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*Full Length Research Paper*

# Smart phone use among academic librarians in a state University library in Nigeria

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This study investigated how academic librarians in Olabisi Onabanjo University (OOU) Library, Nigeria used smart phones to embrace academic library services and routines. Questionnaire method was employed to collect data for the study. The data were analysed using descriptive statistics and analysis of variance (ANOVA). The study revealed that the academic librarians of the university had and used smart phones for personal and official purposes, though the use for personal activities were more pronounced than for library services. The study further revealed that status of the academic librarians does not influenced smart phones use amongst other findings. Many recommendations were proffered amongst which were adoption of mobile technology for library applications and services as well as adoption of smart phone use by academic librarians to offer and enhance library mobile services and routines.

**Keywords:** Academic Librarians, Academic Libraries, Nigeria, Smart phone use.

## INTRODUCTION

Library services worldwide have changed with the transformations in information and communication technologies (ICTs). Academic libraries and their services have also been influenced in many ways due to the several transformations in ICTs, for instance, automation, electronic library, digital library, virtual library, Web 2.0, Library 2.0, and Library 3.0 and beyond. These transformations have constantly challenged academic librarians in terms of services, roles, responsibilities, skills and competencies. The concepts, electronic libraries and web-based applications have facilitated ubiquitous library services by librarians by making resources and services available anytime, anywhere and anyhow to library users. With mobile devices and applications, vast amount of changes are generated in facilitating communication and transfer of information from business to business, business to customers, employers to employees and so on and in providing more added value services

(Steenderen, 2002). Smart phones being good example of mobile devices or technology have made communication and access to information very convenient, cheap and timely to users.

The use of smart phones is increasingly widespread among individuals - students (elementary, secondary and higher education), university staff, and other categories of workers, old people and even the illiterates. Statistics from (Synovate, 2009; NPD Group, 2009) and some other researchers like Abdul-Karim, Darus and Hussin (2006) and Bridges, Rempel and Griggs (2010) provided a general estimate of the current popularity of smart phones. Smart phones technology have made communication and access to information very convenient and timely to the users from the comfort of their homes and offices, and from where ever they are while on the move using their cellular phones or the personal digital assistants (PDAs) (Batool and Asghar, 2012). The device enables access to information without limitations of space and time (Aharony, 2013). At present, almost every student studying in tertiary institutions owns

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a mobile phone. They are using it to access information for personal, academic, entertainment and other purposes. These have implications for Nigerian academic librarians to be fully equipped with technology and web skills to effectively use smart phones, train users and handle challenges that are likely to emerge. This is important because prospective users might find alternative mobile-friendly websites, services and devices to satisfy their various needs for information if librarians are not proactive.

Academic librarians elsewhere, that is, in the developed countries have used wireless or mobile technology to offer many new possibilities such as for accessing information from online catalogues, online databases, the Internet and virtual libraries and many other library services. They have also used the short message services (SMS) applications to disseminate library information to users, communicate with library users, library vendors and university administrators for library related purposes and issues. It is important therefore that Nigerian academic librarians get acquainted with the use of the wireless technology, especially, the smart phones to effectively promote ubiquitous library services. It is also important for them to train library users how to use effectively their smart phones to accomplish academic and research excellence. This research therefore sets out to examine smart phone use among academic librarians in Olabisi Onabanjo University (O.O.U.), Nigeria. It discusses mobile phone penetration in some other countries and Nigeria. The concept of smart phone and its relevance to the university systems and academic libraries are discussed. Empirical data on ownership of smart phones by academic librarians, extent of use for academic library services and their statistical relationships are provided to add to literature and research in these aspects. Suggestions and conclusion are however provided.

## LITERATURE REVIEW

The number of mobile phone users has increased at an exponential rate over the past several years. Mobile phones are now used in most regions throughout the world. They have gone from a 5 percent worldwide penetration rate ten years ago to an estimated 61 percent penetration rate in 2008 (International Telecommunication Union (ITU), 2009). Mobile phone subscriptions have been estimated at 4 billion, than landlines estimated at 1.3 billion (ITU, 2009). Its subscriptions have skyrocketed in USA and Canada. Many countries such as El Salvador, Venezuela, Guatemala, and Panama and African countries like, South Africa, Gabon, Armenia, Russia, Malaysia, and Thailand have outpaced USA and Canada (Bridges et al, 2010). This implied that mobile phone technology has spread and allowed developing countries to jettison the

challenges of creating landline infrastructures while providing people with quick and easy access to information and at cheaper rate. In Nigeria, mobile phone use has reached a stage where individuals aged 15 upwards use one or more different types of smart phones at the same time. Before discussion on applications and uses of smart phones for library services, it is important to describe what smart phones are.

Smart phones or web-enabled phones are an example of mobile phones and refer to several brands of phones including the Blackberry, iPhone, and the Palm Treo and so on that are networked, portable and handheld. They are different from a dummy or feature phone. There is no industry-standard definition of smart phone but Bridges et al. (2010) compiled a list of comparison of smart phone from a featured phone. To them, smart phones essentially have larger screens; synchronises with computer; have full (miniature) typewriter keyboards referred to as QWERTY keypads; may have touch-screen capabilities and may run on an open operating system (for example, the Android phone by Google runs on Linux OS). They have applications that can be downloaded; full web browser (able to access any web site), uses 3G networks for faster connectivity and have more powerful processors (Bridges et al., 2010). All these features and functions are not possible with feature phones.

Various applications which ranged from telephone conversation and simple text messages to multimedia messaging services, Internet facilitated (for instance, opera, mozilla, Internet explorer, online games, whatsapp, facebook, instagram and so on) and non-Internet facilitated (for instance, flash share, phone games, settings and so on) applications have been observed and used among smart phones users. The functionality of these applications depended on the services and capability of each smart phone technology. These applications have been made possible through various developments in mobile phone technology such as General Packet Radio Service (GPRS), wireless application protocol (WAP) and the third generation (3G) standard (Abdul-Karim et. al., 2006) and 4G. 3G allows high-speed broadband access to data services, such as the web and e-mail, via mobile devices (Gaylord, 2009). Before 3G systems are the 2G mobile phones which could not handle both voice and data over the networks. Gaylord (2009) explained that a basic 2G phone downloads a song at 144 kilobits per second which requires several minutes while the 3G phone downloads over 2,000 kilobits per second, making it faster and more efficient. Gaylord (2009) stated further that the 4G phones simply means faster than 3G and are 10-50 times faster than a 3G phone.

The widespread use of mobile phone technologies as compared to the use of personal computers can be clearly seen across all walks of life. The applications of wireless communication services have penetrated the

educational sector thus, improving teaching, learning, research and information delivery services. The use is widespread among students of higher institutions of learning. Such widespread use has provided opportunities for institutions and businesses to apply the technology for commercial as well as for educational purposes. Many higher education institutions have reported continuing importance of mobile devices for students. Institutional survey reports, such as, *Informing Innovation at Ohio University and University of Minnesota's Twin Cities 21<sup>st</sup> Century students*, found that large majorities of students owned hand-held or portable devices such as laptops, cell phones, and iPods (Booth, 2008, 2009; Walker and Jorn, 2009). The University of Minnesota study found that the percentage of students who owned or aspired to own smart phones jumped dramatically from 2007 (Walker and Jorn, 2009).

The ECAR study of undergraduates' use of information technology (2009) found that about half of the respondents (51.2%) indicated that they owned an Internet-capable handheld device. Another 11.8% indicated that they planned to purchase one in the next 12 months (Smith, Salaway and Caruso, 2009). Further, the ECAR survey indicated that nearly two thirds of administrators understood that mobile devices with Internet capability have become essential tools for higher education (Pirani and Sheehan, 2009). The Association of College and Research Libraries' (ACRL) Research and Planning Review Committee (2010) cited the explosive growth of mobile devices and applications as a driver of new services for academic libraries (Barnhart and Pierce, 2011). In a tabular illustration, Abdul-Karim et. al. (2006) presented six (6) universities in Malaysia that provided various wireless phone based services. The summary of the services provided by these institutions included examination results, students' intake information, account balance, course registration, class schedule, lecturer and course, date and venue of examinations and help desk. Other services were result for continuing education, appeal, result for pre-accommodation, directory, news, complaints, polling, job posting alerts and general information dissemination. The list however did not indicate any of the services provided by libraries. The university library, as a central organ in providing information to the university community, is expected to face service transformation as experienced by various other services in the educational field. Many library services are potential targets for this different mode of services delivery. Abdul-Karim et. al. (2006) indicated that smart phones presented libraries and librarians with the opportunity of checking records of books borrowed; sending alerts on overdue books and outstanding fines; sending reminders to return library items that will be due soon and renewing library items. Further opportunities in the area of library circulation services included, reference enquiry services, sending text alerts on new resources on the library web site, sending alerts on library event

information, getting information from the library OPACs/databases as well as contacting librarians for help. Hahn (2008) wrote that mobile devices constituted an opportunity for crafting new library services such as in-library exploration, social engagement, outreach to traditionally underserved populations as well as micro-instruction and learning. Lippincott (2010) in her article on mobile future for academic libraries noted that as smart phones have become library users' key information devices, libraries should strategies to have a significant presence in offering content and services suitable for these devices.

A variety of studies have been conducted on handheld devices and their impact on library services. Several researchers have also studied the use of library materials by handhelds. Notable examples include those of Evans, 2006; Duncan, 2006; Good, 2007; Spires 2008 and Cummings, Merrill and Borelli, 2010. Parker (2007) investigated use of SMS by 50 libraries from all over the world with websites in English language. It was found that libraries mostly used the technology for circulation purposes while just a few librarians used it as a reference service. Spires (2008) surveyed 766 librarians on their use of handhelds and their perceptions of use by library patrons and indicated that current demand is fairly limited noting that most reported uses indicated greater use of electronic organizer type functions than accessing library related content. Of library-related functions, those which were reported with greatest frequency were catalogue access, reading documents, database access, and accessing ready reference materials. Spires (2008) further noted that much of the content patrons desired to be accessible on a handheld came with substantial additional costs to the libraries while acknowledging that demand for access to library resources on handhelds was low as at the time the survey was conducted.

Cummings et. al. (2010) conducted a survey to better understand the nature of handheld mobile computing use by academic library users and to determine whether there is a significant demand for using the library services with these small screen devices. The study found that 58.4% of respondents who owned a web-enabled handheld device indicated that they would use small screen devices, such as PDAs or web-enabled cell phones to search a library OPAC. Barnhart and Pierce (2011) asserted that the increasing use of mobile devices had impacted higher education and academic libraries have responded in a variety of ways, such as by creating mobile web sites and adding text messaging reference services. Some vendors have responded as well, by providing tools and content that can be used with mobile devices (Barnhart and Pierce, 2011). The increasing trends in mobile learning in higher education and developments in mobile computing devices have led to new types of learning, research, and instruction. It is thus vital that academic librarians prepare for the unique opportunities and challenges that will emerge from the

combination of mobile patrons, mobile content, and increasingly mobile librarians.

In addition, Aharony (2013) in a study of librarians' attitudes toward mobile services found no significant difference between age of librarians and smart phone use for library services among the librarians surveyed using MANOVA statistics. The study however found a significant relationship between gender of the librarians and smart phone use for library mobile services. Weimer (2010) found that while other sectors have realised the importance of SMS, librarians have been slower to recognise its benefits in extending library services at a very low cost. In Asian countries, use of SMS in providing library information services was not very common despite large majority of cellular phone subscribers (Weimer, 2010). Batool and Asghar (2012) in a study of mobile phone text messaging use among university librarians in Lahore City found that majority of the librarians used SMS to connect with friends and relatives or for entertainment purposes. They rarely used SMS to communicate with library users, professional colleagues and administrators.

With many institutions aiming to position themselves at the forefront of tertiary education in the 21st Century, it is inevitable that mobile solutions will be the best access point in providing convenience to the modern campus. This can be done by extending the service delivery channels from PC to mobile devices via SMS, and through WAP over GSM, GPRS, 3G and 4G technologies. This has implications for Nigerian academic libraries and academic librarians to devise strategies to have their services where users are. For instance, with mobile phones use, library users can now renew books or pay fines for overdue loans without stepping into the library as long as they move about or carry their mobile phones. This calls for a high level of technology skills, web technology competencies, library management competencies, library collection competencies, and digital literacy and information literacy skills from academic librarians. Competencies in these skills will assist academic librarians train users to effectively use smart phone technologies and applications to access academic library electronic services and resources. They will also be able to use the various electronic media to use the avalanche of web-based applications and services to promote library services and help patrons satisfy their various needs for information.

This has implications for Nigerian academic libraries and librarians to be well-equipped to handle further challenges that will emerge as a result of these fast paced transformative technologies, otherwise prospective users will go elsewhere or find alternatives in satisfying their needs for information. Academic librarians in the developed countries have used wireless technology to offer many new possibilities such as for accessing information from online catalogues, online databases, the Internet and virtual libraries and so on. Little is known

about how Nigerian academic librarians have used mobile devices to handle traditional academic library services and electronic services to their patrons (students, academic, non-academic staff and other members of the university community). Hence, the need to investigate how academic librarians in Olabisi Onabanjo University (O.O.U), Nigeria use smart phones to embrace academic library services and routines.

### **Statement of the problem**

Currently, almost every student studying at tertiary institutions owns a smart phone. Studies have established that this trend will continue at a rapid rate. Library patrons especially university students will continue to make extensive use of smart phones for day-to-day learning in preference to laptops or computers to access and download information, especially, learning and research materials; record lectures; general knowledge and other personal uses. Similarly, academic staff will use their smart phones to access and download information from the various electronic and scholarly databases to conduct and publish their research findings. It behoves on Nigerian academic librarians to know how patrons use the web on their phones to access library resources and services and other information for personal consumption. It is also important for them to have phone skills, web skills, library collection competencies and library management skills. Competencies in these aspects will assist them design mobile library services that go along with mobile or hand held devices to use and access library resources anyhow, anytime and anywhere. They also need the skills to be able to strategies to handle challenges that are likely to arise as a result of these fast-paced mobile transformative technologies; otherwise, prospective library users will look elsewhere for information to satisfy their various needs. It is against this background that this study intends to critically examine smart phone use among academic librarians in O.O.U., Nigeria for library services.

### **Objectives of the study**

The specific objective of this study is to examine smart phone use among academic librarians in Olabisi Onabanjo University, Ogun State, Nigeria for library services. In view of this, the study intends to:

- i. find out ownership status of smart phones among academic librarians in O.O.U.;
- ii. identify purpose of use of smart phones among academic librarians in O.O.U.;
- iii. identify the frequency of use of smart phone among academic librarians in O.O.U.;
- iv. find out if ownership of smart phone will influence

TABLE 1 DISTRIBUTION OF RESPONDENTS BY SEX

Gender	Frequency	%
Male	5	45.5
Female	6	54.5
<b>Total</b>	<b>11</b>	<b>100.0</b>

TABLE 2 DISTRIBUTION OF RESPONDENTS BY STATUS

Status	Frequency	%
Librarian II	4	36.4
Librarian I	4	36.4
Senior Librarian	1	9.1
Principal Librarian	2	18.2
<b>Total</b>	<b>11</b>	<b>100.0</b>

TABLE 3 DISTRIBUTION OF RESPONDENTS BY AGE GROUP

Age (yrs)	Frequency	%
36-40	1	9.1
41-45	1	9.1
46-50	5	45.5
51-55	4	36.4
<b>Total</b>	<b>11</b>	<b>100.0</b>

TABLE 4 DISTRIBUTION OF RESPONDENTS BY OWNERSHIP OF SMARTPHONE

Years of experience of smart phone use	Frequency	%
1-2 years	2	18.2
3-4 years	1	9.1
Over 5 years	8	72.7
<b>Total</b>	<b>11</b>	<b>100.0</b>
Number of Smartphone		
1	9	81.8
2 or more	1	9.1
None	1	9.1
<b>Total</b>	<b>11</b>	<b>100.0</b>
Ownership of Smartphone		
Yes	10	90.9
No	1	9.1
<b>Total</b>	<b>11</b>	<b>100.0</b>

it use for library services;

v. examine if status of academic librarians will influence smart phone use for library services;

vi. investigate if gender of academic librarians will influence smart phone use for library services.

### Research Hypotheses

The study will test the following hypotheses at 0.05 level of significance:

**Ho<sub>1</sub>**: Ownership of smart phones by academic librarians will influence smart phone use for library services.

**Ho<sub>2</sub>**: Gender of academic librarians will influence smart

phone use for library services

**Ho<sub>3</sub>**: Status of academic librarians will influence smart phone use for library services.

### METHODOLOGY

The study adopted the descriptive survey design method. The target subjects of the study were the academic librarians in Olabisi Onabanjo University. A thirteen (13) item questionnaire designed by the researchers was used to gather data for the study. Information sought from respondents included demographic data, ownership of smart phones, years of experience of smart phone use; nature of use of smart phones and constraints in smart

**TABLE 5** DISTRIBUTION OF RESPONDENTS BY PURPOSE OF USE OF SMART PHONES

Purpose of use of smart phones	Yes		No	
	Freq	%	Freq	%
Searching and downloading information for official use	10	90.9	1	9.1
Viewing other library contact information	8	72.7	3	27.3
Uploading and searching library catalogues	7	63.6	4	36.4
Checking and sending e-mails for official use	7	63.6	4	36.4
Searching library databases	7	63.6	4	36.4
Uploading library e-resources	7	63.6	4	36.4
Teaching information literacy programmes	7	63.6	4	36.4
Teaching how to use phones and other media	6	54.5	5	45.5
Social networking for library related issues	5	45.5	6	54.5
Professional networking	5	45.5	6	54.5
Displaying library contact information	5	45.5	6	54.5
Chatting online with users	5	45.5	6	54.5
Virtual reference services	4	36.4	7	63.6
Calling, receiving and sending SMS to library contractors	3	27.3	8	72.7
Calling, receiving and sending SMS to library users	3	27.3	8	72.7
Reference enquiry activities	3	27.3	8	72.7
Sharing content with users	3	27.3	8	72.7
Announcing library news	2	18.2	9	81.8
Selection, ordering and purchase of library books	2	18.2	9	81.8
Selection, ordering and purchase of serial publications	2	18.2	9	81.8
Web-based subject guides	2	18.2	9	81.8
Cataloguing and classifying library books	2	18.2	9	81.8
Advertising library products	2	18.2	9	81.8
Requesting items through interlibrary loan services	1	9.1	10	90.9
Cataloguing and classifying serials publications	1	9.1	10	90.9
Book lending activities	-	-	11	100.0
Calling, receiving and sending SMS to friends and family	11	100.0	-	-
Calling, receiving and sending SMS to colleagues	11	100.0	-	-
Searching and downloading information for personal use	11	100.0	-	-
Checking and sending e-mails for personal use	11	100.0	-	-
Listening to music	11	100.0	-	-
Individual study and research	10	90.9	1	9.1
Information and knowledge sharing among colleagues	10	90.9	1	9.1
Reading e-content	9	81.8	2	18.2
Getting information on participation in library conferences, seminars and workshops	8	72.7	3	27.3
Watching films	8	72.7	3	27.3
Playing online games	6	54.5	5	45.5
Electronic banking services	5	45.5	6	54.5
Videos communications	4	38.4	7	63.6
Personal shopping	3	27.3	8	72.7

phones use. Thirteen (13) copies of the instrument were administered but only eleven (11) could be retrieved. This constituted 85% response rate. All the instruments were found useable. The data gathered were collated and analysed using frequency counts, simple percentages, descriptive statistics and analysis of variance (ANOVA)

## RESULTS AND DISCUSSIONS

This sub-section presented the results of the analysis in line with the objectives and research hypothesis formulated for the study in order to make valid conclusion.

Table 1 presented the distribution of respondents by sex. According to the result of the analysis, 5(45.5%) of the respondents were male and 6(54.5%) were female. This indicated that majority of the respondents were female.

Table 2 showed that greater percentage of the respondents were Librarian II 4(36.4%) and Librarian I 4(36.4%). Others were Principal Librarians 2(18.2%) and a Senior Librarian (9.1%).

Table 3 presented the distribution of respondents by age group. The table indicated that majority of the academic librarians (81.9%) were between 46-55 years of age while 2(18.2%) were between the age group 36-45.

**TABLE 6** DISTRIBUTION OF RESPONDENTS BY FREQUENCY OF SMART PHONE USE

Frequency of use of smart phones for Library services	Never	Rarely	Occasionally	Frequently	Always
	%	%	%	%	%
Calling, receiving and sending SMS to friends and family	-	-	-	27.3	72.7
Calling, receiving and sending SMS to colleagues	-	-	-	36.4	63.3
Calling, receiving and sending SMS to library contractor	54.5	18.2	9.1	18.2	-
Calling, receiving and sending SMS to library users	45.5	27.3	18.2	9.1	-
Searching and downloading information for personal use	-	-	18.2	45.5	36.4
Searching and downloading information for official use	-	18.2	45.5	27.2	9.1
Checking and sending e-mails for personal use	-	-	27.3	18.2	54.5
Checking and sending e-mails for official use	9.1	36.4	45.5	-	9.1
Selection, ordering and purchase of library books	54.5	18.2	18.2	9.1	-
Individual study and research	-	-	45.5	36.4	18.2
Information and knowledge sharing among colleagues	-	18.2	54.5	18.2	9.1
Personal shopping	36.4	18.2	36.4	9.1	-
Selection, ordering and purchase of serials publications	72.7	9.1	18.2	-	-
Electronic banking services	27.3	18.2	27.3	9.1	18.2
Social networking for library related issues	18.2	18.2	54.5	9.1	-
Professional networking	27.3	36.4	36.4	-	-
Videos communication	27.3	27.3	36.4	9.1	-
Advertising library products	36.4	54.5	9.1	-	-
Announcing library news	27.3	45.5	27.3	-	-
Uploading library e-resources	27.3	45.5	27.3	-	-
Reading e-content	9.1	27.3	45.5	9.1	9.1
Playing online games	27.3	9.1	45.5	18.2	-
Getting information on participation in library conferences, seminars and workshops	18.2	18.2	36.4	18.2	9.1
Chatting with colleagues	9.1	18.2	63.6	9.1	-
Displaying library contact information	27.3	27.3	36.4	9.1	-
Viewing other library contact information	9.1	9.1	63.3	9.1	9.1
Uploading and searching library catalogues	9.1	18.2	54.5	18.2	-
Requesting items through interlibrary loan services	45.5	36.4	18.2	-	-
Searching library databases	18.2	36.4	27.3	-	18.2
Book lending activities	72.7	27.3	-	-	-
Reference enquiry activities	54.5	18.2	27.3	-	-
Sharing content with users	45.5	27.3	27.3	-	-
Virtual reference services	54.5	27.3	18.2	-	-
Web-based subject guides	36.4	45.5	18.2	-	-
Watching films	18.2	18.2	27.3	27.3	9.1
Listening to music	-	9.1	27.7	36.4	27.3
Chatting online with users	9.1	45.5	36.4	-	9.1
Cataloguing and classifying library books	36.4	27.3	27.3	-	9.1
Cataloguing and classifying serials publications	72.7	9.1	-	-	18.2
Teaching information literacy programmes	36.4	27.3	18.2	18.2	-
Teaching how to use phones and other media	27.3	9.1	54.5	9.1	-

**Table 7** T-test showing significant differences in the academic librarians' smart phone use base on ownership of smart phone

Ownership of smart phone	N	Mean	STD	T	P	Remarks
Yes	10	78.59	7.89	5.79	0.001	significant
No	1	55.89	6.54			

### Research Objective 1: Find out ownership status of smart phone among the academic librarians in O.O.U. Library

Table 4 presented the status of ownership of smart phones among the academic librarians. The result indicated that majority 10(90.9%) of the academic librarians owned a smart phone while only 1(9.1%) do not have. On the number of smart phones they had, the result indicated that 9(81.8%) owned 1 smart phone, 1(9.1%) academic librarian owned 2 or more and 1(9.1%) had none. The data further revealed that 8(72.7%) had over 5 years of experience in smart phone use, 2(18.2%)

had between 1-2 years of experience and 1(9.1%) had between 3-4 years of experience of smart phone use.

### Research Objective 2: Identify the purpose of use of smart phone among academic librarians in O.O.U. Library

Table 5 presented academic librarians purposes of smart phones use. Results indicated that smart phone use was greater for personal uses than for library services as shown above. For instance, all the respondents signified that they used smart phones for calling, receiving and

**Table 8** T-test showing significant gender differences in academic librarians' smart phone use

Gender	N	Mean	STD	t	P	Remarks
Male	5	62.20	8.67	0.358	0.729	Not significant
Female	6	63.66	5.46			

**Table 9** Analysis of variance showing significant differences between status of academic librarians and smart phone use

GROUP		Sum of Squares	df	Mean Square	F	Sig.
Librarians	Between Groups	273.795	4	68.449	2.247	.180
	Within Groups	182.750	6	30.458		
	<b>Total</b>	<b>456.545</b>	<b>10</b>			

sending SMS to friends and family 11(100%), calling, receiving and sending SMS to colleagues 11(100%), searching and downloading information for personal use 11(100%), listening to music 11(100%), checking and sending e-mails for personal use 11(100%), individual study and research 10(90.9%) and information and knowledge sharing among colleagues 10(90.9%). Other personal uses included reading e-content 9(81.8%), watching film 8(72.7%), getting information on participation in library conferences, seminars and workshops 8(72.7%) and playing online games 6(54.5%) and so on.

Whereas for library services, great use included searching and downloading information for official use 10(90.9%), viewing other library contact information 8(72.7%), uploading and searching library catalogues 7(63.9%), checking and sending e-mails for official use 7(63.7%), searching library databases 7(63.9%), uploading library e-resources 7(63.9%), teaching information literacy programmes 7(63.9%) and teaching how to use phones and other media 6(54.5%). Other services such as calling, receiving and sending SMS to library contractors and library users 3(27.3%) each, selection, ordering and purchase of library books, selection, ordering and purchase of serials publications 2(18.2%), and requesting items through interlibrary loan services 1(9.1%) recorded low uses. This finding was in line with the findings of Weimer (2010) and Batool and Asghar (2012) that librarians rarely used smart phones (SMS) to communicate with library users, colleagues and administrators to extend library services.

### **Research Objective 3: Identify the frequency of smart phone use among academic librarians in O.O.U. Library**

Table 6 presented the frequency of smart phone use among academic librarians based on listed purposes. Majority of the academic librarians' frequency of smart phone use were 'never', 'rarely' and 'occasionally'. Few academic librarians used their smart phones for library services 'frequently' and 'always'. Frequent and always uses of smart phones for library services were rather on

the low sides. These indicated that mobile library applications and services were yet to be deployed in the library (O.O.U. Library), hence, the low use of smart phones for some of the listed academic library services

### **Research Hypothesis 1: Ownership of smart phone will not significantly influence smart phone use among the academic librarians**

Table 7 presented an independent sample t-test showing significant differences in the academic librarians' smart phone use and ownership of smart phones. The result indicated significant outcome ( $t = 5.79$ ;  $P < 0.05$ ). Therefore, the null hypotheses is rejected and thus concluded that ownership of smart phones influenced academic librarians' smart phone use for library services.

### **Research Hypothesis 2: Gender of academic librarians will not significantly influence smart phone use for library services.**

Table 8 presented an independent sample t-test showing significant gender differences in the level of smart phone use among the academic librarians in Olabisi Onabanjo University. The result revealed insignificant outcome ( $t = 0.358$ ;  $P > 0.05$ ) indicating that there was no significant gender differences in academic librarians' smart phone use. Thus smart phone is not sensitive to gender of academic librarians in O.O.U. Thus, the researchers failed to reject the null hypothesis at  $t_{tab} \propto /2$  level of significance. This finding do not agree with the finding of Aharony (2013) that gender of academic librarians, to be specific, university librarians, significantly influenced innovativeness and smart phone use for mobile services.

### **Research Hypothesis 3: Status of academic librarians will not significantly influence smart phone use.**

Table 9 presented the analysis of variance showing whether status of academic librarians will significantly influence smart phone use or not. The result of the

analysis indicated no significant outcome ( $F_{(4,6)} = 2.25$ ;  $P > 0.05$ ). Hence, the null hypothesis is accepted and thus conclude statistically that status of academic librarians in O.O.U. Library do not significantly influence smart phone use for library services.

## SUMMARY OF FINDINGS

The study revealed that:

1. Majority of the academic librarians (90.9%) had smart phones and 72.7% of those who had smart phones had over five years of experience of smart phone use, 9.1% had between 3 and 4 years of experience of smart phone use while 18.2% had 1- 2 years of experience of smart phone use.

2. Academic librarians used their smart phones for both personal and official uses. However, the use of smart phones to embrace library services was on a much lower scale compared to personal or individual uses as indicated in the data provided.

3. Academic librarians used smart phones for library services occasionally. Frequent and always indications of use for library services were rather on a lower range (9.1% - 18.2%).

4. Ownership of smart phones influenced academic librarians' smart phone use for library services and routines.

5. Gender of academic librarians does not significantly influence smart phone use for library services.

6. The status of academic librarians does not significantly influence smart phone use for library services.

## CONCLUSION AND RECOMMENDATIONS

The prevalence of smart phones and other hand-held devices is hard to ignore among the members of the university community, most especially the students, lecturers and importantly, the academic librarians. This is because they now have access to smart phones which makes it imperatives for academic librarians to design, provide and sustain mobile services applications or innovations. These mobile innovations will enhance academic librarians provide services, such as, mobile websites and applications, text messaging, virtual reference services, notifications, mobile friendly online catalogues, social media presence and other services to meet the immediate and emerging needs of mobile users. These can only be possible if Nigerian academic librarians are more aggressive and forward-thinking in their push towards attainment of mobile services innovations. In view of the above, it is therefore recommended that:

1. Academic libraries and librarians should take mobile services as necessary to promote effective use of the library and its resources, hence, the need for every academic librarian to adopt the use of smart phones and other hand-held devices to promote and sustain mobile services innovations.

2. Heads of Libraries/University Librarians in Nigeria should consider how mobile initiatives for library services fits within the context of Nigerian academic librarianship and should support such initiatives by way of designing and adopting sustainable mobile strategies.

3. Library staff technology training and skill development should be given utmost priorities to ensure adequate back up, technical support and sustainability of the initiatives. This will guarantee academic librarians' mastery of mobile devices and applications skills to embrace as well as promote ubiquitous library services.

4. Provision of adequate funds to ensure constant subscriptions to broadband Internet connectivity, electronic scholarly databases and web applications as well as hardware, like smart phones, e-readers, tablets, and others for use by librarians and library users. Further, adequate fund is needed to install, support, maintain and sustain mobile applications and websites for library services.

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