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PERFORMANCE EXPECTANCY, EFFORT EXPECTANCY, AND FACILITATING CONDITIONS AS FACTORS INFLUENCING SMART PHONES USE FOR MOBILE LEARNING BY POSTGRADUATE STUDENTS OF THE UNIVERSITY OF IBADAN, NIGERIA

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ABSTRACT

Aim/Purpose	This study examines the influence of Performance Expectancy (PE), Effort Expectancy (EE), and Facilitating Conditions (FC) on the use of smart phones for mobile learning by postgraduate students in University of Ibadan, Nigeria.
Background	Due to the low level of mobile learning adoption by students in Nigeria, three base constructs of the Unified Theory of Acceptance and Use of Technology (UTAUT) model were used as factors to determine smart phone use for mobile learning by the postgraduate students in the University of Ibadan.
Methodology	The study adopted a descriptive survey research design of the correlational type, the two-stage random sampling technique was used to select a sample size of 217 respondents, and a questionnaire was used to collect data. Descriptive statistics (frequency counts, percentages, mean, and standard deviation), test of norm, and inferential statistics (correlation and regression analysis) were used to analyze the data collected.

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Contribution	The study empirically validated the UTAUT model as a model useful in predicting smart phone use for mobile learning by postgraduate students in developing countries.
Findings	The study revealed that a significant number of postgraduate students used their smart phones for mobile learning on a weekly basis. Findings also revealed a moderate level of Performance Expectancy ($\bar{x}$ =16.97), Effort Expectancy ($\bar{x}$ =12.57) and Facilitating Conditions ($\bar{x}$=15.39) towards the use of smart phones for mobile learning. Results showed a significant positive relationship between all the independent variables and use of smart phones for mobile learning (PE, r=.527*; EE, r=.724*; and FCs, r=.514*). Out of the independent variables, PE was the strongest predictor of smart phone use for mobile learning (β =.189).
Recommendations for Practitioners	Librarians in the university library should organize periodic workshops for postgraduate students in order to expose them to the various ways of using their smart phones to access electronic databases.
Recommendations for Researchers	There is a need for extensive studies on the factors influencing mobile technologies adoption and use in learning in developing countries.
Impact on Society	Nowadays, mobile learning is increasingly being adopted over conventional learning systems due to its numerous benefits. Thus, this study provides an insight into the issues influencing the use of smart phones for mobile learning by postgraduate students from developing countries.
Future research	This study utilized the base constructs of the UTAUT model to determine smart phone use for mobile learning by postgraduate students in a Nigerian university. Subsequent research should focus on other theories to ascertain factors influencing Information Technology adoption and usage by students in developing countries.
Keywords	Performance Expectancy (PE), Effort Expectancy (EE), Facilitating Conditions (FC), mobile learning, smartphone use

INTRODUCTION

Postgraduate education is an integral part of universities' intellectual activities aimed at equipping graduate students with advanced knowledge and requisite skills needed for optimum performance in their respective disciplines. Thus, postgraduate students are required to undergo specialized training in the form of course works, practicals, and research in their areas of interests for the award of higher degrees. In the distant past, postgraduate research in tertiary institutions was dominated by the use of printed materials as primary sources of information (Okite-Amughoro, Makgahlela, & Bopape, 2014). This required the students to be physically present either in the libraries or the classrooms to access information and learn. However, the advent of Information and Communication Technology (ICT) has revolutionized the process of learning and research in postgraduate education, as postgraduate students now can acquire knowledge via electronic means, thus, bringing to the fore the concept of mobile learning.

Wang, Wu, and Wang (2009) defined mobile learning as the delivery of learning to students anytime and anywhere through the use of wireless Internet and mobile devices, including mobile phones, personal digital assistants (PDAs), smart phones, and digital audio players. It also refers to educational

provision where the sole or dominant technologies are handheld or palmtop devices (Traxler, 2005). Mobile learning represents a learning process through which students acquire knowledge outside the classroom environment and obtain vital information for their study through the use of portable technological devices linked to the Internet. Mobile learning is transforming the face of educational technology globally since students at all levels of education can enjoy access to educational resources anytime anywhere (Oyelere, Suhonen, Shonola, & Joy, 2016).

Mobile learning presents a viable means through which postgraduate students can access scholarly information in this information age where electronic media such as databases, websites, e-books, and e-journals have replaced printed materials as the major source of scholarly information. Mobile learning offers postgraduate students a unique opportunity to navigate through the diverse information available in the various electronic media in order to improve their knowledge on different topics. According to Lavin, Moreno, and Fernandez (2008), mobile learning is enabled by integrating various hardware and software technologies into multimedia applications facilitating the communication of educational content in a number of different formats for university students. Mobile learning also enables postgraduate students to learn at their own pace in different locations and retrieve information pertinent to their academic activities in a flexible and efficient manner especially through the use of smart phones.

Smart phones as products of mobile technology have aided mobile learning as they ensure that postgraduate students can access and retrieve information from the Internet in different electronic formats wherever they are. In fact, within the Nigerian context, anecdotal evidence reveals a prevalence of smart phone use among students, which could increase their chances of engaging in mobile learning. Adedoja, Botha, and Ogunleye (2012) also noted that there is a high likelihood that students in Nigeria will engage in mobile learning, as smart phones are increasingly more accessible and less expensive, with alternative ways of powering them that has reduced reliance on the power supply, which is erratic.

However, in as much as mobile learning offers some benefits to postgraduate students, there are some challenges to mobile learning by these students. Galatis and White (2013) stated that the most serious issue faced by mobile learning is the lack of a solid theoretical framework that can guide effective instructional design and evaluate the quality of programs that rely significantly on mobile technologies. Alhajri (2016) also categorized the challenges to mobile learning as institutional challenges; integration to technology challenges; technical challenges; design challenges; evaluation challenges; cultural and social challenges.

In the Nigerian context, Ifinedo (2013) highlighted low concentration as a major barrier to mobile learning by students in Nigerian universities. Ifinedo further argued that, while in the traditional classroom learning style it is possible for students to undertake a course that spans over an hour, the mobile learning counterpart cannot sustain the concentration span of students for that long. This connotes that the performance of mobile learning with the use of smart devices could be described as low. This might be the case as a result of some distractions that the use of smart phones or related devices may bring. In addition, Shonola and Joy (2014), in their study, identified challenges to mobile learning in Nigerian universities to include inadequate infrastructure, poor funding, regulatory issues, altitudinal barrier, and failure to modify the curriculum to accommodate mobile learning.

These challenges could negatively affect the adoption of mobile learning, especially within the Nigeria context, even though the smart phones are accessible and appear to be prevalent. Chaka and Govender (2014) affirmed that despite increasing accessibility of smart phones to students in Nigeria, their adoption rate for mobile learning seems to be low. This perceived low rate of adoption, which may be fueled by the challenges already highlighted, could be traced to the performance and effort expectancies associated with the use of smart phones for mobile learning. Also, it could also be traced to the facilitating conditions provided by government or the management of the universities to ensure the use of smart phones by the students is enhanced.

Performance expectancy (PE), effort expectancy (EE) and facilitating conditions (FC) are constructs within the Unified Theory of Acceptance and Use of Technology (UTAUT) developed by Venkatesh, Morris, Davis, and Davis (2003) to predict user acceptance and subsequent usage of a system/Information Technology. Performance expectancy is one of the constructs of the Unified Theory of Acceptance and Usage of Technology (UTAUT) model that has received considerable attention from several researchers in different fields of human endeavors (Bugembe, 2010; Khayati & Zouaoui, 2013; Tossy, 2014; Venkatesh et al., 2003). These researchers stated, in their studies, that performance expectancy is a key construct that determines adoption and eventual usage of information systems. Performance expectancy is largely determined by indicators such as perceived usefulness, intrinsic and extrinsic motivation, job-fit, relative advantage, and outcome expectations of the Information Technology (Wu, Yu, & Weng, 2012).

Performance expectancy refers to the degree to which an individual perceives that using a system will help him or her to attain a gain in job performance (Venkatesh et al., 2003). It can also be defined as the degree to which postgraduate students perceive that using smart phones will enable them achieve improved performance in their academic activities. Performance expectancy is of direct relevance to the use of smart phones for mobile learning by postgraduate students in universities. This is because postgraduate students rely on the use of smart phones to access adequate information pertinent to their intellectual activities. Owing to their improved search capabilities, smart phones enable postgraduate students to retrieve vast amount of information in different disciplines. Thus, if a postgraduate student perceives that the use of smart phone for mobile learning will contribute meaningfully in enhancing his or her academic performance, he or she may be favorably disposed to use it.

Effort expectancy is also a construct of the UTAUT model that measures the level of ease of use associated with the use of an information technology. Venkatesh et al. (2003) viewed effort expectancy as the degree of ease associated with the use of an information system. It connotes the level of expectation of postgraduate students that the use of smart phones will not be characterized by physical and mental efforts. Effort expectancy is based on the idea that there are relationships between the effort put forth at work, the performance achieved from that effort, and the rewards received from the effort (Ghalandari, 2012).

Effort expectancy has a direct link to the use of smart phones for mobile learning by postgraduate students. This is because the use of smart phones for mobile learning by postgraduate students is likely to be influenced by how easy or complex it is to retrieve relevant information with smart phones within the shortest time possible. Hence, if postgraduate students realize that it is very easy to use their smart phones for mobile learning, they might not refrain from using them.

Furthermore, facilitating conditions as a construct in UTAUT refers to the extent to which an individual perceives that organizational and technical infrastructures required to use the intended system are available (Ghalandari, 2012). Facilitating conditions are factors in an environment that make possible the use of smart phones for mobile learning by postgraduate students. Facilitating conditions are largely determined by indicators such as perceived behavioral control and compatibility. The effective use of smart phones for mobile learning by postgraduate students hinges on the availability of organizational resources (human and materials) and appropriate technical infrastructure required for their optimum performance. This implies that the degree to which postgraduate students believe that organizational resources and technical infrastructure exist to support the effective use of smart phones for mobile learning could determine if they will actually use their smart phones for mobile learning or not.

Therefore, the use of smart phones for mobile learning could be a function of these UTAUT constructs. In order to empirically test this, the study is set to examine the influence of performance expectancy, effort expectancy, and facilitating conditions on the use of smart phones for mobile learning by postgraduate students in University of Ibadan, Nigeria.

Description of the Mobile Learning Framework in the University of Ibadan, Nigeria

The University of Ibadan, Nigeria's premier university, has over the years developed a framework that supports mobile learning. The Information Technology and Media Services (ITeMS) of University of Ibadan has developed and continues to develop and maintain functional university-wide wireless networks extending to different faculties, departments, and centers. This has made it possible for staff and students who are registered to connect to the Internet at any time of the day to access electronic information resources for learning and research purposes. Access to the Internet within the University also facilitates the use of online discussion forums by the lecturers and students, which makes it possible for learning to continue outside the four walls of the classroom.

The University, in an attempt to enhance mobile learning, provides tablets for the students who are on the distance learning program. With the tablets, students can have access to a learning management system (with access to virtual classroom and course and lecture materials), open educational resources (OERs), and the electronic library from the website of the Centre (www.dlc.ui.edu.ng). In order to ensure that staff and students take proper advantage of this framework that supports mobile learning, seminars and workshops are organized periodically.

Research Problem

Postgraduate students in Nigeria have access to a variety of smart phones that can be used for mobile learning. However, anecdotal evidence has revealed that some postgraduate students rarely use their smart phones for mobile learning; instead, they use them largely for socialization purposes. That is why some scholars have described the adoption of mobile learning by students in Nigeria as low. Could this be that the postgraduate students did not consider their smart phones useful for mobile learning? Are they possibly of the opinion that it could be difficult to use their smart phones for mobile learning? Are they negatively affected by the level of infrastructural support that did not facilitate the use of their smart phones for mobile learning? It is against this backdrop that this study is set to examine the influence of performance expectancy, effort expectancy, and facilitating conditions on the use of smart phones for mobile learning by postgraduate students in the University of Ibadan, Nigeria.

Research Questions

This study provides answers to the following research questions:

i. What is the frequency of use of smart phones for mobile learning by postgraduate students in the University of Ibadan, Nigeria?
ii. What is the performance expectancy of smart phones for mobile learning by postgraduate students in the University of Ibadan, Nigeria?
iii. What is the effort expectancy of smart phones for mobile learning by postgraduate students in the University of Ibadan, Nigeria?
iv. What are the facilitating conditions influencing the use of smart phones for mobile learning by postgraduate students in the University of Ibadan, Nigeria?

Hypotheses

The following null hypotheses will be tested in the study at 0.05 level of significance:

1. There is no significant relationship between performance expectancy and use of smart phones for mobile learning by postgraduate students in the University of Ibadan, Nigeria.
2. There is no significant relationship between effort expectancy and use of smart phones for mobile learning by postgraduate students in the University of Ibadan, Nigeria.

3. There is no significant relationship between facilitating conditions and the use of smart phones for mobile learning by postgraduate students at the University of Ibadan, Nigeria.
4. There is no joint influence of performance expectancy, effort expectancy, and facilitating conditions on the use of smart phones for mobile learning by postgraduate students at the University of Ibadan, Nigeria.

LITERATURE REVIEW

Quite a number of scholars have used UTAUT to provide empirical insights into the acceptance of different technologies by different individuals in a variety of settings (Venkatesh, Thong, & Xu, 2016). However, the studies that relate to the main objective of this study will now be reviewed. Jackman (2014) used the UTAUT theoretical model to examine the acceptance of mobile learning by 600 undergraduate students at the University of the West Indies, Cave Hill Campus, Barbados. The questionnaire was the research instrument and results showed smart phone was the most used mobile device as noted by close to four-fifths of the respondents: 460 (76.6%). It was also reported that there was a significant positive relationship between performance expectancy and behavioral intention to accept mobile learning (r=.51). Similarly, effort expectancy (r=.27) and facilitating conditions (r=.47) also had a positive correlation with the intention to accept mobile learning. The researcher also did a regression analysis that revealed the relative influence of the independent variables with the following beta values: performance expectancy (β =.303); effort expectancy (β =.139); and facilitating conditions (β =.277) Thus, performance expectancy significantly predicted the behavior intention to use mobile devices for mobile learning the most by the respondents.

Kim-Soon, Ibrahim, Ahmad, and Sirisa (2015) examined the factors influencing intention to use mobile technologies such as smart phone, tablet, laptop, and personal digital assistants for learning by 400 students (diploma, degree, master, and PhD) of four technical universities in Malaysia through the use of a questionnaire. Results showed that most of the respondents (87 (21.8%)) used the mobile technologies for learning somewhat frequently. One of the factors that influenced the use of the mobile technologies was performance expectancy (r-.513**). On the other hand, findings revealed that there was a negative relationship between effort expectancy and use of mobile technologies for learning by the respondents (r =-.083).

Ugur, Koc, and Koc (2016) did an analysis of mobile learning acceptance by considering the influence of performance expectancy, effort expectancy, and facilitating conditions among 491 college students in University of Sakarya, Turkey. The multiple regression that was conducted revealed that all the three UTAUT model constructs significantly predicted behavioral intention to use mobile learning by the respondents. More specifically, the beta values of the variables independently were; performance expectancy (β =.389), effort expectancy (β =.210) and facilitating conditions (β =.043). This shows that, like the result of reported by Jackman (2014), performance expectancy is a key predictor of behavioral intention to accept mobile learning by the college students.

Zainol Yahaya, Yahaya, and Zain (2017) studied performance expectancy, effort expectancy, and facilitating conditions as factors influencing mobile learning among 150 accounting students of higher institutions in Malaysia. The data collection instrument for the study was the questionnaire that was adopted from the original scales of UTAUT developed by Venkatesh et al. (2003). Findings showed a significant positive relationship between performance expectancy and acceptance of mobile learning (r=.266*), effort expectancy and acceptance of mobile learning (r=.582*), and facilitating conditions and acceptance of mobile learning (r=.643*).

Yeh and Tseng (2017) explored the behavioral intention of using mobile payments in Taiwan by 174 college students by considering the influence of factors like performance expectancy, effort expectancy, and facilitating conditions. The convenience sampling method was used, and a validated questionnaire was used to collect data. Results revealed that out of the three UTAUT factors, only effort expectancy (r=-0.096) had a negative relationship with the use of mobile payments. Performance

expectancy (r=0.235**) and facilitating conditions (r=0.510**) have significant positive relationship with use of mobile payments. The authors reasoned that effort expectancy had a negative relationship with use of mobile payment probably because the respondents were savvy in the use of smart phones and this might give them the confidence that the use of mobile payment would not be difficult.

In a recent study conducted in Nigeria, Chaka and Govender (2017) studied the perception and readiness of 320 students towards mobile learning in three colleges of education in the North Central Geo-Political Zone of the country. In addition to the perception and readiness, the extent to which performance expectancy, effort expectancy, and facilitating conditions (rephrased as mobile learning conditions) influence students' intention to adopt mobile learning was also examined. Findings showed that performance expectancies (β =.105), effort expectancies (β =.242), and mobile learning conditions (β =.452) significantly predicted intention to use mobile learning by the respondents. The authors concluded that mobile learning conditions are critical to mobile learning readiness and adoption by the students.

In addition to the studies conducted on the influence of UTAUT constructs on mobile learning, various studies have also examined the pros and cons of the various mobile technologies (laptops and tablets) in relation to the use of smart phones for mobile learning. Jacob and Isaac (2008) conducted a survey on the mobile devices adopted for mobile learning purposes by 151 undergraduate students in a Malaysian university. Almost all the respondents (90%) noted that laptop was the best/efficient form of mobile devices for mobile learning that was available at that time. Although, results showed that the most popular mobile devices among the respondents were pen drives and cell phones, while laptop was ranked 3rd and smart phone 6th respectively.

Foti and Mendez (2014) investigated the mobile devices adopted for mobile learning by forty-six postgraduate students in an Occupational Therapy program in Stockton University, New Jersey, United States of America. A large section of the students who preferred laptops for mobile learning noted that the bigger screens and keyboards of laptops made it the better tool for learning activities such as note-taking, research, and completing assignments. However, Ozok, Benson, Chakraborty, and Norcio (2008) argued that despite the popularity of laptops, they have limitations in terms of mobility when compared with other devices like smart phones and tablets.

Kljunic and Vukovac (2015) researched into the use of mobile devices for learning by 461 students of higher institutions in Croatia. The researchers compared the use of smart phones and tablets for mobile learning by the respondents. From the findings, over four-fifths of the students (83.7%) possessed a smart phone as against (18.7%) that indicated that they owned a tablet. It was also reported that out of the 126 students that answered the question on the use of mobile device for educational purposes, 37.3% used smart phones more than tablets and 15.1% noted that they used tablets more than smart phones. In addition, a small proportion of the students (11.9%) affirmed that they used the devices equally for educational purposes.

Ali (2017) surveyed the use of mobile devices in the student learning process in the Lahti University of Applied Sciences, Finland with an emphasis on Reppu (a service provided by Lahti UAS that makes it possible for students who are enrolled to submit assignments). The study made use of qualitative and quantitative research techniques to collect data from 21 students (undergraduates and postgraduate). Findings showed that a significant number of the respondents (85.7%) noted that they used Reppu on their mobile devices like smart phones to access course and information materials as compared to (4.8%) that used laptops for the same purpose. The researcher observed that the reason for this may be that it could be more convenient to use mobile devices as opposed to the use of laptops.

From the literature review, performance expectancy of smart phones for mobile learning seems to be the most determining factor that predicted adoption and usage. The review also revealed that smart phones at present are being deployed for mobile learning more than other mobile devices like laptops

and tablets. Thus, it is very important to zero in on smart phones and examine how performance expectancy, effort expectancy, and facilitating conditions influence their use for mobile learning, especially among postgraduate students.

Conceptual Model

The conceptual model for the study was developed from the researchers' view of the interactions that could exist between the variables of the study based on the review of the literature. The model proposes a direct relationship between the independent variables and the dependent variable. Specifically, it is assumed that there is a relationship between the performance expectancy and use of smart phones for mobile learning. Also, there could be a link between effort expectancy and use of smart phones for mobile learning. It is also evident from the model that a relationship is proposed between facilitating conditions and use of smart phones for mobile learning. In addition, the model also seeks to test the influence of the three independent variables on the dependent variable (Figure 1).

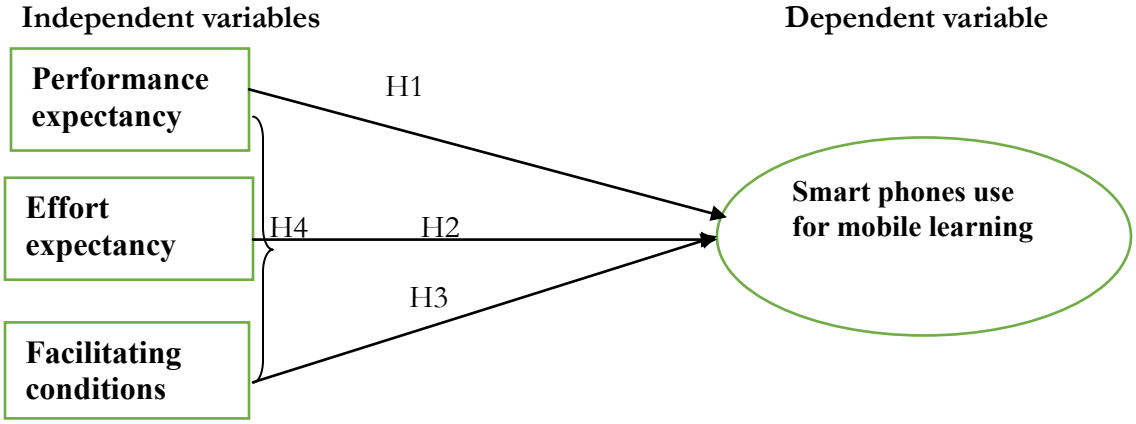


Figure 1: Conceptual model for the study

Research Methodology

Population and Sample

The population of this study consists of all postgraduate students of the University of Ibadan, Nigeria. According to the data collected from the Records Office of the postgraduate school of the institution, there are 13,307 postgraduate students in thirteen faculties, three institutes, and seven centers. In order to get the sample size, the two-stage random sampling technique was used. At the first stage, three faculties were randomly selected through balloting; the faculties were Education with a population of 1654, Agriculture and Forestry (1230), and the Social Sciences (1445). The second stage involved the use of 5% sampling fraction to determine the sample size of 217. This was done by calculating 5% of the number of postgraduate students in the three faculties earlier selected at random. The researchers collected data by personally visiting the faculties during the free periods of the students. Adequate time was given for the respondents to complete the questionnaire, after which they were retrieved personally by the researchers.

Research Instrument

Questionnaire was the research instrument used for data collection. The items for the three independent variables were adapted from the scale developed by Venkatesh et al. (2003). The questionnaire has five sections with Section A focusing on the demographic information of the respondents with three items. Section B collects information on the use of smart phones for mobile learning with six items and two-point response format (agree and disagree). Section C captures the responses of

the students on the performance expectancy of smart phone use for mobile learning with eight items and four-point response format (strongly agree, agree, disagree, and strongly disagree). Section D has questions on the effort expectancy of smart phone use for mobile learning with seven items and four-point response format (strongly agree, agree, disagree and strongly disagree). Lastly section E collects information on facilitating conditions for smart phone use for mobile learning also with four-point response format (strongly agree, agree, disagree and strongly disagree) *see* Appendix A.

RELIABILITY OF INSTRUMENT

The content validity of the questionnaire was conducted with the use of the Cronbach's Alpha. The result for each of the scale is contained in Table 1. The Cronbach's Alpha values for all the scales are greater than 0.70. Thus, the instrument is reliable and valid.

Table 1 Reliability of scales used

Reliability Statistics		
Construct	**Cronbach's Alpha**	**No. of Items**
Use of smart phones for mobile learning	.782	6
Performance expectancy	.734	8
Effort expectancy	.709	7
Facilitating conditions	.711	7

DATA ANALYSIS METHODS

A total number of 217 copies of the questionnaire were administered to the postgraduate students in the University of Ibadan, Nigeria out of which 186 were retrieved and found valid for analysis giving a response rate of 86%. Descriptive statistics (frequency counts, percentages, mean, and standard deviation), test of norm, and inferential statistics (correlation and regression analysis) were used to analyze the data collected.

RESULTS

DEMOGRAPHIC CHARACTERISTICS OF RESPONDENTS

The demographic details (program, gender, age, and personal income) of the respondents were analyzed using descriptive statistics (frequency counts and percentages), and the result is presented in Table 2. Results showed that the master's students (89.2%) participated more in the study than the doctoral students (10.8%). Findings revealed that majority of the respondents were males (55.4%), while females constitute 44.6% of the respondents. Most of the respondents (48.4%) were within the age range of 20-30, while only one respondent (0.5%) was between 61-70 years of age. Close to two-fifths of the respondents (39.2%) earned between #20,000 and #40,000 and (1.6%) had a monthly income that was above #100,000.

Table 2: Demographic details of respondents

S/N	**Demographic Details**	**Categories**	**Frequency (n=186)**	**Percentage (%)**
1	Programme	Masters PhD	166 20	89.2 10.8
2	Gender	Male Female	103 83	55.4 44.6

S/N	Demographic Details	Categories	Frequency (n=186)	Percentage (%)
3	Age	20-30	90	48.4
		31-40	74	39.8
		41-50	19	10.2
		51-60	2	1.1
		61-70	1	0.5
4	Personal monthly Income	Less than #20,000	44	23.7
		#20,000 - #40,000	73	39.2
		#40,000 - #60,000	26	14.0
		#60,000 - #80,000	22	11.8
		#80,000 - #100,000	18	9.7
		Above #100,000	3	1.6

N=186

Answers to Research Questions

Research question one: What is the frequency of use of smart phones for mobile learning by postgraduate students at the University of Ibadan, Nigeria?

The frequency of use of smart phones for mobile learning by the respondents is presented in Table 3. Most of the respondents (39.2%) used their smart phones for mobile learning on a weekly basis while five respondents (2.7%) used their smart phones for mobile learning occasionally.

Table 3: Frequency of use of smart phones for mobile learning by the postgraduate students of the University of Ibadan

Smart phone use frequencies						Mean $\bar{X}$	STD
Daily		**Twice a week**		**Weekly**			
N	**%**	**N**	**%**	**N**	**%**		
58	31.2	23	12.4	73	39.2	2.27	1.308
Monthly		**Occasionally**		**Never**			
N	**%**	**N**	**%**	**N**	**%**		
19	10.2	5	2.7	8	4.3		

Research question two: What is the performance expectancy of smart phones for mobile learning by postgraduate students in the University of Ibadan, Nigeria?

In order to determine the level of performance expectancy of smart phone use for mobile learning by the respondents, a test of norm was conducted (See Appendix B). The scale between 0-10 shows that the level of performance expectancy is low, the scale between 11-21 indicates that the level of performance expectancy is moderate, and the scale between 22-32 shows that the level of performance expectancy is high. Thus, the overall mean for performance expectancy as indicated by the responses of the postgraduate students is 16.97, which falls within the scale 11-21. Therefore it could be deduced that the level of performance expectancy of smart phone use for mobile learning by the postgraduate students is moderate (Table 4).

Table 4: Performance expectancy of smart phones for mobile learning by postgraduate students of the University of Ibadan

S/N	Items	Mean $\bar{X}$	STD
1	My smart phone enables me to access scholarly information relevant to my academic activities	1.77	.794
2	I can learn more efficiently with the use of my smart phone	1.65	.651
3	The use of smart phone does not improve my academic performance	2.76	.940
4	Implementation of literature search and information retrieval are easy with smart phone use	2.22	.953
5	There is no advantage associated with the use of my smart phone for mobile learning	2.72	.968
6	The electronic information resources that can be accessed motivates me to use smart phone	1.93	.953
7	I am convinced that smart phone use will add value to my learning activities	1.95	.834
8	Using smart phone for mobile learning enables me to follow the trend in learning globally	1.97	.891
	Weighted score	16.97	6.984

Research question three: What is the effort expectancy of smart phones for mobile learning by postgraduate students in the University of Ibadan, Nigeria?

The level of effort expectancy of smart phone use for mobile learning was also measured with the test of norm (see Appendix B). The scale between 0-8 indicates low effort expectancy, the scale between 9-16 depicts moderate effort expectancy, and the scale between 17-24 shows that high effort expectancy. The overall mean for effort expectancy as indicated by the responses of the postgraduate students is 12.57 which falls within the scale 9-16. Thus, the postgraduate students were of the view that the effort required to use smart phones for mobile learning was moderate (Table 5).

Table 5: Effort expectancy of smart phones for mobile learning by postgraduate students of the University of Ibadan

S/N	Items	Mean $\bar{X}$	STD
1	The use of smart phones for mobile learning is not characterized with stress	2.37	1.006
2	I do not require much technical expertise to effectively use my smart phone for mobile learning	2.03	.958
3	I can access electronic information resources anywhere and anytime through my smart phone use	1.81	.807
4	The use of smart phones for mobile learning reduces cost, time and effort associated with conventional learning system	1.92	.850
5	Constraints of smart phones terminals such as small screens, low battery life and inconvenient input make it difficult to use smart phones for mobile learning	2.26	.976
6	The use of smart phones for mobile learning is not frustrating	2.18	.904
	Weighted score	12.57	5.501

Research question four: What are the facilitating conditions influencing the use of smart phones for mobile learning by postgraduate students in the University of Ibadan, Nigeria?

In order to determine the level of facilitating conditions influencing the use of smart phone use for mobile learning by the respondents, a test of norm was conducted (See Appendix B). The scale between 0-9 shows that the level of facilitating conditions is low, the scale between 10-19 connotes that the level of facilitating conditions is moderate, and the scale between 20-28 indicates that the level of facilitating conditions is high. Thus, the overall mean for facilitating conditions is 15.39 which fall within the scale 10-19. Therefore it could be deduced that the level of facilitating conditions that could support the use of smart phones for mobile learning by the postgraduate students is moderate (Table 6).

Table 6: Facilitating conditions in the use of smart phones for mobile learning by postgraduate students in the University of Ibadan

S/N	Items	Mean $\bar{X}$	STD
1	There is adequate training on the use of smart phones for mobile learning in my university	2.63	1.016
2	The use of smart phones for mobile learning is encouraged by my lecturers	2.04	.917
3	The presence of unstable power supply hinders the effective use of smart phones for mobile learning in my university	1.99	.909
4	Limited Internet connection and inadequate bandwidth in my university do not motivate me to use my smart phone for mobile learning	2.34	1.034
5	I have the skills and abilities to use smart phones for mobile learning	2.03	.961
6	I need to improve my ICT skills in order to effectively use my smart phone for mobile learning	2.04	.963
7	I find it very difficult to use my smart phone for mobile learning because it is quite complex	2.32	1.082
	Weighted score	15.39	6.882

TEST OF HYPOTHESES

Hypothesis one: There is no significant relationship between performance expectancy and use of smart phones for mobile learning by postgraduate students in the University of Ibadan, Nigeria.

Table 7 shows that there is a moderate significant positive relationship between performance expectancy and use of smart phones for mobile learning ($r = .527^{*}$; $df = 185$; $p < 0.05$). This means that the more the postgraduate students perceive the use of smart phones for mobile learning as beneficial for their academic activities, the more they use them. Thus, the null hypothesis is rejected.

Table 7: Relationship between performance expectancy and use of smart phones for mobile learning

Variables	N	r	df	Remark
Performance expectancy Use of smart phones for mobile learning	186	.527*	185	Significant

Hypothesis two: There is no significant relationship between effort expectancy and use of smart phones for mobile learning by postgraduate students in the University of Ibadan, Nigeria.

Table 8 presents the result of the correlation analysis, and findings revealed that there is a strong significant positive relationship between effort expectancy and use of smart phones for mobile learning ($r = .724^{*}$; $df = 185$; $p < 0.05$). This means that the more smart phones are easier to use for mobile learning, the more postgraduate students will use them for such. With this, the null hypothesis is rejected.

Table 8: Relationship between effort expectancy and use of smart phones for mobile learning

Variables	N	r	df	Remark
Effort expectancy Use of smart phones for mobile learning	186	.724*	185	Significant

Hypothesis three: There is no significant relationship between facilitating conditions and the use of smart phones for mobile learning by postgraduate students in the University of Ibadan, Nigeria.

Table 9 shows that there is a moderate significant positive relationship between facilitating conditions and use of smart phones for mobile learning ($r = .514^{*}$; $df = 185$; $p < 0.05$). This indicates that increase in the facilitating conditions will lead to an increase in the use of smart phones for mobile learning by postgraduate students. This leads to the rejection of the null hypothesis.

Table 9: Relationship between facilitating conditions and use of smart phones for mobile learning

Variables	N	r	df	Remark
Facilitating conditions Use of smart phones for mobile learning	186	.514*	185	Significant

Hypothesis four: There is no joint influence of performance expectancy, effort expectancy and facilitating conditions on the use of smart phones for mobile learning by postgraduate students at the University of Ibadan, Nigeria.

Table 10 shows the joint contribution of performance expectancy, effort expectancy, and facilitating conditions to the prediction of use of smart phones for mobile learning. The table shows a coefficient of multiple correlation ($R=.653$ and a multiple R^2 of .542). This means that 54.2% of the variance was accounted for by the three predictor variables when taken together. The significant of the composite contribution was tested at $P<.05$. The table also shows that the analysis of variance for the regression yielded F-ratio of 276.7833 ($P<0.05$). This implies that the joint contribution of the independent variables to the dependent variables was significant and the other variables not included in this model may have accounted for the remaining variance. Thus the null hypothesis is rejected.

Table 10: Joint contribution of performance expectancy, effort expectancy, and facilitating conditions to the prediction of use of smart phones for mobile learning

Model Summary					
R	R Square	Adjusted R Square		Std. Error of the Estimate	
.653[a]	.542	.429		5.43210	
ANOVA[a]					
Model	Sum of Squares	Df	Mean Square	F	Sig.
Regression	24651.345	3	8217.115	276.7833	.000[b]
Residual	5432.887	183	29.6879		
Total	30084.232	186			

Table 11 reveals the relative contribution of the three independent variables to the dependent variable. The regression formula for the joint contribution of the independent variables is
y=f (PE, EE, FC)

Where y= use of smart phones for mobile learning
PE= Performance expectancy
EE= Effort expectancy
FC= Facilitating conditions
$Y= \beta_1 PE+ \beta_2 EE+ \beta_3 FC$

The relative contribution is expressed as beta weights, performance expectancy ($\beta = .189$, $P< .05$), effort expectancy ($\beta = .132$, $P< .05$), and facilitating conditions ($\beta =.091$, $P<.05$). Hence out of the independent variables, it is performance expectancy that significantly predicts use of smart phones for mobile learning by the postgraduate students.

Table 11: Relative contribution of performance expectancy, effort expectancy, and facilitating conditions to the prediction of use of smart phones for mobile learning

Coefficients

Model	Unstandardized coefficient		Standardized coefficient	T	Sig
	B	Std. Error	Beta		
Constant	2.2761	.153			.000
Performance expectancy	.476	.096	.189	.962	.000
Effort expectancy	.506	.067	.132	.662	.000
Facilitating conditions	.252	.043	.091	.464	.001

Dependent variable: Use of smart phones for mobile learning

PRESENTATION OF ALL FINDINGS

Table 12 presents all the main findings of the study. This is provided in order to ensure that at a glance the results can be ascertained which also makes it easy to compare the results of the different variables.

Table 12: Presentation of all major findings

S/n	Variables	Results	Remark
1	Frequency of use of smart phones for mobile learning	Highest %=39.2	Weekly basis
2	Performance expectancy (PE)	Mean=16.97	Moderate
3	Effort expectancy (PE)	Mean=12.57	Moderate
4	Facilitating conditions (FC)	Mean=15.39	Moderate
5	Relationship between performance expectancy and use of smart phones for mobile learning	r= .527*	Moderate significant positive relationship
6	Relationship between effort expectancy and use of smart phones for mobile learning	r= .724*	Strong significant positive relationship
7	Relationship between facilitating conditions and use of smart phones for mobile learning	r= .514*	Moderate significant positive relationship
8	Joint influence of PE, EE, FC on use of smart phones for mobile learning	R^2=.542 (54.2%)	Significant
9	Relative contribution of PE, EE and FC to the prediction of use of smart phones for mobile learning	PE (β= .189) EE (β=.132) FC (β=.091)	Mostly significant (1st) 2nd 3rd

DISCUSSION OF FINDINGS

Results revealed that a significant number of postgraduate students (39.2%) used their smart phones for mobile learning on a weekly basis. This could be as a result of the fact that some of these students are employed (either part time or full time) secularly or privately. Thus, they might not get to use their smart phones for mobile learning on a daily basis because of the other activities that compete for their time and attention. This supports the findings of the study conducted by Kim-Soon et al. (2015) in Malaysia where they reported that most of the respondents noted that they used their mobile devices for learning somewhat frequently.

The level of performance expectancy (mean=16.97), effort expectancy (mean=12.57), and facilitating conditions (mean=15.39) associated with the use of smart phones for mobile learning as noted by the respondents was moderate. As for the level of performance expectancy, the result indicates that most of the postgraduate students did not benefit fully from the opportunities associated with the use of smart phone for mobile learning. The majority of students also had the view that it required an average effort to use their smart phones for mobile learning, thus revealing that the use of smart phones for mobile learning is not entirely effortless. In addition, from the point of view of the respondents, the level of infrastructure that should aid the use of smart phones for mobile learning was average. This perception by most of the respondents could bring about a low level of adoption of smart phones use for mobile learning if nothing is done to bring about a more favorable perception. This agrees with the results of the study done by Jackman (2014) in Barbados where the respondents indicated that their level of performance expectancy and facilitating conditions towards use of mobile device for mobile learning was average.

Findings also revealed that there was a positive significant relationship between performance expectancy (r= .527*), effort expectancy (r= .724*), facilitating conditions (.514*), and use of smart phones for mobile learning by the postgraduate students. This has validated the importance of the UTAUT constructs in the acceptance and use of smart phones for mobile learning. This aligns with

the results of the studies done by Jackman (2014), Ugur et al. (2016), Zainol et al. (2017) and Chaka and Govender (2017) where there was a significant positive relationship between the UTAUT constructs (performance expectancy, effort expectancy and facilitating conditions) and use of mobile devices for mobile learning.

The joint contribution of the independent variables to the dependent variable was significant (R^2=.542), but it was performance expectancy (β= .189) that strongly predicted the use of smart phones for mobile learning by most of the postgraduate students. The benefits derivable from the use of smart phones for academic activities play a prominent role in determining their use for mobile learning. This has corroborated the results of the studies by Jackman (2014) and Ugur et al. (2016) where they also reported that performance expectancy was a strong predictor of mobile learning by students.

CONCLUSION

The study has revealed that a significant percentage of the postgraduate students used their smart phones for mobile learning on a weekly basis. The results have also shown that the respondents had a moderate level of performance and effort expectancies of the use of smart phones for mobile learning. Similarly, the postgraduate students rated the level of facilitating conditions that should enhance the use of smart phones for mobile learning as moderate. Even though PE, EE, and FC had a significant relationship with smart phone use for mobile learning, PE had the greatest influence as supported by previous studies (Jackman, 2014; Kim-Soon et al., 2015; Ugur et al., 2016). These results should stimulate further interests among researchers on how the level of EE, FC, and most especially PE associated with the use of smart phones for mobile learning can be enhanced. If this is done, postgraduate students will be able to effectively deploy their smart phones for mobile learning activities that include research, the outcome of which may lead to societal development.

RECOMMENDATIONS

In order to enhance the level of performance and effort expectancies, lecturers should collaborate with librarians in the university library with a view to organizing periodic workshops on the use of smart phones for mobile learning. This will build the capacity of the postgraduate students on how they can effectively use their smart phones to access electronic information resources and also engage in other academic activities. The Information Technology and Media Services (ITeMs) should improve on the existing mobile learning framework, particularly in the aspects of bandwidth management and access to the wireless network by the postgraduate students. Furthermore, to increase the level of facilitating conditions that could enhance smart phone use for mobile learning by postgraduate students, the management of the university should continue to work assiduously to provide stable electricity supply and access to fast internet connectivity within the university campus.

REFERENCES

Adedoja, G., Botha, A., & Ogunleye, O. S. (2012). The future of mobile learning in the Nigerian education system. In P. Cunningham & M. Cunningham (Eds), *IST Africa 2012 Conference Proceedings*. Dublin, Ireland: International Information Management Corporation (IIMC) Retrieved from http://www.researchspace.csir.co.za/dspace/bitstream/10204/6095/1/Botha4_2012.pdf

Alhajri, R. (2016). Prospects and challenges of mobile learning implementation: A case study. *Journal of Information Technology and Software Engineering, 6*(5), 1-8. https://doi.org/10.4172/2165-7866.1000189

Ali, J. (2017). *Mobile device use in student learning process: Supporting student learning process with use of mobile devices* (Bachelor's Thesis in Business Information Technology) Lahti University of Applied Sciences.

Bugembe, J. (2010). *Perceived usefulness, perceived ease of use, attitude and actual usage of a new financial management system: A case study of Uganda National Examination Board* (Dissertation). Makerere University Uganda). Retrieved from http://www.makir.mak.ac.ug

Chaka, J. G., & Govender, I. (2014). Mobile learning for colleges of education in Nigeria: An educational analysis. *Mediterranean Journal of Social Sciences*, *5*(16), 289-295. https://doi.org/10.5901/mjss.2014.v5n16p289

Chaka, J. G., & Govender, I. (2017). Students' perception and readiness towards mobile learning in colleges of education: A Nigerian perspective. *South African Journal of Education*, 37(1), 1-12. https://doi.org/10.15700/saje.v37n1a1282

Foti, M. K., & Mendez, J. (2014). Mobile learning: How students use mobile devices to support learning. *Journal of Literacy and Technology, 15*(3), 58-78.

Galatis, H., & White, G. K. (2013). Mobile learning - Why tablets? *DERN Research Brief, 1*(1). Melbourne: Australian Council for Educational Research.

Ghalandari, K. (2012). The effect of performance expectancy, effort expectancy, social influence and facilitating conditions on acceptance of e-banking services in Iran: The moderating role of age and gender. *Middle East Journal of Scientific Research, 12*(6), 801-807.

Ifinedo, E. (2013). *Mobile learning for instructional purpose in Nigeria: An exploratory analysis*. University of Jyvaskyla, Department of Mathematical Information Technology. Retrieved from http://www.jyx.jyu.fi

Jackman, G. (2014). Investigating the factors influencing students' acceptance of mobile learning: The Cave Hill Campus experience. *Caribbean Educational Research Journal, 2*(2), 14-32. Retrieved from http://www.cavehill.uwi.edu/fhe/hum/publications/EducationCERJ.htm

Jacob, S. M., & Isaac, B. (2008).The mobile devices and its mobile learning usage analysis. *Proceedings of the International MultiConference of Engineers and Computer Scientists* Vol I. (IMECS). Hong Kong: 19-21 March, 2008.

Khayati, S., & Zouaoui, S. K. (2013). Perceived usefulness and use of information technology: The moderating influences of the dependence of a subcontractor towards his contractor. *Journal of Knowledge Management, Economics and Information Technology*, *3*(6), 68-77.

Kim-Soon, N., Ibrahim, M. A., Ahmad, A. R., & Sirisa, N. M. X. (2015). Factors influencing intention to use mobile technologies for learning among technical universities students. *Proceeding of the 26th International Business Information Management Association Conference*, *Madrid, Spain, 26*, 2046-2057.

Kljunic, J., & Vukovac, D. P. (2015). A survey on usage of mobile devices for learning among tertiary students in Croatia. *Proceeding of the Central European Conference on Information and Intelligent Systems* (pp. 97-104). Varazdin, Croatia: Faculty of Organization and Informatics, September 23-25, 2015.

Lavin, M. P., Moreno, G. P., & Fernandez, M. B., (2008).Development of education videogames in m-learning contexts. *Proceedings of Second IEEE International Conference. Journal of Digital Game and Intelligent Toy Enhanced Learning DIGITEL*), 17-19.

Okite-Amughoro, F. A., Makgahlela, L., & Bopape, S. (2014). The use of electronic information resources for academic research by postgraduate students at Delta State University, Abraka, Nigeria. *South African Journal of Library and Information Science*, *80*(2), 1-7.

Oyelere, S. S., Suhonen, J., Shonola, S. A., & Joy, M. S. (2016). Discovering students mobile learning experiences in higher education in Nigeria. *Frontiers in Education Conference (FIE)*. https://doi.org/10.1109/FIE.2016.7757541

Ozok, A. A., Benson, D., Chakraborty, J., & Norcio, A. F. (2008). A comparative study between tablet and laptop PCs: User satisfaction and preferences. *International Journal of Human-Computer Interaction*, 24(3), 329-352. https://doi.org/10.1080/10447310801920524

Shonola, S. A., & Joy, M. (2014).Barriers to m-learning in higher education institutions in Nigeria. *Proceedings of ICERI2014 Conference*. Seville, Spain: 17th-19th November 2014.

Tossy, T. (2014). Modelling the adoption of mobile payment system for paying examination fees in Tanzanian major cities. *International Journal of Computing and ICT Research*, *8* (2), 83-98. Retrieved from http://www.ijcir.mak.ac.ug/volume8-issue2/article7.pdf

Traxler, J. (2005). *Mobile learning: A handbook for educations and trainers*. Routledge London.

Ugur, N. G., Koc, T., & Koc, M. (2016). An analysis of mobile learning acceptance by college students. *Journal of Educational and Instructional Studies*, *6*(2), 39-49.

Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. B. (2003). User acceptance of information technology: Toward a unified view. *MIS Quarterly*, *23*(3), 425-478. https://doi.org/10.2307/30036540

Venkatesh, V., Thong, J. Y. L., & Xu, X. (2016). Unified theory of acceptance and use of technology: A synthesis and the road ahead. *Journal of Association for Information Systems, 17*(5), 328-376. https://doi.org/10.17705/1jais.00428

Wang, Y., Wu, M., & Wang, H. (2009). Investigating the determinants and age and gender differences in the acceptance of mobile learning. *British Journal of Educational Technology*, *40*(1), 92-118. https://doi.org/10.1111/j.1467-8535.2007.00809.x

Wu, M., Yu, P., & Weng, Y. (2012). A study on user behavior for I Pass by UTAUT: Using Taiwan's MRT as an example. *Asia Pacific Management Review, 17*(1), 91-111. Retrieved from http://www.apmr.management.ncku.edu.tw

Yeh, M. L., & Tseng, Y. L. (2017). The college students' behavior intention of using mobile payments in Taiwan: An exploratory research. *Proceedings of IASTEM International Conference*, Singapore, 2nd -3rd January 2017, 1-6.

Zainol, Z., Yahaya, N., Yahaya, N. M., & Zain, N. N. B. M. (2017). Factors influencing mobile learning among higher education students in Malaysia. *International Journal of Advanced Scientific Research and Management, 2*(8), 86-91. Retrieved from http://www.ijasrm.com

APPENDIX A (QUESTIONNAIRE)

UNIVERSITY OF IBADAN
DEPARTMENT OF LIBRARY, ARCHIVAL AND INFORMATION STUDIES

Dear Respondent,

This questionnaire is aimed at collecting data on the use of smart phones for mobile learning by postgraduate students in University of Ibadan. We therefore solicit for your honest response as information provided will be used purely for academic purposes and will be treated with utmost confidentiality.

Thanks for your anticipated cooperation.

Onaolapo, S. & Oyewole, O.

Each section of the questionnaire is meant to collect specific data on the above named title. Please read through each section carefully and indicate by ticking appropriately.

NOTE: Mobile learning represents the learning process through which students acquire knowledge outside the classroom environment through the use of wireless and internet mobile devices like smart phones.

SECTION A: BIO DATA

1. Faculty: _____

2. Academic programme: Masters ( ) M.Phil. ( ) M.Phil. PhD ( ) PhD ( )

3. Gender: Male ( ) Female ( )

4. Age range: 20-30 ( ) 31-40 ( ) 41-50 ( ) 51-60 ( ) 61-70 ( )

5. Marital status: Single ( ) Married ( ) Separated ( ) Divorced ( ) Widowed ( )

6. Personal monthly income: Less than N20,000 ( ) N20,000-40,000 ( ) N40,000-N60,000 ( ) N60,000-N80,000 ( ) N80,000-N100,000 ( ) More than 100,000 ( )

SECTION B: Use of smart phones for mobile learning

7. How often do you use your smart phones for mobile learning?

a. Daily ( ) b. Weekly ( ) c. Twice a week ( ) d. Monthly ( ) e. Occasionally ( ) f. never ( )

SECTION C: Performance Expectancy of smart phone use for mobile learning

8. What is your performance expectancy of the use of smart phone for mobile learning?

Please tick using this scale Strongly Agree (SA) Agree (A) Disagree (D) Strongly Disagree (SD)

Items	**SA**	**A**	**D**	**SD**
My smart phone enables me to access scholarly information relevant to my academic activities				
I can learn more efficiently with the use of my smart phone				
The use of smart phone does not improve my academic performance				
Implementation of literature search and information retrieval are easy with smart phone use				
There is no advantage associated with the use of my smart phone for mobile learning				
The electronic information resources that can be accessed motivates me to use smart phone				
I am convinced that smart phone use will add value to my learning activities				
Using smart phone for mobile learning enables me to follow the trend in learning globally				

SECTION D: Effort expectancy of smart phone use for mobile learning

9. What is your performance expectancy of the use of smart phone for mobile learning?

Please tick using this scale Strongly Agree (SA) Agree (A) Disagree (D) Strongly Disagree (SD)

Items	**SA**	**A**	**D**	**SD**
The use of smart phones for mobile learning is not characterised with stress				
I do not require much technical expertise to effectively use my smart phone for mobile learning				
I can access electronic information resources anywhere and anytime through my smart phone use				
The use of smart phones for mobile learning reduces cost, time and effort associated with conventional learning system				
The use of smart phone for mobile learning enhances my search capabilities				
Constraints of smart phone terminals such as small screens, low battery life and inconvenient input make it difficult to use smart phones for mobile learning				
The use of smart phone for mobile learning is not frustrating				

SECTION E: Facilitating conditions of smart phone use for mobile learning

10. What are the facilitating conditions influencing your use of smart phone for mobile learning?

Please tick using this scale Strongly Agree (SA) Agree (A) Disagree (D) Strongly Disagree (SD)

Items	SA	A	D	SD
There is adequate training on the use of smart phones for mobile learning in my university				
The use of smart phones for mobile learning is encouraged by my lecturers				
The presence of unstable power supply hinders the effective use of smart phones for mobile learning				
Limited Internet connection and inadequate bandwidth in my university do not motivate me to use my smart phone for mobile learning				
I have the skills and abilities to use my smart phone for mobile learning				
I need to improve my ICT skills in order to effectively use smart phone for mobile learning				
I find it very difficult to use my smart phone for mobile learning because it is quite complex				

APPENDIX B

MAXIMUM NORM SCORE OBTAINABLE FOR INDEPENDENT VARIABLES

1. **Performance expectancy (PE)**

Maximum scores obtainable from the 8-item scale on PE (4 x 8) = 32
The average score is (4 + 3 + 2 + 1) / 4 = 10/4 = 2.5
Interval score (32/3) = 10.6

Interval table for Performance Expectancy (PE) of respondents

Interval	Overall mean score image	Remark
0 - 10		Low
11–21	16.97	Moderate
22–32		High

2. **Effort expectancy (EE)**

Maximum scores obtainable from the 6-item scale on PE (4 x 6) = 24
The average score is (4 + 3 + 2 + 1) / 4 = 10/4 = 2.5
Interval score (24/3) = 8

Interval table for Performance Expectancy (PE) of respondents

Interval	Overall mean score image	Remark
0 - 8		Low
9 – 16	12.57	Moderate
17 –24		High

3. Facilitating Conditions (FC)

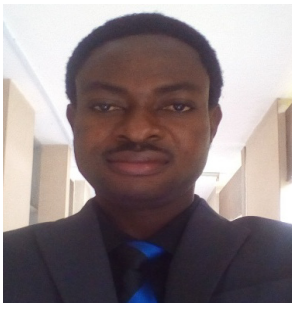
Maximum scores obtainable from the 7-item scale on PE (4 x 7) = 28
The average score is (4 + 3 + 2 + 1) / 4 = 10/4 = 2.5
Interval score (28/3) = 9.3

Interval table for Performance Expectancy (PE) of respondents

Interval	Overall mean score image	Remark
0 - 9		Low
10–19	15.39	Moderate
20– 28		High

BIOGRAPHIES

Sodiq Onaolapo is a postgraduate student in the Department of Library, Archival and Information Studies, Faculty of Education, University of Ibadan, Nigeria. He possess a Bachelor of Library and Information Studies (BLIS) First Class Honours, and a Masters of Library and Information Studies degree. He is a Certified Librarian of Nigeria (CLN) and a member of the Nigerian Library Association (NLA). His research interests include Information Technology acceptance and use, indexing and abstracting services, and Integrated Library Management Systems.



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