8.131$), librarians' perception of smartphones and information service delivery ($f = 4.637$), and librarians' readiness for the use of smartphones and information service delivery ($f = 18.088$). The study concluded that the proliferation of smartphone technology has greatly contributed to the way information is provided; many university libraries are taking advantage of what these technologies present, and university libraries in North-western Nigeria should do the same to embrace this novelty and better provide information services to their clientele. The study recommended that the management of universities, stakeholders, and university library administrators should sensitize library staff and users on the use of smartphone technology to provide services. University libraries should market the services of smartphones, social media platforms, and other technologies to both library staff and users rigorously, systematically, and purposefully to create awareness about the potentiality of smartphone technology.

Keywords: Information service delivery, Libraries, Nigeria, North-western, Smart phone, Technologies, Universities

Introduction

University libraries are established to support the overall objectives of their parent institutions, which are not far from those of teaching, learning, research, and community services. The only way to achieve the set objectives is for the university libraries to strive hard for information service delivery. University libraries are known for acquiring information resources and making them available to their users. In the words of Salihu (2021), libraries have information dissemination as their predominant function. The author opined that university libraries should engage in the collection, processing, preservation, and dissemination of recorded information in the various formats most convenient to their target users. University libraries provide many services, such as circulation, reference, acquisition, technical, library advisory, current awareness services (CAS), and selective dissemination of information (SDI).

These library services could be better provided via digital platforms to improve quality education in Nigerian universities in the 21st century. Information service delivery can only be made possible through emerging technologies, otherwise known as information and Communication Technologies (ICTs). The accelerated adoption and use of ICTs have resulted in the globalization of information and knowledge resources (Ocran, Underwood, & Arthur, 2020). ICTs are a diverse set of technological tools and resources used to communicate and create, disseminate, store, and manage information. The technologies have made communication and access to information very easy and timely for users from the comfort of their homes, offices, and wherever they are in contemporary times. ICTs, such as computers, the Internet, and telecommunication devices like smartphones, have allowed libraries to provide access to information.

To enhance information service delivery in the 21st century, some enabling technologies, like mobile phones, could be deployed in the library. A mobile phone, also known as a cellular phone, cell phone, hand phone, or simply a phone, is a telecommunications device that can make and receive calls over a radio link while moving around a wide geographical area. Modern mobile phones support a wide variety of services, such as text messages, multimedia messages, e-mail, Internet access, business applications, video gaming, and photography. A smartphone is the most advanced form of a cellular telephone with an integrated computer and other features not originally associated with a telephone, such as an operating system (OS), web browsing, android applications, the Play Store, and the ability to run software applications.

Statement of the Research Problem

The central role of librarians is to provide access to information and effective delivery of information services. Information and communication technologies (ICTs), such as computers, the Internet, and telecommunications, have allowed libraries to provide access to efficient, accurate, and timely information. Acheampong and Agyemang (2020) asserted that mobile technologies have introduced the "Libraries in Hand" trend. The writers suggested that since libraries are currently creating digital content accessible on computers, such collections could be made available on mobile platforms.

However, while librarians in developed countries have adopted the use of mobile technologies for mobile-based library services, thus leading to a high and improved level of information service delivery in libraries, the same cannot be said of librarians in developing countries like Nigeria. Specifically, past studies have generally not provided clear evidence of librarians' use of smartphone technologies for information service delivery. From researchers' observations and interactions with librarians, it was gathered that many librarians are not aware of the use of smartphone technologies for information service delivery in libraries. Many

librarians still rely only on traditional channels for information service delivery, which has not enhanced the high level of library usage among patrons. On this note, this study seeks to examine librarians' awareness, perception, and readiness to use smartphone technologies for information service delivery in university libraries in North-western Nigeria.

Research Hypotheses

The study is guided by the following null hypotheses, which were tested at the 0.05 level of significance.

1. There is no significant relationship between librarians' awareness of smartphones and information service delivery in university libraries in northern Nigeria.
2. There is no significant relationship between librarians' perception of smartphones and information service delivery in university libraries in northern Nigeria.
3. There is no significant relationship between librarians' readiness for the use of smartphones and information service delivery in university libraries in North-western Nigeria.

Review of Related Empirical Literature

Bhoj (2020), in a study, opined that the application of mobile phone technology in all aspects of our everyday lives cannot be ignored in institutions and establishments, including libraries. This is because libraries in developed economies have embraced the mobile phone revolution and are utilizing it for effective and efficient services. In contrast, however, mobile-based services are not pervasive among academic libraries in India. They have yet to be embraced by academic and research libraries. Mobile technology has made communication and information access very convenient and timely for users from the comfort of their own homes and offices. Already, mobile devices have had a significant impact on banking, tourism, and health services.

Sinhababuand Kumar (2021) studied librarians' perceptions towards the Virtual Reference Service (VRS). According to them, the Reference Service enables libraries to provide information to a person who needs it, directly or indirectly, or teach him how to find the needed information in the sources. These three major concepts of awareness, perception, and readiness are defined in the context of this study as knowledge that can be seen as facts, information, and skills acquired through experience or education; the theoretical or practical understanding of a subject. Librarians' knowledge of the use of smartphones will determine the extent of adoption and usage. If librarians have extensive knowledge of smartphones, they will adopt and use them effortlessly for the enhancement of information service delivery in university libraries. If they have little or no knowledge of them, they will continue in the traditional mode of service delivery to their users, which may not be effective to reach out to more users at once.

Libraries are at the heart of learning, teaching, and research. With a focus on information services, libraries remain the great and essential way to learn, acquire knowledge, transform, and ultimately discover. University libraries are important investments as they ensure the increase and improvement of the quality of tertiary education for the academic community. Salihu (2021) stated that academic libraries hold a vast range of learning materials, from print to electronic, asserting that many academic libraries today are no longer only holding the print format of materials but also the electronic format. This has many advantages, the biggest being that it serves many users at the same time, given that many learners can access and use electronic information simultaneously and from anywhere. Ocran, Underwood, and Arthur (2020) defined an academic library as a central service of operation that is set up to provide a location, materials, and services to the users for teaching, learning, and research in

an institution. The authors further acknowledged the fact that the most funded types of libraries are those that are the core of any university and hence more developed.

University or academic libraries play an important role in a student's academic career by providing access to materials for their educational activities. It is therefore the library's mission to provide efficient and effective, timely, correct, and up-to-date information services to students. The main activities of university libraries include, but are not limited to, document delivery, reference services, collection development, user education, access to resources held by the library, access to other library holdings, and access to electronic information. Digital platforms improve the quality of education in Nigerian universities in the 21st century. Information service delivery can be made possible through emerging technologies, otherwise known as information and Communication Technologies (ICTs). Rivo and Zumer (2022) revealed that smartphones are intensively used for information service providers and gaining knowledge. Recently, a common use of mobile phones and their features (for example, accessing the Internet or sharing knowledge) has been for educational purposes. Mobile technologies are enhancing the development and assessment of educational environments for appropriate learning activities inside and outside the classroom. This is because the World Wide Web is accessible anywhere via a mobile phone.

The awareness of smartphone technology use in the field of libraries and information in the developed world is prominent. Academic libraries in developed countries have been embracing this technology and using it to improve their delivery of library and information services. Haq, Samani, and Hariyati (2022) state that this has been possible due to the availability of resources such as a good backbone of ICT infrastructure, readily available technical personnel to implement the technology, the penetration of smartphone usage among young residents, who are primarily the targeted audience of the libraries, and the readiness of these academic libraries to implement and use the technology.

The demand for using library apps to search for information has been increasing after the COVID-19 outbreak. This development prompted Chan, Chiu, and Ho (2022) to conduct a study on the mediating effects of the relationship between perceived service quality and public library app loyalty during the COVID-19 era. The aim was to look into how the pandemic affects the users' perception of loyalty to using library apps and to evaluate the service quality of a public library app under the Hong Kong Government's mobile applications initiative. Using structural equation modelling, data collected from Hong Kong, a metropolis where mobile services empower its citizens, showed the interrelationships between service quality and possible outcomes (i.e., perceived brand image, user satisfaction, e-word of mouth, and user loyalty). Findings also indicate that the influence of perceived service quality on user loyalty can only be achieved through perceived brand image and user satisfaction. The findings and suggestions reiterated the importance of considering usability concepts when analyzing the service quality of each unique app. They also provide insights for practitioners in developing the next generation of apps for smart public information services and call for further investigation into the proposed hierarchical model and other potential factors related to service quality.

Obim and Akpokurerie (2022) investigated the adoption of mobile applications for evidence-based pedagogy in library schools in southeast Nigeria. The specific objectives of the study include the examination of the available mobile applications, the level and extent of adoption, and challenges and strategies to enhance the adoption of mobile applications in library schools in the geo-political zone. The study adopted a descriptive survey, while the target population consisted of 100 educators in seven university-based LIS schools in Southeast Nigeria. Thus, a structured questionnaire was developed and used by the researchers, while descriptive statistics were used in data analysis. The results showed that the extent of adoption of mobile applications among LIS educators was low, though mobile applications would help

in the delivery of lectures to students. An unstable power supply, low Internet bandwidth, and the absence of a policy on the adoption of mobile applications for teaching on the part of lecturers were the major obstacles inhibiting the adoption of mobile applications.

Methodology

This study employed a descriptive survey research design. The descriptive survey design was used because it enabled the researcher to fully investigate the phenomenon under study. It also allows the researcher to collect data from different respondents in different geographical locations on a particular subject matter. The population of this study comprised 671 librarians in 20 universities in northern Nigeria. It consists of federal, state, and privately owned universities. The universities are conventional and specialized. The rationale behind using this category of library personnel is the fact that they provide professional library services as well as head the units of the university libraries.

Table 1: Population of the Study

S/N	Universities	Number of Librarians
1	Ahmadu Bello University, Zaria	193
2	Bayero University, Kano	101
3	Federal University, BirninKebbi	23
4	Federal University, Dutse	16
5	Federal University, Dutsin-ma	15
6	Federal University, Gusau	27
7	UsmanuDanfodio University, Sokoto	16
8	Nigerian Police Academy, Wudil	16
9	Nigerian Defense Academy, Kaduna	22
10	Air Force Institute of Technology, Kaduna	08
11	SuleLamidoUniversty, Kafin Hausa	20
12	Kaduna State University, Kaduna	34
13	Kano University of Science and Technology, Wudil	20
14	Kebbi State University of Science and Technology, Aliero	22
15	Sokoto State University, Sokoto	18
16	Umaru Musa Yar'adua University, Katsina	40
17	Yusuf MaitamSule University, Kano	34
18	Zamfara State University, Mafara	15
19	Al-Qalam University, Katsina	14
20	Skyline University, Kano	17
Total		671

Sources: National Universities Commission (NUC), Abuja. (2019) MIS, Federal, State and Private Universities. June/July 2019

Multistage sampling procedure was used for this study. Multistage sampling is the type of sampling process that involves a number of stages or processes as well as other sampling techniques. In the first stage, 11 universities were selected using stratified sampling whereby universities were arranged into layers i.e by ownership, and at the second stage proportionate stratified sampling was used to select 226 librarians based on the number in the stratum. This technique allows taking of samples in stages using smaller and smaller sampling unit at each stage.

Table 2: Sample Size

S/N	Institution	State	Population	Sample Size	Percentage %
1	Ahmadu Bello University, Zaria	Kaduna	193	86	(38)
2	Kaduna State University Kaduna	Kaduna	34	16	(7)
3	Bayero University, Kano	Kano	101	45	(20)
4	Kano University of Science and Technology, Wudil	Kano	20	9	(4)
5	Skyline University, Kano	Kano	17	7	(3)
6	UsmanuDanfodio University, Sokoto	Sokoto	16	7	(3)
7	Umaru Musa Yar'adua University, Katsina	Katsina	40	18	(8)
8	Al-Qalam University, Katsina	Katsina	14	7	(3)
9	SuleLamido University, Kafin Hausa	Jigawa	20	9	(4)
10	Federal University, Gusau	Zamfara	27	11	(5)
11	Kebbi State University of Science & Technology, Aliero	Kebbi	22	9	(4)
Total			504	226	(100)

A structured questionnaire with a five-point Likert scale was used as an instrument for data collection. The questionnaire was self-developed by the researchers and validated by experts in the fields of librarianship, ICT, and education. Descriptive statistics such as percentages, mean scores, and standard deviation were used to analyze the data in relation to the research questions. Descriptive statistics was later transformed into an inferential statistical tool, i.e., linear regression, which was used to test the three formulated null hypotheses at the 0.05 level of significance.

Response Rate

A total of 226 copies of the questionnaire were distributed to targeted respondents at eleven (11) selected universities in Nigeria. However, 183 copies of the questionnaire were correctly filled out and returned. This gave a response rate of 81% of the completed and returned copies of the questionnaire, which is adequate for the analysis of the data and making inferences.

Hypotheses One

There is no significant relationship between librarians’ awareness of smart phone and information service delivery in university libraries in North-western Nigeria.

Table 3: Hypothesis one testing

R	R Square	Adjusted R Square	Std. Error of the Estimate	F	Sig.
.207 ^a	.043	.038	1.284	8.131	.005 ^b

Table 3 shows that the two variables (awareness of smart phones and information service delivery) when combined have a significant relationship in university libraries in North-western Nigeria. The interactive effect is significant ($F = 8.131, p < 0.05$). Therefore, there is a significant relationship between awareness of smart phones and information service delivery in university libraries in northern Nigeria.

Hypothesis Two

There is no significant relationship between librarians’ perception of smart phone and information service delivery in university libraries in North-western Nigeria.

Table 4: Hypotheses Two testing

R	R Square	Adjusted R Square	Std. Error of the Estimate	F	Sig.
.158 ^a	.025	.020	.539	4.637	.033 ^b

Table 4 shows that the two variables (perception of smart phones and information service delivery) when combined have a significant relationship in university libraries in North-western Nigeria. The interactive effect is significant ($F = 4.637, p < 0.05$). Therefore, there is a significant relationship between the perception of smart phones and information service delivery in university libraries in northern Nigeria.

Hypothesis Three

There is no significant relationship between librarians’ readiness on the use of smart phone and information service delivery in university libraries in North-western Nigeria.

Table 5: Hypotheses Three testing

R	R Square	Adjusted R Square	Std. Error of the Estimate	F	Sig.
.301 ^a	.091	.086	.769	18.088	.000 ^b

Table 5 shows that the two variables (readiness for the use of smart phones and information service delivery) when combined have a significant relationship in university libraries in North-western Nigeria. The interactive effect is significant ($F = 18.088, p < 0.05$). Therefore, there is a significant relationship between perceptions of smart phones and information service delivery in university libraries in northern Nigeria.

Summary of the Findings

1. There was a significant relationship between librarians’ awareness of smart phones and information service delivery in universities in northern Nigeria.
2. There was a significant relationship between librarians’ perceptions of smart phones and information service delivery in university libraries in North-western Nigeria.

3. There was a significant relationship between librarians' readiness for the use of smart phones and information service delivery in university libraries in North-western Nigeria.

Discussion of Findings

Hypotheses one: There is no significant relationship between librarians' awareness of smart phones and information service delivery in university libraries in North-western Nigeria.

The result of Hypothesis 1 shows that the two variables (awareness of smart phones and information service delivery) have a significant relationship. This indicates that the librarians awareness of and use of the operation and navigation of the internet through their smart phone devices helps to fast-track the flow of information services in the library. This also indicated that university libraries in North-western Nigeria are growing and advancing fast due to the staff's exposure to smart phones, sourcing and sorting academic information, and how the libraries handle, arrange, and dish out information, making it easier for the library staff and the users as well. This finding is in line with Dar and Madhusudhan (2021), as the researchers reported that being knowledgeable about smart phone adoption for information service delivery by librarians has been seen as the most positive aspect that can lead to the usage of mobile devices for information services offered by university or academic libraries. This finding also corroborates that of Haq, Samani, and Hariyati (2022), as the researcher observed that mobile technology provides an opportunity for academic libraries to provide access to information services in a much more effective and quicker way to the user. The new technology requires academic librarians to move towards adopting new online marketing strategies for library services and resources. Therefore, academic libraries have to move with the times and invest in innovative marketing strategies suited to their environment and users to make a positive impact with services accessible via mobile devices. Based on the findings and other related studies, we can now conclude that awareness of smart phones and information service delivery in the northern Nigerian universities has a positive relationship, thus promoting information service delivery.

Hypothesis Two: There is no significant relationship between librarians' perception of smartphones and information service delivery in university libraries in North-western Nigeria.

The result shows that the two variables (perception of smartphone and information service delivery) have a significant relationship. It indicated that librarians have a positive perception and acceptance of smartphones for information service delivery. They all, in general, perceive that smartphones are a good opportunity for libraries in the 21st-century library system. The findings of this study indicate that, overall, librarians have a positive attitude towards mobile-based library services. This finding tally with the findings of Rivo and Zumer (2022); hence, the co-researchers found out that users of library services in the era of information and communication technologies need to find materials or quick pieces of information, and they were already using online databases and catalogues on their mobile devices. Respondents were in favour of accessing the library catalogue from mobile phones. This was in addition to accessing information such as library opening hours, location, contact information, and borrowing records. Such mobile library services were therefore recommended for implementation. Mobile apps and responsive web design for library users have their pros and cons.

From the results of the above two null hypotheses, the acceptance and adoption of smartphones revealed a positive perception the librarians have towards smartphones for information service delivery in university libraries in northern Nigeria.

Hypothesis Three: There is no significant relationship between librarians' readiness for the use of smartphones and information service delivery in university libraries in North-western Nigeria.

The result in Hypothesis 2 shows that the two variables (perception of smartphones and information service delivery) indicate that the staff have a positive perception of and acceptance of smartphones for information service delivery. This finding is in support of Haq, Samani, and Hariyati (2022) but contradicts that of Obim and Akpokurerie (2022), respectively; hence, the former co-researchers conducted a study in 2022 on the mediating effects on the relationship between perceived service quality and public library app loyalty during the COVID-19 era. This study revealed a strong and significant relationship between librarians' readiness for the use of smartphones and information service delivery in university libraries in northern Nigeria. The later co-researchers in 2022 reported a low level of adoption of mobile applications, though the technology has the potential to help in the delivery of lectures to students.

Conclusion

The revolution of smartphone technologies and their impact on society has made a mark in most operations of the library and information centres today. Emerging technologies like smartphones and social media have become vital alternatives to providing library services in an era where libraries are facing the challenges of budget cuts and the desire of 21st-century users who prefer having library services readily at hand. The proliferation of smartphone technology has greatly contributed to the way information is provided. Many university libraries are taking advantage of what these technologies present, and university libraries in North-western Nigeria should do the same to embrace this novelty to better provide information services to their clientele.

Recommendations

1. Librarians in universities in North-western Nigeria should learn the basic skills necessary to use a smart phone; being knowledgeable about and understanding new technologies such as smart phones is vital. Librarians are aware of the benefits and importance of smart phones for information service delivery, and they will be in a better position to adopt their use for informational purposes.
2. With the use of smart phones gaining favorable perception among librarians, it is important that libraries in universities in North-western Nigeria conduct a user needs assessment to investigate the information needs of users and the type of information they want access to in the libraries.
3. University libraries in North-western Nigeria should develop a mobile infrastructure; the availability of ICTs will pave the way for the development of mobile-based library services. Library management should survey the existing infrastructure to see whether it can support mobile-based information services.

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