ZAMFARA INTERNATIONAL JOURNAL OF EDUCATION (ZIJE)

2013

FEDERAL UNIVERSITY GUSAU

KNOWLEDGE INNOVATION & SERVICE

Volume 2, Number 2

www.zijedufugus.co...

Impact of Smart Phone Technology on Information Service Delivery among Librarians in Universities in North-Western Nigeria

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Abstract

The study investigated the impact of smart phone technology on information service delivery among librarians in universities in North-Western Nigeria. The study was guided by two specific objectives and two corresponding research questions. The study employed survey design to elicit information from the respondents. Multistage sampling procedure was used to sample 183 librarians from the population of 671 within the 20 universities in North-Western Nigeria. Structured questionnaire was used as an instrument for data collection. Data were analyzed using descriptive statistics. The study revealed that 95(51.9%) and 62(33.9%) of librarians believed that use of social media platforms through smart phone could simplify library services respectively with the mean score $X= 4.25$, SD, 1.034. The study concluded that the proliferation of smart phone 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 in order to embrace this novelty to better provide information services to their clienteles. The study recommended that management of university libraries, stake holders and library administrators should sensitize library staff and users on the use of smart phone technology to provide services. Equally, the university library management should build the capacity of its staff in continuous professional development (CPD) programs to acquire skills required in efficiently operating in 21st century libraries.

Keywords: Library services, Smart phone, Librarians

Introduction

Libraries are at the heart of learning, teaching and research, with focus on information services, libraries remain the great essential way to learning, knowledge acquisition, transformation and ultimately discovery Dar (2021). The 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 the university libraries should engage in collection, processing, preservation and dissemination of recorded information in the various formats most convenient to its target users. University libraries provide many services such as: circulation, reference, acquisition, technical, library advisory, Current Awareness Services (CAS), Selective Dissemination of Information (SDI), information and referral services, Inter-library loan, and document deliveries among others.

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 the emerging technologies otherwise known as the Information and Communication Technologies (ICTs). ICTs are diverse set of technological tools and resources used to communicate, and to create, disseminate, store and manage information (Ocran, 2020). The technologies have made communication and access to information very convenient and timely to the users from the comfort of their homes, offices and where ever they are, in contemporary time, the ICTs such as computers, the Internet and Telecommunication devices like mobile phones have afforded libraries the opportunity to provide access to information.

Mobile telephone refers to as wireless communication device which allows transfer of information over a distance without the use of enhanced electrical conductors or wires (Singh, and Ansari, 2020). Modern mobile phones support wide variety of services such as text messages, multimedia messages, e-mail, Internet access, business applications, video gaming and photography. Smart phone is the most advanced form of a cellular telephone with an integrated computer and other features not originally associated with telephone, such as operating system (OS), web browsing, android applications, play store and the ability to run software applications (Liu and Briggs 2015).

In Nigerian it is obvious to note that, in the 21st century most of the sectors and organizations are incorporating mobile technologies into their daily transactions like financial institutions, insurance companies, business conglomerates, academic institutions and so on. This view of the importance of mobile technologies has a wider gap in Nigeria, more especially in the northern part of the country. Nigeria is lagging behind in terms of ICT usage; if librarians in Nigeria are to continue to make substantial contributions as information service providers, they will have to understand the transformation and exploit the emerging technologies like smart phone in providing their services to users, this is because smart phone technology, has become a common platform and channel for all types of communication and information. Application of new technologies in the libraries require improvement of different kinds of skills and competencies to enable information professionals catch up with the technological advances and adopt the development to the library work for effective and efficient library and information service delivery Gbaje et al (2018). Competencies refer to skills or knowledge that leads to superior performance.

Hansaben (2020) stated that the application of mobile phone technology in all aspects of our everyday life 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 them for effective and efficient services. In contrast, however, mobile - based services are not pervasive among academic libraries in Nigeria especially North-western part of the country.

With the proliferation of mobile technologies particularly smart phone recently, it is paramount for librarians to note this development for better service delivery. Haq, et al (2022) conducted a study on Android-Based digital library application development. Digital technology
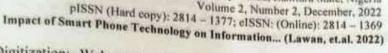
has enabled the dissemination of all types of information, replacing traditional formats with automated systems. As a result of the development of digital technology, the library has also entered a new era, which is then called the digital library era. The purpose of the study was to develop an android-based digital library application. The results of the study indicated that the development of an android-based digital library application has been successfully implemented with the results of the trial getting an average percentage above 80% which is included in the very feasible category to be implemented. Even so, evaluation and monitoring must continue to be carried out to prevent errors or problems that may occur, as well as material to continue developing this android-based digital library application.

Furthermore, Acheampong, and Agyemang, (2020) conducted research on enhancing academic library services provision in the distance learning environment with mobile technologies. The study aimed at exploring the potentials of using mobile technologies (m-techs) to enhance academic library services delivery. The objectives were to assess the students' awareness and appreciation for mobile technology-based library services; and to assess the librarians' competencies in switching to delivering mobile technology-based services. The results indicated that the students were aware and had positive appreciation for the value of mobile technology-based library. They expressed great expectations about the availability of the library services on m-tech platforms in Ghana. The findings also demonstrate the proliferation of the mobile device usage within the university environment and indicate how librarians should build their competencies in switching to deliver services on mobile-based platforms

Panda (2021) in recent research, a study of reference service using mobile technology in Library. Stated that libraries all over the world are continually reinventing themselves to meet changing community needs and the increasing opportunities and associated challenges that modern and evolving technologies bring. On another side, financial crisis and cutting budget, unavailability of adequate staff, user awareness, etc. are the main issues faces by libraries while try to adopt new technologies for accepting the challenges and issues created by this pandemic. On this point, mobile technology, as an economical affordable technological solution that helps libraries to keep abreast of the dynamically changing needs of their clientele and identify the way of delivering user-centered services by surveying the user needs. The current study examines the exponential growth in the mobile communication system, both in terms of technology user count, after considering the needs of the user community. Besides, the study sets out the basic steps for introducing a mobile reference service in a library, as well as its future uses and benefits.

The skills and competencies of information providers are relevant in the era of information and communication technology boost, the paradigm shift change the way people sought for information. Hamad, et al (2020) stated that digital skills are necessary to work and manage electronic library infrastructures and services. Accordingly, there is an urgent need for assessing the level of digital skills among librarians at academic libraries. It is also important to investigate the influence of digital skills on technology acceptance among librarians.

Gbaje, et al (2018) itemised technological skills for the 21st century environment as E-mail management skills; Microsoft word (Word Processing Skills); Microsoft Access (Database management skills); Microsoft Excel (Spreadsheet skills); Power point (presentation software); Use of Portable Document Format (PDF) Software; Web Searching Skills; Searching Library Databases; Using an Integrated Library System (Virtual/Alice for Windows); Use of Digital

Camera for Digitization; Web navigation skills; Teaching others to use technology; File management/operating system navigation skills; Troubleshooting technology; CDROM/ DVD Search; Scanners and similar devices; Creating online instructional materials/products; How to cite and evaluate internet resources; installing software; troubleshoot printing problems; Web design; Instant Messaging; computer security knowledge; Connecting patrons laptop to the library wireless; Blogging; Wiki; Installing printer, scanner and computer systems; Graphic Design; Network management; Computer programming and Creating & updating Institutional OPAC It is deduced from the above studies, librarians need to enhance their technological skills continually, in order to meet the expectations of users.

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 devices have afforded libraries the opportunity to provide access to efficient, accurate and timely information. Acheampong, and Agyemang, (2020) asserted that mobile technologies have introduced Libraries in hand trend. The authors suggested that since libraries are currently creating digital contents accessible on computers, such digital collections could be made available on mobile platforms.
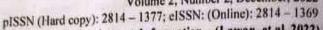
However, while librarians in developed countries have adopted the use of mobile technologies for mobile-based library services, thus leading to high and improved level of information service delivery in libraries, same cannot be said of librarians in developing countries like Nigeria. Past studies have generally not provided clear evidence of librarians' use of smart phone technologies for the purpose of information services delivery (Chaputula, 2020). From observation and interactions with librarians, it was gathered that many librarians still rely only on traditional channels for information services delivery which have not really enhanced high level of library usage among users. It is on this note that this study was conducted to examine the impact of smart phone technology on information service delivery among librarians in universities in North-Western Nigeria

Objectives of the Study
The aim of the study is to determine the impact of smart phone technology on information service delivery among librarians in universities in North-Western Nigeria. The specific objectives are to:
1. Determine the impact of smart phone technology on information service delivery among university librarians in North-western Nigeria.
2. Assess the skills required of librarians to use smart phone for information service delivery in university libraries in North-western Nigeria

Research Questions
1. What is the impact of smart phone technology on information service delivery among university librarians in North-western Nigeria?
2. What are the skills required of staff to use smart phone technology for information service delivery in university libraries in North-western Nigeria?

Research Hypothesis

The study is guided by the following null hypothesis and would be tested at 0.05 level of significance.

1. There is no significant relationship between librarians' skills to use smart phone and information service delivery in university libraries in North-western Nigeria

Methodology

This study employed descriptive survey research design. The descriptive survey design was used because it enabled the researcher to fully investigate the phenomenon under study. It equally allows the researcher to collect data from different respondents in different geographical locations on a particular subject matter. The population of this study comprised all 671 professional librarians in 20 NUC approved universities in North-western, Nigeria. The universities are conventional and specialized ones. The rationale behind using this category of library personnel is owing to the fact that they provide professional library services.

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 that is by ownership, and at the second stage proportionate stratified sampling was used to select 183 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. Structured questionnaire was used as an instrument for data collection. The questionnaire was self-developed by the researchers and validated by experts in the field of librarianship. Descriptive statistics such as percentages, mean scores and standard deviation and linear regression was used to analyze the data in relation to the research questions.

Results

Research question 1

What is the impact of smart phone technology on information service delivery among university librarians in north-western Nigeria?

Table 1. Impact of smart phone technology on Information service delivery among university librarians in north-western Nigeria

S.N	Mobile Based Library Services	Mean	SD	Decision
1.	Reference Services through the use of smart phone enhanced quick service delivery	3.48	1.244	High
2.	Circulation Services (renew library items on loan, book reservation) will be much faster	2.75	1.284	Low
3.	Notifications/Alerts/SMS (overdue, fines, reminders about books being overdue)	3.21	1.334	High
4.	Providing access to library news, (events, opening and closing hours) will be improved	3.73	1.309	High
5.	It will enhance the provision of access to library databases (e-resources e.g e-books and e-journals)	3.60	1.322	High
6.	Provide a platform for Access to library Mobile Library Online Public Access Catalogue (MOPAC)	3.35	1.197	High
7.	Inter library loan services will be faster and efficient	3.82	1.193	High
8.	Using smart phone to provide Current Awareness Services (CAS) to library users	3.83	1.133	High
9.	The use of smart phone to provide Selective Dissemination of Information (SDI) to patrons is very helpful	3.61	1.148	High
10.	Quick Response Code (QR) service through smart phone bring confidentiality to library patrons	3.37	1.343	High
11.	Provision of Information Literacy services via smart phone acquaint users with library services	3.95	1.036	High
12.	It enhances library guides and tours and access to library maps	3.40	1.354	High
13.	Smart phone provides a platform for the use of social media services(facebook, twitter, WhatsApp, wikis, blogs etc)	4.25	1.034	High

Table 1 showed respondents view on the level of impact of smart phone technologies for information service delivery in university libraries in North West Nigeria. The results showed that majority of librarians in university libraries in North-western Nigeria believed that the use of social media platforms, (Facebook, Twitter, WhatsApp, Wikis, Blogs etc) through smart phone simplify library services. To be specific the result showed that 95(51.9%) and 62(33.9%) of the respondents are of the opinion that the use of social media platforms through smart phone simplify library services respectively with the mean score X= 4.25, SD, 1.034. This might be due to the fact that social media platforms are popular worldwide, it touches all aspects of human endeavours; it allows individuals and organizations to establish relationships and to share information about themselves and their interests with friends, professional colleagues and others by means of public or private profiles.

Whereas, only 18(9.8%) and 44(24%) of the respondents were of the opinion that circulation services are affected by the use of smart phone (loan, and book reservation) with mean score X=2.75, SD, 1.284. This could be due to the fact that, many services rendered in circulation

are no longer relevant to the 21ˢᵗ century users of library, with the proliferation of services like Quick Response Code, Mobile Online Public Access Catalogue, (MOPAC) users can use it for loan and book reservation, Selective Dissemination of Information (SDI) among others.

Research Question 2

What are the skills required of staff to provide library and information services using smart phone technology?

Table 2. Skills requirement for staff to provide library and information services using smart phone technology

	Statements	Mean	Std. Dev	Decision
1.	Skills to operate software applications on smart phones	4.47	.797	Agreed
2.	Skills to navigate the Internet	4.14	.913	Agreed
3.	Skills to evaluate and share electronic information (e-files) through smart phone	4.22	.849	Agreed
4.	Skills to open file e.g PDF, word documents on your smart phone	4.25	.878	Agreed
5.	Skills be able to use e-mail, on smart phone for information service delivery	4.50	.725	Agreed
6.	Attach and send documents on your smart phone	4.26	.917	Agreed
7.	Skills to search, retrieve and disseminate information	4.28	.899	Agreed
8.	Offers online reference services to library users	4.16	1.019	Agreed
9.	Do instant messaging with friends, family and co-workers	4.23	.833	Agreed
10.	Skills to use new media (facebook, twitter, watsapp, snapchat, blog etc)	4.49	.857	Agreed

Source: Field Survey (2019)

Table 2. showed respondents' view on the skills requirement for staff to provide library and information services using smart phone technology in university libraries in North-western Nigeria. The highest mean score of 4.50 with SD .725 was discovered on the item skills to open e-mail, attached and send a file on their smart phones. This could due to the fact that e-mail is one oldest means of Internet communications before the emergence new media platform. Librarians are more familiar with e-mail as means of communication; most librarians admit having one or more e-mail accounts.

The lowest mean score 4.14 and SD .913 was discovered in the item skills to operate software application on smart phones. This implies that librarians find it difficult to operate software applications on smart phones particularly for information service delivery. This is because the benchmark for accepting the decision was set at the mean score of 3, anything below this is rejected

Hypothesis testing

There is no significant relationship between librarians' skills to use smart phone and information service delivery in university libraries in North-western Nigeria

Table 3: Regression analysis of relationship between librarian skills on smart phones and information services delivery

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

The Table 3 showed that the two variables (skills to use smart phone and information service delivery) when combined have 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 librarians' skills to use smart phone and information service delivery in university libraries in North-western Nigeria.

Discussion of Findings

The study found out that librarians in university libraries in North-western Nigeria believed that the use smart phone through social media platforms, (Facebook, Twitter, WhatsApp, Wikis, Blogs etc) could simplify library services. These services according to them, enables libraries to provide information to a person who needs it, directly or indirectly or teaching him how to find the needed information in the sources.

Despite the numerous advantages of smart phone technologies in the daily activities of organizations, individuals and institutions; they are yet to be embraced by academic libraries. Hansaben (2020) in a study opined that the application of mobile phone technology in all aspects of our everyday life 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 them for effective and efficient services. In contrast, however, mobile - based services are not pervasive among academic libraries in Nigeria especially North-western part of the country.

With the proliferation of mobile technologies particularly smart phone recently, it is paramount for librarians to note this development for better service delivery. Haq, et al (2022) conducted a study on Android-Based digital library application development. Digital technology has enabled the dissemination of all types of information, replacing traditional formats with automated systems. As a result of the development of digital technology, the library has also entered a new era, which is then called the digital library era.

In conformity to the findings on impact of smart phone usage in universities in North-western, Nigeria, Panda (2021) in a recent research, reference service using mobile technology in Library. Stated that libraries all over the world are continually reinventing themselves to meet changing community needs and the increasing opportunities and associated challenges that modern and evolving technologies bring. On another side, financial crisis and cutting budget, unavailability of adequate staff, user awareness, etc. are the main issues faces by libraries while try to adopt new technologies for accepting the challenges and issues created by this pandemic. On this point, mobile technology, as an economical affordable technological solution that helps libraries to keep abreast of the dynamically changing needs of their clientele and identify the way of delivering user-centered services by surveying the user needs.

The concept of mobile-based services are relatively wider, scholars conducted many studies. Singh and Ansari (2020) outlined services that can be provided via WhatsApp and these include; Current Awareness Service (CAS), Selective Dissemination of Information (SDI)

reference service, ask a librarian, user discussion forum, document reservation, acquisition feedback, reminders and notifications, library news, mobile collections and reprography service. Traditionally, university libraries were "place based" services with patrons having to physically visit the library for real-time access to librarians and collections. This posed an enormous challenge to the 21st-century users because they live in a highly interactive and networked world which already largely provides for their information needs with no limitation by time and geographical location. To meet these challenges, reference service becomes instrumental as it serves as the medium of interaction between the patrons and libraries.

Access to information on smart phone depends on the ability to operate the technology, the study discovered that librarians admitted having the skills to open e-mail in smart phone, new media skills and the ability to navigate the Internet on their smart phones. These skills and competencies of information providers are relevant in the era of information and communication technology boost, the paradigm shift change the way people sought for information. Gbaje, et al (2018) conducted a study titled essential competencies for effective service delivery in Nigerian university libraries; the study aims to identify types of competencies required by librarians in university libraries and determine how competencies are acquired for effective information service delivery. The study concluded that the vast changing university library environment demands that the librarians in Nigerian university libraries must be someone with multi-skills to enhance effective and efficient library and information service delivery. The academic libraries that can survive in this environment are those that have the ability to deal effectively and proactively to a broad spectrum of contemporary challenges that focus on speed, cost and quality.

In consequence, the librarians working in such libraries need continuous grooming by acquiring core competencies and new skills so that they never become out of date in this fast changing environment. In this context Hamad, et al (2020) stated that digital skills are necessary to work and manage electronic library infrastructures and services. To cushion the effects, Gbaje, et al (2018) itemised technological skills for the 21st century environment as E-mail management skills; Microsoft word (Word Processing Skills); Microsoft Access (Database management skills); Microsoft Excel (Spreadsheet skills); Power point (presentation software); Use of Portable Document Format (PDF) Software; Web Searching Skills; Searching Library Databases; Using an Integrated Library System (Virtual/Alice for Windows etc); Use of Digital Camera for Digitization; Web navigation skills; Teaching others to use technology; File management/operating system navigation skills; Troubleshooting technology; CDROM/ DVD Search; Scanners and similar devices; Creating online instructional materials/products; How to cite and evaluate internet resources; installing software; troubleshoot printing problems; Web design; Instant Messaging; computer security knowledge; Connecting patrons laptop to the library wireless; Blogging; Wiki; Installing printer, scanner and computer systems; Graphic Design; Network management; Computer programming and Creating & updating Institutional OPAC. It is deduced from the above studies, librarians need to enhance their technological skills continually, in order to meet the expectations of users.

With regards to the findings on the relationship between librarians skills to use smart phone and information services delivery. The findings is in line with Dar, (2021) as the researcher reported that being skillful about smart phone adoption for information services delivery by librarians have been seen as the most positive aspect that can lead to the usage of mobile device

for information services offered by university or academic libraries. This findings also corroborates that of Haq, et al (2022) as the researcher observed that mobile technology provides an opportunity for academic libraries to provide access to information services in a much 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

Conclusion

The revolution of smart phone technologies and their impact in the society has made a mark in most operations of the library and information centers today. Emerging technologies like smart phone and social media have become vital alternative to providing library services in an era where libraries are facing challenges of budget cuts and the desire by the 21st century users who prefer having library services readily at hand. The proliferation of smart phone 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 in order to embrace this novelty to better provide information services to their clienteles.

Recommendations

1. Management of university libraries in North-western Nigeria and stake holders should endeavor to advertise the services of smart phones, social media platforms and other technologies to both library staff and users rigorously, systematically and purposefully to create awareness about the potentiality of smart phone technology. This will consequently contribute to the acknowledgement of the library's mandate to support teaching, learning and research in universities in North-West Nigeria

2. The management of university libraries in North-western Nigeria should appoint a member of staff in the library specifically on smart phone, social media and emerging technologies. This person should participate in training both staff and users of the library how to effectively use these emerging technologies. Similarly, the library management should build the capacity of its staff in continuous professional development (CPD) programs to acquire skills required in efficiently operating in 21st century libraries

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