The Influences of Top-management Support and Training on Mobile Technology Adoption by Librarians among Universities in South-west, Nigeria

Dr. Priscilla Abike Agbetuyi

Department of Educational Technology, Bamidele Olumilua University of Education, Science and Technology, Ikere- Ekiti, Ekiti State, Nigeria.

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ABSTRACT

Mobile Technology (MTech) is one of the technologies that have transformed academic librarians' service delivery by providing instant, concurrent and remote access to information resources and services. Despite the growing trend of MTech, low adoption had been reported in Nigerian university libraries. Hence, the study investigated the influences of top-management support and training on MTech adoption by librarians among universities in South-west, Nigeria. The study: identified the various library services provided via MTech; assessed the extent of adoption of MTech; determined the relationship between top-management support and MTech adoption; and examined the influence of training on MTech adoption by librarians among universities in South-west, Nigeria. The study adopted the quantitative research methodology using descriptive survey design of correlational type, with a population of 476 librarians from universities in South-west, Nigeria. Questionnaire was the data collection instrument and validated by experts, and Cronbach alpha reliability coefficient of 0.89 obtained. The research questions were analyzed using descriptive statistics, the hypotheses tested with Pearson Product Moment Correlation at 0.05 level of significance. The study revealed that library service mostly provided through MTech was mobile online public access catalogue (65.8%,$\bar{x}$=0.48), while mobile augmented reality was the least (13.6%,$\bar{x}$=0.34); there was a significant relationship between top-management support and MTech adoption ($r=0.092$, $p<0.05$); and training significantly influenced MTech adoption ($r=0.445$, $p<0.05$). The study concluded that top-management support and training significantly influenced MTech adoption by librarians among universities in South-west, Nigeria, and recommended that the library management and the university management should organize constant training and re-training on mobile applications.

Keywords: Librarians, mobile library applications, mobile technology adoption, training, top-management support, universities, Nigeria.

INTRODUCTION

The entire globe is witnessing rapid technological advancements orchestrated by Information and Communication Technologies (ICTs), impacting almost every area of human engagements, including higher education, while academic libraries are not exempted. Mobile technology is one of the technologies ushered in by the technological advancements of this age for information service delivery by librarians. Mobile technology employs the Code Division Multiple Access (CDMA) platform that is utilized for cellular communication by enabling users to use certain frequencies to prevent interference from other users (Abdullahi & Innocent, 2020). Mobile technology is the technology that allows cellular communications and information transfer through mobile apps and other web-enabled mobile platforms.

In the context of this research, mobile technology adoption is the integration of mobile library applications in providing specialized information services to library users. Mobile technology application in libraries is one of the technological trends which assist librarians to provide information services via mobile technology platforms. Mobile library applications are specialized software with web applications and websites which improve the functionality of mobile devices, providing elegant, uniform methods for accessing information; and allowing for the creation of new services for library users (Panda, 2021). According to Panda (2020), mobile technology

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application plays a key role in the new normal library setting by assisting remote users to reach the library at any time from any location, thereby expanding library services to users. Substantiating this, Panda (2021) further noted that mobile technology application supports several services and routines in academic libraries.

The incorporation of mobile library applications in providing information services is a new direction and popular trend for university librarians as most of their services are being upgraded to mobile-accessible platforms, thus enhancing service delivery in libraries. Some of the services provided via mobile technology are training and consultations in information literacy, the ability to access electronic books and electronic journals, the Bookmyne app, and the Mobile Online Public Access Catalogue (MOPAC) (Matumba & Rajkoomar, 2024).

The adoption of mobile technology varies significantly across continents and countries of the world, as attested to by several scholars (Torres-Pérez, Mendez-Rodriguez & Orduna, 2016; Adekunmisi, Akinbode & Oyedipe, 2017; Acheampong, 2019; Tu & Ming, 2020). Several factors like top-management support and training could predict the adoption of mobile technology by librarians. Top-management support is the extent to which the management of an organisation/institution is willing to provide support to the entire workforce and assist in solving problems within an expected time limit (AbuAkel & Ibrahim, 2023). Top management is enshrined with decision-making power and could approve or disapprove of any technological innovation in the university system. Hence, their position could go a long way in predicting technology adoption.

Training could be another influencer of the adoption of mobile technology by librarians. According to Lysenko and Shporteeva (2021), training is a dynamic process of transferring knowledge, skills, and information and using the knowledge and practical abilities acquired to effectively adapt to changes in the workplace, while creating fresh approaches to professional endeavours that provides the organizations with a competitive edge. Librarians' training and skill enhancement is a critical success factors for seamless implementation of mobile technology to offer digital library services (Awoyemi & Soyemi, 2020). It could be posited that training programmes on mobile technology applications in library services have the capacity of improving the expertise and helping library staff to recognise how mobile technology is closely linked with meeting users' expectations.

Investigations had shown that mobile technology is not fully harnessed for library services and observations during visits to libraries had revealed that librarians may be under-utilizing mobile technology platforms in the delivery of service to users. Furthermore, it had been observed that academic libraries in developing countries like Nigeria and South-west in particular are yet to fully harness the potentials that mobile technology has brought. The previous studies established that most university libraries focused on very few services offered via mobile technology applications. Low implementation was also recorded in previous studies carried out in Africa. In addition, studies (Agbetuyi & Isah, 2021; Acheampong, 2019) reported low level of adoption mobile technology for library services in African countries generally. Therefore, there is the need to ascertain the influences of top-management support and training on the adoption of mobile technology by librarians among universities in South-west, Nigeria. The study was set to identify various library services provided via mobile technology among universities in South-west, Nigeria, and examine the extent of adoption of mobile technology by librarians among universities in South-west, Nigeria.

Research Questions

The study was guided by the following research questions:

- What types of library services are provided via mobile technology among universities in South-west, Nigeria?
- What is the extent of adoption of mobile technology by librarians among universities in South-west, Nigeria?

Hypotheses

The following null hypotheses were tested at $\alpha = 0.05$ level of significance,

- There is no significant relationship between top-management support and mobile technology adoption by librarians among universities in South-west, Nigeria.

- There is no significant influence of training on mobile technology adoption by librarians among universities in South-west, Nigeria.

LITERATURE REVIEW

Mobile technology adoption in academic library services

Mobile technology is one of the emerging technologies in library services allowing concurrent and simultaneous communication and transfer of information between librarians and users via specialised mobile-apps, programs and websites, and other web-enabled mobile platforms. Mobile technology adoption is the integration of mobile library applications in providing digital information services to end users. Mobile technology adoption had been described by Jimoh and Yusuf (2023) as the utilization of mobile technology platforms for offering innovative and electronic information services to library users; thus enabling librarians to re-pattern their information services in line with the new digital revolution.

Mobile technology platforms that enable librarians to mediate with users are mobile library applications through which users connect via their web-based devices. Usman, Ibrahim, and Salihu (2020) described mobile applications (mobile-apps) as a set of programs that are designed to run on mobile devices to perform specific tasks for users. Mobile library apps have been described by Singh and Madhusudhan (2023) as a form of "mobile software application" that gives users remote access to library collections and services on mobile devices. According to the authors, these applications provide support for library services in several ways through mobile SMS-based library services, mobile library websites, mobile databases in libraries, mobile quick response codes in libraries, and mobile reference services.

Library services via mobile technology

University libraries are set up with the responsibility of providing information resources and services to lecturers, students, and researchers to support teaching, learning, and research activities in universities. Notable among the information services rendered by librarians to their patrons in university libraries are reference service, information literacy service, library instruction, provision of reading and studying facilities, and provision of print and electronic information resources (Aina, 2004). Asare and Holmer (2021) identified SMS notification service, e-resources with mobile interfaces, mobile online public access catalogue (MOPAC), library virtual/audio tours, library instructions on mobile and mobile learning, mobile reference services, and overdue notifications.

Khomo, Naicker, and Chisita (2023) noted that ask-a-librarian service is being offered on the mobile digital library, Acheampong (2019) spelt out some services like library catalogue search, viewing upcoming events, making a reservation for library facilities, texting for reference inquiries, and renew checked out items, while Mansouri and Soleyman (2019) revealed that mobile OPAC, circulation service, ask-a-librarian, mobile collections and databases, mobile library tour and instructions, and renewal services were some of the services offered via mobile technology. These services are not entirely new, but an upgrade of existing services that create unique users' experience and virtual interactions between librarians and library patrons.

Top-management support and mobile technology adoption by librarians

Top-management support refers to the extent of support provided by the management for new technological innovation (Haneem, Nazri, Nazim, David & Nur, 2019; AbuAkel & Ibrahim, 2020). Top-management had been described as a germane determinant in the successful adoption and implementation of new technology in an organisation (Mohtaramzadeh et al., 2018; AbuAkel & Ibrahim, 2020). Support from institution had been described as the provision of resources, structures, and procedures by the management or government or other bodies to enhance the success, development, and operation of individuals, groups, and different innovations in the organisation (Hefferman & McKay, 2019).

Empirical evidences strongly supported the influence of top-management support on mobile technology adoption. Abdekhoda et al. (2018) study on the academic librarians' integration of mobile technology in a library environment by using 120 academic librarians revealed, among other factors, that management support was a

strong determinant factor in integrating mobile technology in a library setting. Kumar and Adeyemi (2019) averred that adequate support from the parent body for the digital revolution is necessary for successful technology adoption. Soyemi and Awoyemi (2021a) investigated individual and organizational characteristics, the study utilized a survey research design and self-designed questionnaire, which were validated by researchers and administered to 234 college library personnel. It was revealed from the study's findings that there exists a positive influence of management style towards the integration of mobile library solutions to provide digital information services among librarians in the studied Colleges of Education libraries in Southwest, Nigeria. In essence, the significance of top-management support for successful mobile technology adoption had been demonstrated through the study.

Training and mobile technology adoption by librarians

Training is another organizational factor that could predict mobile technology adoption decisions. According to the Oxford Advanced Learner's Dictionary (2006), training is the action of teaching a person a particular skill or type of behaviour. Training is the process of undertaking a course of skills through practice and instruction over some time. Training of staff could also serve as positive reinforcement towards adoption by opening up their initiatives to new ways of handling services and routines. Potnis, Regenstreif-Harms and Cortez (2016), identified training as a key step in the development of mobile library applications and mobile library websites. This suggests that training will open staff initiatives to new ideologies and dimensions of mobile technology use.

Hamad et al. (2018) investigated the recognition and uptake of mobile technology-enhanced services in Jordanian academic libraries, the study assessed the level of awareness and adoption among others. By using a questionnaire to elicit responses from 121 library staff across 10 public universities. Staff training on mobile technology was reported to be a necessary consideration for successful adoption. Alluding to this, Dei (2020) study revealed that the training of librarians was an integral part of the adoption success as lack of requisite training and necessary skills on mobile technology was a factor hindering the full adoption and deployment of mobile technology for librarians' use in information service delivery. The study emphasized and spelt out the role of staff training to appreciate and support the full deployment of mobile technology.

METHODOLOGY

The study employed a quantitative research methodology using the descriptive survey research design. The population of the study consisted of all librarians from Federal, State and Private universities in South-west, Nigeria. There were 476 librarians as at the time of this study which were all selected purposively for the study. Questionnaire was the data gathering instrument and the face and content validity were ascertained by experts in the field of librarianship. A reliability test was also conducted outside the study's scope using split-half method, and a coefficient of 0.89 was obtained. Data were collected by the researcher and trained research assistants within a space of three months, out of 476 copies of questionnaire distributed, 404 copies were returned and found useful, giving a response rate of 85% (see Table1). The research questions were analyzed using frequency, percentages, mean and standard deviation, while the hypotheses were tested with Pearson Product Moment Correlation with the aid of SPSS software and all ethical considerations were duly followed.

Table 1: Response Rate on the Copies of Questionnaire Administered

S/N	Universities by Ownership	Copies of a questionnaire distributed	Copies of questionnaire Retrieved
1	Federal	124	104
2	State	145	129
3	Private	207	171
	Total	476	404
	Response Rate (%)	85%	

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RESULTS

Research question 1: What types of library services are provided via mobile technology among universities in South-west, Nigeria?

Table 2 presents an analysis of results on the types of library services provided via mobile technology among universities in South-west, Nigeria

Table 2: Library services provided via mobile technology among universities in South-west, Nigeria (n=404)

S/N	Services via Mobile Technology	Used	Not Used	Std. Dev.	Mean
1	SMS notification services	128(31.7)	276(68.3)	1.68	0.47
2	Multimedia messaging service(MMS)	234(57.9)	170(42.1)	1.42	0.49
3	Mobile Augmented Reality	55(13.6)	349(86.4)	1.86	0.34
4	Quick Response (QR) codes on mobile	194(48.0)	210(57.0)	1.52	0.50
5	Selective dissemination of information	164(40.6)	240(59.4)	1.59	0.49
6	Current Awareness Service (CAS)	92(22.8)	312(77.2)	1.77	0.42
7	Mobile reference service	71(17.6)	333(82.4)	1.82	0.38
8	Mobile library tour	71(17.6)	333(82.4)	1.82	0.38
9	Mobile instructions	71(17.6)	333(82.4)	1.82	0.38
10	Mobile collections and databases	107(26.5)	297(73.5)	1.74	0.44
11	E-mail services	94(23.3)	310(76.7)	1.77	0.42
12	Mobile Online Public Access Catalogue (MOPAC)	266(65.8)	138(34.2)	1.34	0.48
13	Ask-A-Librarian	71(17.6)	333(82.4)	1.82	0.38
14	Frequently Asked Questions (FAQ)	168(41.6)	236(58.4)	1.58	0.49

Table 2 shows the types of library services provided via mobile technology in South-west universities, in Nigeria. As revealed from the findings, the most famous service provided through mobile technology is the Mobile Online Public Access Catalogue (65.8%; $\bar{x}$ 0.48). This is followed by multimedia messaging services with (57.9%; $\bar{x}$ 0.49). Next to this is QR Codes (48.0%; $\bar{x}$ 0.50). Following this is FAQ (41.6%; $\bar{x}$ 0.49) and SDI (40.6%; $\bar{x}$ 0.49). The last service provided using mobile technology is Mobile Augmented Reality (13.6%; $\bar{x}$ 0.34).

Research question 2: What is the extent of adoption of mobile technology by librarians among universities in South-west, Nigeria?

Table 3 presents an analysis of the extent of adoption of mobile technology by librarians among universities in South-west, Nigeria.

Table 3: Extent of adoption of mobile technology by librarians among universities in South-west, Nigeria (n=404)

S/N	Extent of Adoption of Mobile Technology by Librarians	HA	MA	A	NA
1	SMS notification services	232(57.4)	101(25.0)	71(17.6)	0(0)
2	Multimedia messaging service (MMS)	43(10.6)	116(28.7)	45(11.1)	200(49.5)

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3	Mobile augmented reality	19(4.7)	115(28.5)	20(5.0)	250(61.9)
4	Quick Response (QR) codes on mobile	56(13.9)	170(42.1)	20(5.0)	158(39.1)
5	Selective dissemination of information	133(32.9)	93(23.0)	20(5.0)	158(39.1)
6	Current Awareness Service (CAS)	169(41.5)	84(20.8)	54(13.4)	97(24.0)
7	Mobile reference service	169(41.8)	130(32.2)	34(8.4)	71(17.6)
8	Mobile library tour	150(37.1)	129(31.9)	20(5.0)	105(26.0)
9	Mobile instructions	83(20.5)	180(44.6)	36(8.9)	105(26.0)
10	Mobile collections and databases	131(32.4)	122(30.2)	46(11.4)	105(26.0)
11	E-mail services	173(42.8)	98(24.3)	62(15.3)	71(17.6)
12	Mobile OPAC (MOPAC)	182(45.0)	105(26.0)	83(20.5)	34(8.4)
13	Ask-A-Librarian	233(57.7)	100(24.8)	71(17.5)	0(0)
14	Frequently Asked Questions (FAQ)	128(31.7)	171(42.3)	105(26.0)	0(0)

Key - HA: Highly Adopted; MA: Moderately Adopted; A: Adopted; NA: Not Adopted

Table 3 shows the extent of adoption of mobile technology by librarians among universities in South-west, Nigeria. As revealed by the results, ask-a-librarian 233(57.7) was the highly adopted technology for information service delivery followed by SMS notification services 232(57.4) and this was followed by Mobile OPAC 182(45.0). It could be deduced that ask-a-librarian, SMS notification services, and Mobile OPAC were the highly adopted technologies for information service delivery. However, mobile augmented reality was the least adopted for information service delivery.

Hypothesis 1: There is no significant relationship between top-management support and mobile technology adoption by librarians among universities in South-west, Nigeria.

Table 4 presents an analysis of the relationship between top-management support and mobile technology adoption by librarians among universities in South-west, Nigeria.

Table 4: Relationship between top-management support and mobile technology adoption by librarians among universities in South-west, Nigeria. n=404

Variables	**Mean**	**St. Dev**	**Df**	**R**	**P**	**Sig**
Adoption of Mobile Technology	37.55	12.69	402	0.092	0.000	Sig
Top Management Support	27.36	7.39				

Table 4 shows the relationship between top-management support and mobile technology adoption by librarians among universities in South-west, Nigeria. The finding reveals that top management support ($r = 0.092$; $p<0.05$) has a linear relationship (though not statistically significant) with the adoption of mobile technology by librarians among universities in South-west, Nigeria. This implies that a linear relationship exists between top management support and the adoption of mobile technology by librarians among universities in South-west, Nigeria. Hence, the null hypothesis is not upheld.

Hypothesis 2: There is no significant influence of training on mobile technology adoption by librarians among universities in South-west, Nigeria.

Table 5 presents an analysis of the influence of training on mobile technology adoption by librarians among universities in South-west, Nigeria.

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Table 5: Influence of training on mobile technology adoption by librarians n=404

Variables	Mean	St. Dev	Df	R	P	Sig
Adoption of Mobile Technology	37.55	12.69	402	0.445	0.000	Sig
Training	22.48	4.05				

Table 5 shows the influence of training on mobile technology adoption by librarians among universities in South-west, Nigeria. The finding reveals that training ($r = 0.445$; $p < 0.05$) have a statistically significant positive relationship with the adoption of mobile technology by librarians among universities in South-west, Nigeria. This implies that there is a positive influence of training on the adoption of mobile technology by librarians among universities in South-west, Nigeria. Hence, the null hypothesis is not upheld.

DISCUSSION OF THE FINDINGS

The findings of research question one indicated that library service mostly provided in South-west university libraries on mobile technology platforms is mobile online public access catalogue (MOPAC) while mobile augmented reality is the least. The findings of the study is in tandem with that of Chapatula and Mutula (2019) who reported e-journals, mobile OPAC and SMS services as services provided via mobile technology platforms in the studied libraries. The findings is in tandem with that of another study by Acheampong (2019) who revealed that librarians were willing to adopt mobile reference enquiries, mobile SMS, mobile academic databases, MOPAC, mobile electronic books, mobile collections, mobile academic databases, e-journals, digitised dissertations, thesis, books reservation and renewal of books borrowed, virtual tours and mobile SNS for service delivery in the studied libraries.

In terms of the extent of librarians' adoption of the technologies, the findings of research question two revealed that Ask-a-librarian, SMS notification services and Mobile OPAC are the highly adopted technologies for information service delivery. The findings of Mansouri and Asl (2019) who reported that ask-a-librarian, database search and library hours were the most essential components of mobile technology adopted for service delivery lend credence to this study. These findings also corroborate that of Hassan et al. (2017) who reported low extent of mobile technology adoption, however with the exception of the highly adopted SMS notification service in the studied library.

The outcome of hypothesis one revealed the existence of a linear relationship between top-management support and the adoption of mobile technology for information service delivery by librarians among universities in South-west, Nigeria. The result is in tandem with that of Al-Mamary and Shamsuddin (2015) who discovered that top-management was statistically significant with technology acceptance. Also, the findings of Matumba (2021), which reported that global trends, university management support and COVID-19 encouraged academic librarians' adoption of mobile technology in the studied libraries lend credence to this study.

The result of hypothesis two revealed that there is a statistically significant positive relationship between training and the adoption of mobile technology for information service delivery by librarians among universities in South-west, Nigeria universities. The finding is in agreement with that of Acheampong and Dei (2020) who revealed that librarians' training significantly influenced the effective delivery of mobile technology-based library service. The outcome of the study by Awoyemi and Soyemi (2020) which revealed high proficiency levels of librarians in implementing mobile technology due to the high level of training they had received also lends credence to this study.

CONCLUSION AND RECOMMENDATIONS

The study concluded that top-management support and training significantly influenced mobile technology adoption by librarians among universities in South-west, Nigeria. However, training was the highest predictor. It was recommended that University management and heads of libraries should organize constant training and re-training programmes for librarians to be able to navigate mobile library applications and fully exploit its

potentials in the provision of information services and, at the same time, provide the necessary support for full adoption of mobile technology. It is anticipated that the study's outcome would be beneficial in several ways to many stakeholders (policymakers, university management, practicing librarians, and researchers) in the library and information sector. The study has contributed substantially to the body of knowledge by establishing the influences of training and top-management support on mobile technology adoption by librarians among universities in South-west, Nigeria. Furthermore, the study also contributes to existing local and international discourse on the influencers of mobile technology adoption by librarians, thus expanding the frontiers of knowledge.

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Declaration of Conflict

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