



**EFFECTS OF SMARTPHONE USE ON LIBRARY INFORMATION RESOURCES
UTILISATION BY UNDERGRADUATES IN TWO FEDERAL UNIVERSITIES
IN SOUTH-WEST, NIGERIA**

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ABSTRACT

Library Information Resources (LIRs) are meant to be utilised. Previous studies have shown traces of decline in LIRs utilisation by undergraduates. Thus; this study investigated the effects of smartphone use on LIRs utilisation by undergraduates in two federal universities in South-west, Nigeria. Descriptive research survey was adopted for the study. Multi-stage sampling technique was used to select 337 respondents from 30,103 undergraduates in the University of Ibadan (UI) and the Obafemi Awolowo University (OAU), Ile-Ife. Questionnaire was used for data collection. A total of 337 copies of the questionnaire were distributed to respondents in UI and OAU, however, 323 were duly filled and returned with a response rate of 95.9%. Research question 1 and 2 were answered using frequency and mean distribution, while the hypothesis was analysed using Pearson correlation method. Findings of the study revealed that the level of LIRs utilisation was generally moderate, albeit, LIRs such as, OPAC, CD_ROM and government publications utilisation, was low. The undergraduates rarely direct the purpose of their using smartphone towards LIRs utilisation, however, smartphones use had positive effect on use of LIRs, but the undergraduates were unable to use data subscription on smartphones to access library's online databases, and there was difficulty in accessing some of the websites subscribed to by the university library. Thus, it was recommended that access to online/Internet-based LIRs, should be extended to data subscription on smartphones, and manual should be provided to guide users in accessing websites subscribed to, or owned by the university library.

Keywords: *Smartphone use, Library information resources utilization, mobile phones*

Introduction

The Encyclopedia Americana (2006) described a library as a body of recorded information brought together for a specific purpose, organized for use and made available to users. Okiki (2013) opined that libraries are established with the primary goal of providing information to the students, staff and workers of the university community. The main facility needed by undergraduates apart from classroom instructions is the library information resources. Popoola and Haliso (2009) define information resources as those information-bearing materials that are in both printed and electronic formats, such as



textbooks, journals, indexes, abstracts, newspapers, reports, CD-ROM databases, the Internet/E-mail, video tapes, computers, among others. Library information resources (LIRs) are of no value to undergraduates until they have been utilised to achieve a set goal (Ntui & Udah, 2015). The extent to which LIRs can be utilised may be influenced by certain factors, among which is smartphones use.

Smartphone according to Ting, Lim, Patanmacia, Low and Ker (2011) is a programmable mobile phone that offers advanced capabilities and features by providing services such as instant messaging, downloading applications, utilising information services such as WiFi, Global Positioning System (GPS) and entertainment. The features of smartphones such as camera, video, sound recordings or podcasting is advanced and can compete with specialized equipment (Osman, Talib, Sanusi & Shiang-Yen, 2012). Nonetheless, the sophistication of smartphone, it will remain a mere phone for just call and text messaging, unless its potentials are exploited and the smartphone as much as possible is put into maximum use. Woodcock, Middleton and Nortcliffe (2012) affirmed that smartphones can connect to the Internet conveniently and directly through protocols including Wi-Fi and 3G and indirectly through Bluetooth. This connectivity allows data to be accessed from anywhere in a timely way. With smartphone computing capability and Internet connectivity, smartphone users can take advantage of the non-print information resources in university libraries.

The location and target for this study is undergraduates in two federal universities in South-west, Nigeria. South-west is one of the six geopolitical zones in Nigeria, comprising six states, namely Lagos, Ogun, Oyo, Osun, Ondo and Ekiti. Federal universities are established and funded by the federal government of Nigeria. Undergraduates in these universities, who are in pursuit of first degree in their field of studies, would require relevant information to be successful. This information is obtained either directly or indirectly from information resources which are domiciled within or outside the walls of the library. In view of the independent variable (smartphone use) effects on LIRs utilisation, this study investigated the effects of smartphone use on LIRs utilisation by undergraduate students in two federal universities in South-west, Nigeria.

Statement of the Problem

The concern for this study is the under-utilisation of LIRs among university undergraduates in South-west, Nigeria. The main role of university library is to provide information resources that would promote the intellectual growth and creativity of its users towards recording high academic performance. These information resources include; textbooks, newspapers, journals, maps, atlases, government documents, computers magazines, encyclopaedias, dictionaries, CD-ROM, Internet, e-journals and e-books. Observation has shown that in spite of the importance of the library on students' intellectual growth and creativity towards recording high academic achievement in universities, they still do not effectively utilise the resources of their university libraries. This may be due to the preference for smartphone use, which is reflected in their reliance on smartphones to search for needed information, especially in this era of increasing electronic environment of library resources and services. Therefore, this study sets out to investigate the effects of smartphone use on LIRs utilisation by undergraduates in two federal universities in South-west, Nigeria.

Objectives of the Study

The main objective of this study was to investigate the effects of smartphone use on LIRs utilisation by undergraduates in two federal universities in South-west, Nigeria. Specifically, this study sought to:

- i. investigate the level of LIRs utilisation by undergraduates in two federal universities in South-west, Nigeria;



- ii. examine the purpose of smartphone use in relation to LIRs utilisation by undergraduates in two federal universities in South-west, Nigeria;
- iii. identify the constraints on LIRs utilisation by undergraduates in two federal universities in South-west, Nigeria; and
- iv. examine the effect of smartphone use on LIRs utilisation by undergraduates in two federal universities in South-west, Nigeria;

Research Questions

The following research questions were raised in this study:

1. What is the level of LIRs utilisation by undergraduates in two federal universities in South-west, Nigeria?
2. What is the purpose of smartphone use in relation to LIRs utilisation by undergraduates in two federal universities in South-west, Nigeria?
3. What are the constraints to LIRs utilisation by undergraduates in two federal universities in South-west, Nigeria?

Hypothesis

Ho: There is no significant effect of smartphone use on LIRs utilisation by undergraduates in two federal universities in South-west, Nigeria.

Significance of the study

The findings of the study are expected to improve undergraduates' use of LIRs in universities, for enhanced academic performance. It will help the management of university libraries under study to make informed decisions that would help improve the utilisation of information resources. The librarians would be sensitized on the need to formulate programmes and services that would promote the use of information resources through the functionalities and capabilities of smartphones. The findings of this study would add to the body of literature on LIRs utilisation by the undergraduates in the studied South-west, universities. The study is expected to be of benefit to librarians, and other researchers.

Review of Related Literature

A library that is well-equipped can play an important part in the provision of quality education. The establishment of a quality library has positive effects on the enrolment of students (Niazi & Mace, 2006). Okiy (2011) opined that the roles of university libraries in Nigeria are to effectively support the institutions to attain the key functions of teaching, research and community service. This is supported by Jamil, Tariq and Jamil (2013) observations, that university libraries are providing knowledge and information resources for teaching, learning and research. Bitagi and Garba (2014) described information resources as a range of materials and equipment gathered by the library in order to meet the information needs of both intended and anticipated users. Popoola and Haliso (2009) listed information resources to include textbooks, journals, indexes, abstracts, newspapers, reports, CD-ROM databases, the Internet/E-mail, video tapes, computers, and so on.

Khan, Akhtar, Wahid and Begum (2015) conducted a study to investigate the usefulness of library resources utilisation by B.Ed. students in private sector universities in Khyberpahtoonkhwa, Pakistan. They found that library resources were underutilised despite the students' willingness to use the library, the study revealed lack of human and material, resources as the main reason for underutilisation of the LIRs.

In Saudi Arabia, a study was conducted by Alfawareh and Jusoh (2014) to investigate smartphones usage, among university students in NAJHRAN University; they found that majority of the students used smartphone as a regular mobile phone, as a computer with Internet connection and as a



digital camera. However, most of the students do not fully utilise smartphones for learning purposes. Similarly, the result of a study conducted by Mansour (2016) in Egypt to investigate the use of smartphone apps among library and information science students at South Valley University (SVU), Egypt, showed that for professional purposes, students used smartphone more for communication purposes when compared to learning purposes.

Parksah and Kaur (2015) asserted that mobile devices, such as smartphone and mobile services, offer tremendous flexibility for those who want to take advantage of LIRs and services. For instance, with simple 3G connection on a smartphone, a user lying on a beach can access e-books and multimedia content from a local library. Salisbury, Laincz and Smith (2015) examined whether, the use of mobile devices and gadgets such as smartphones, PDAs, have the potential to facilitate seamless access to library resources. They found that, among various disciplines engineering students used their mobile devices to access library resources the most, followed by nursing, life sciences and agricultural sciences. Saxena and Yadav (2013), in a descriptive study of impact of mobile technology on libraries, asserted that mobile technology has made communication and information access very convenient and timely to users from the comfort of their homes and offices, and from wherever they are while on the move with their cellular phone units, smartphones or PDA (Personal Digital Assistants). This could be some of the reasons why, Ghuloum and Al-lamki (2017), stressed that mobile access is in greater demand than ever before by library users and that smartphones are becoming the preferred way to access almost any type of information.

In Kenya, George, Maina and Wanangeye (2016) carried a study to analyse the use of mobile technology in access and utilisation of library resources in Mount Kenya University Kisii Campus. They found out that, there are increased retrieval and use of library resources and services through the use of mobile phone technology. In order 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 small screen devices such as smartphone, Cummings, Merrill and Borrelli (2010) in a study “the use of handheld mobile devices: their impact and implications for library services” found that a total of 54% of respondents who own a web-enabled device, indicate that they would use small screen devices, such as smartphones, PDAs or web-enabled cell phones to search a library OPAC.

Igbo and Imo (2010) investigated the challenges of accessibility of information resources by post-graduate library users of a Nigerian university. The findings revealed that LIRs were not easily accessible to the students as a result of inadequacies emanating from out-datedness of resources; ineffective bibliographic organization and ineffective library services. Quadri, Adetimirin and Idowu (2014) examined the availability and utilisation of library electronic resources by undergraduate students in private universities in Ogun State, Nigeria. Findings of the study showed that the challenges that undergraduates encountered in the utilisation of e-resources include: poor Internet connectivity, lack of relevant e-resources in various disciplines, erratic power supply and lack of technical know-how. Similarly, Olajide and Adio (2017) in a study to investigate the effective utilisation of library resources, identified; erratic power supply, functional resources, adequate reading space and lack of physical facilities, like toilet as the major problems preventing students from effectively utilising the resources in the library.

Aubrey and Stephen (2018) conducted a study to find out the current state of providing and accessing library and information services in public university libraries in Malawi through mobile phones, and found that the institutions in the study had institutional repositories, e-journals and e-books, among others, which they can offer through mobile phones, however, high cost of accessing services through mobile phones, vandalism of ICT infrastructure, congestion of networks were some of the challenges affecting the provision of LIRs and services through mobile phones. This implies that, if these challenges were curbed there would be an improvement in the utilisation of library LIRs as long as they are made available and accessible using mobile phones or smartphones.

From the foregoing, it can be inferred that LIRs are being underutilised by undergraduates. Most of the discussed literature on smartphone use revealed that if users of smartphones are given the opportunity, there will be an increase in the retrieval of library information resources, as most students are of the opinion that they would like to access library information resources and services on their smartphones. However, none of the literature reviewed was on the effect of smartphone use on LIRs utilisation by undergraduates in two federal universities in South-west, Nigeria.

Methodology

Descriptive survey was adopted for the study. The multistage sampling technique was used to select 337 undergraduates from a population of 30,143 in the University of Ibadan and Obafemi Awolowo University, Ile Ife. The instrument for data collection was questionnaire. The questionnaire was divided into four sections; Section A: Demographic Information of the Undergraduates, Section B: LIRs Utilisation by the Undergraduates, Section C: Purpose of Smartphone Use in relation to LIRs utilisation, and Section D: Constraints of LIRs utilisation. The hypothesis stated, was tested at a 0.05 level of significance. Three hundred and twenty three copies of the questionnaire were used for data collection. Data were analysed using descriptive statistics and inferential statistics to answer the research questions and test the hypothesis, respectively.

Questionnaire Administration and Response Rate

Response rates to the questionnaire is presented in Table 1.

Table 1: Undergraduates' Questionnaire Distribution and Response Rate

S/N	Faculty	University of Ibadan (UI)		Obafemi Awolowo University (OAU)		Total
		No. Administered	No. Returned	No. Administered	No. Returned	
1	Technology	62	59	76	72	131
			34.50%		43.40%	
2	Education	54	52	40	39	91
			30.50%		23.50%	
3	Arts	55	51	50	50	101
			29.80%		31.10%	
Total		171	162	166	161	323
			94.7%		97.0%	95.90%
N = 323						

Table 1 show that the total number of the questionnaire administered in both universities was three hundred and thirty seven (337) copies. However, only 162(94.7%) copies in UI and 161(97.0%) copies in OAU were duly filled and returned with useful responses by the respondents giving 95.9% response rate.

Demographic Distribution of the Undergraduates

This section focuses on the demographic characteristics of the undergraduates. Table 2 presents information on the demographic data of the respondents.

Table 2: Demographic Distribution of the Respondents

Age	University of Ibadan	Obafemi Awolowo University	Total
18 – 25years	85(52.50%)	48(29.80%)	133(41.20%)
26 - 35 years	43(26.50%)	87(54.00%)	133(41.20%)
36 - 45 years	15(9.30%)	10(6.20%)	25(7.70%)
46 - 55 years	16(9.90%)	8(5.00%)	24(7.40%)
56 years and above	3(1.90%)	8(5.00%)	11(3.40%)
Gender			
Male	61.70%	40.40%	51.10%
Female	38.30%	59.60%	48.90%
N = 323			

Results in Table 2 shows that most of the respondents 133(41.2%) were between ages 18-25 years while 133(41.2%) were also between ages 26-35 years. Only 11(3.4%) respondents were ages 56 years and above. This means that most of the respondents were still in their youthful age as undergraduate students since they were still under 30 years. Table 2 also shows that most of the respondents 165(51.1%) were males, while 158(48.9%) were females. This means that most of the respondents in this study were male undergraduate students.

Research question 1: What is the level of LIRs utilisation by undergraduates in two federal universities in South-west, Nigeria?

The results on level of LIRs utilisation by the undergraduates is presented in Table 3

Table 3: Level of Library Information Resources Utilisation by the Respondents

S/N	Items	Not Use	Low Use	Highly Used	Very Highly Used	Mean
1	Monographs/textbooks	26	34	119	140	3.17
2	Journals	77	45	153	48	2.53
3	Reference materials	53	37	184	49	2.71
4	Newspapers/magazines	52	105	121	45	2.49
5	Government publications	45	165	72	41	2.34
6	Theses/dissertation	49	107	128	39	2.49
7	CD-ROM	44	166	86	27	2.3
8	Library electronic database	118	123	51	31	1.98
9	Catalogue cabinet	176	42	51	54	1.95
10	OPAC	60	175	41	47	2.23
11	Online databases	42	98	142	41	2.56
12	Computer systems	28	62	189	43	2.77
13	Conferences/workshops/seminar materials	34	75	98	116	2.92
14	Internet resources	35	61	119	108	2.93
Aggregate mean= 2.53						
Criterion mean= 2.5						

Table 3 shows that, the most utilised LIRs as indicated by the respondents are; monographs/textbooks (mean=3.17), followed by Internet resources (mean=2.93, conferences/workshops/seminar materials (mean=2.92), computer systems (mean=2.77), reference materials

(mean=2.71) and journals (mean=2.53). While the least utilised library information resources are library electronic database (mean=1.98), followed by, catalogue cabinet (mean=1.95), OPAC (mean=2.23), CD-ROM (mean=2.3), government publications (mean=2.34) and newspaper/magazine (mean=2.49). From Table 3, the aggregate mean of 2.53 is slightly greater than the criterion mean of 2.5 therefore; the level of utilisation of LIRs is moderate. This implies that generally, the LIRs in the universities studied were moderately utilised by the undergraduate students, however, some resources, specifically, government publication, CD-ROM, OPAC and catalogue cabinets were under-utilised by the undergraduate students.

Research question 2: What is the purpose of smartphone use in relation to LIRs utilisation by undergraduates in two federal universities in South-west, Nigeria?

Data on the purpose of smartphones use by undergraduates is presented in Table 4.

Table 4: Purpose of Smartphone use in Relation to LIRs Utilisation by the Respondents

S/N	Items	SD	A	D	SA	Mean
1	To connect to the library’s Internet network	29	179	67	48	2.41
2	To search the library’s online databases for e-journals	49	195	48	31	2.19
3	To download e-journals from the library website	121	117	50	35	2.00
4	To search the library OPAC for needed title	54	184	58	27	2.18
5	To transfer e-book/e-journals to computer device for printing	72	118	31	102	2.50
6	Get updates on library information resources from the library social network account (e.g Facebook)	83	174	55	11	1.98
7	To save considerable number of e-books (for later reading) within the period I have access to the library Internet network	124	43	83	73	2.33
8	To read news items, be it political, educational/economically	65	100	7	151	2.76
9	Consult reference materials (dictionaries, encyclopaedia, thesaurus, etc.)	40	62	48	173	3.10
10	To browse the Internet for information	143	11	56	113	2.43
11	Use smartphone instead of computer systems in the library	57	38	37	191	3.12
12	Snap pages of books that I cannot take out of the library	117	19	114	73	2.44
Aggregate mean= 2.45, Criterion mean= 2.5						
N=323						

Note: SD(Strongly Disagree), D(Disagree), SA(Strongly Agree) and A(Agree)

Table 4 shows that most of the respondents use smartphone, instead of computer systems in the library (Mean= 3.12). In the same way, the respondents affirmed that they consult most reference materials (dictionaries, encyclopaedia, thesaurus) (Mean= 3.10). While the respondents use smartphone to read news items, be it political, educational or economically (Mean= 2.76). However, most of the respondents do not use smartphones to get updates on LIRs from the library social network account (e.g Facebook) (Mean= 1.98), nor use smartphone to download e-journals from the library website (Mean= 2.00), or use smartphone to search the library Online Public Access Catalogue (OPAC) for needed title (Mean= 2.18). Since the aggregate mean of 2.45 is lesser than the criterion mean of 2.5, as revealed in Table 4, it is concluded that undergraduates rarely direct the purpose of their smartphone use towards LIRs utilisation.

Research question 3: What are the constraints on LIRs utilisation by undergraduates in two federal universities in South-west, Nigeria?

Information on the constraint to LIRs utilisation is presented in Table 5.

Table 5: Constraints to Library LIRs Utilisation by the Respondents

S/N	Items	SD	D	A	SA	Mean
1	I cannot use Online public access catalogue (OPAC) from my smartphone because the OPAC can only be accessed using the library computer.	69	46	175	30	2.54
2	It is impossible for me to use the library’s online databases using data subscription on my smartphone, unless I use the university logon hotspot.	52	37	105	126	2.97
3	Lack of information search skills	67	115	34	106	2.56
4	Difficulty in accessing some websites subscribed to by the university library	56	60	179	26	2.56
5	Information overload	148	20	124	31	2.12
6	There is often poor Internet services	63	41	77	142	2.92
7	Epileptic electricity supply	90	119	19	95	2.37
8	The library is not conducive for reading	105	201	8	9	1.76
9	There is shortage of reading spaces in the library	44	132	124	23	2.39
10	The information materials are irrelevant and outdated	47	171	62	43	2.31
11	The library books relating to my course work are inadequate	52	102	132	37	2.48

Note: SD (Strongly Disagree), D (Disagree), SA (Strongly Agree) and A (Agree)

Table 5 shows that most of the respondents indicated that it was impossible for them to use the library’s online databases using data subscription on smartphone, unless they use the university logon hotspot (Mean=2.97). Similarly, the respondents indicated poor Internet services (Mean=2.92), difficulty in accessing some websites subscribed to by the university library (Mean= 2.56) and Lack of information search skills (Mean=2.56). In addition, 155(48.0%) indicated information overload. Thus, constraints confronting LIRs utilisation by the undergraduates include inability to use the library’s online databases using data subscription on smartphone except the university logon hotspot, poor Internet services, lack of information search skills and difficulty in accessing some websites subscribed to by the library.

Hypothesis: There is no significant relationship between smartphone use and LIRs utilisation by undergraduates in two federal universities in South-west, Nigeria.

Table 5: Correlation of Smartphone use and LIRs Utilisation by the Respondents

Group	N	Mean	Std. Dev.	r-cal	Df	Sig. P	Remark
Smartphone use	323	29.50	10.68	.447**	322	0.00	Significant
Library information resources utilisation	323	35.32	4.80				

Significant at $p < 0.05$

Table 5, shows that there is a significant positive correlation ($r=.447^{**}$; $p < 0.05$) between smartphone use and LIRs utilisation by undergraduates in two federal universities in South-west, Nigeria. This implies that an improvement in the use of smartphones by undergraduates will result in an increase in the use of LIRs by undergraduates. Therefore the hypothesis is rejected.

Discussion of the Findings

Findings of the study showed that firstly, the level of utilisation of LIRs was generally moderate. This, on one hand, negates the findings of Khan, Akhtar, Wahid and Begum (2015) that LIRs were underutilised despite students' willingness to use the library, while on the other hand, this study revealed specifically that LIRs such as catalogue cabinet, OPAC, government publications and CD-ROMs utilisation by the undergraduates was low, thus supporting the previous findings of Khan, Akhtar, Wahid and Begum (2015) that revealed underutilisation of LIRs.

Secondly, in considering the purpose of smartphone use in relation to LIRs utilisation, this study showed that the undergraduates rarely directed the purpose of their smartphone use towards LIRs utilisation. For instance, most of the undergraduates do not use their smartphones for purposes that are library related such as; getting updates on LIRs and downloading e-journals from library websites, or searching the OPAC for needed titles. This is in conformity with the findings of Mansour (2016) that revealed that for professional purposes, students use smartphone more for communication purposes when compared to purposes that have to do with learning such as utilising LIRs for the purpose of complementing classroom lessons and completing academic assignments.

Thirdly, challenges of LIRs utilisation was that, undergraduates were unable to use data subscription on smartphone to access library's online databases. Similarly, poor Internet services, lack of information search skills and difficulty in accessing some websites subscribed to by the university library were some of the constraint of LIRs utilization by the undergraduates. These were reflected in the findings of Quadri, Adetimirin and Idowu (2014) that showed that some of the challenges that undergraduates encountered in the utilisation of e-resources were poor Internet connectivity, lack of relevant e-resources in various disciplines, erratic power supply and lack of technical know-how. In the same vein, Aubrey and Stephen (2018) identified high cost of accessing services through mobile phones, vandalism of ICT infrastructures, congestion of networks as some of the challenges affecting the provision of LIRs and services through mobile phones.

The study also revealed a positive effect of smartphone use on LIRs, which implies that an improvement in the use of smartphones by undergraduates will result in an increase, in the use of LIRs by the undergraduates. This was corroborated by the findings of George, Maina and Wanangeye (2016) that there were increased retrieval and use of LIRs and services through the use of mobile phone technology such as smartphones.

Conclusion and Recommendations

The use of smartphone would enhance the use of LIRs, especially if the management of the studied libraries create the necessary environment that would facilitate the use of smartphones viz a viz LIRs utilisation.

In line with the findings and conclusion made, the following are therefore recommended:

1. Although, the study revealed that LIRs utilisation is generally moderate, some of the LIRs had low utilisation; therefore, management of university libraries can improve the use of such LIRs through user education.
2. Since the purpose of smartphone use is rarely directed at LIRs utilisation, management of university libraries should adopt the use of smartphones' friendly and functional applications that will allow for LIRs shearing via the library's websites.
3. The study revealed that the undergraduate students were unable to access library's online databases using data subscription on smartphones, hence, university library should ensure that access to library's online/Internet-based information resources are not limited to only users that login to access the library's online databases through the university hotspot, but be extended to data subscription on smartphones.



4. Since the study revealed that there is difficulty in accessing e-journal websites that the libraries subscribed to, manuals in book and electronic format should be provided to guide prospective users of such websites including websites owned by the university library.

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