The Adoption of Mobile Technology for Learning in Public Universities in Ogun State

**Adegboyega S. Oyewole **Anayo V. Eyeke ***Adesola O. Bello ****Adekunle A. Olojede*

*Dept of Business Education, Michael Otedola College of Primary Education, NOFORIJA-Epe, Lagos **Department of Statistics, Federal College of Animal Health and Production Technology, Moor Plantation, Ibadan, Nigeria ***Department of Mass Communication, Olabisi Onabajo University, Ago-Iwoye. ****Dept of Educational Foundations and Counselling, Olabisi Onabajo University, Ago-Iwoye.

Abstract

This study investigates the influencing factors of undergraduate students' adoption of mobile technology for learning in Public Universities in Ogun State. The study specifically examined the influence of undergraduate students' perceived satisfaction, perceived ease of use and perceived accessibility on the adoption of mobile technologies for learning and assessed if there is any difference in the perception of undergraduate students on the usefulness of mobile technologies for learning according to sex and age. The study makes use of primary data sourced through adapted questionnaire. Data collected from a random sample of four hundred (400) students from two public Universities in Ogun State was analyse using the regression Analysis of Variance (ANOVA) technique. It was found out that undergraduate students' perceived satisfaction, perceived ease of use and perceived accessibility have a significant positive influence on the adoption of mobile technologies for learning in Public Universities. It was also found that age and sex do not have a significant joint and independent influence on the adoption of mobile technologies for learning while undergraduate students perceived accessibility, perceived satisfaction and perceived ease

of use have a positive significant joint and independent influence on the rate of adoption of mobile technologies for learning in Public Universities. The study concluded that the perception of undergraduate students on the satisfaction, ease of use and accessibility enhance the adoption of mobile technology for learning among undergraduate students in Public Universities in Ogun State. Among others, the study recommended the need to encourage undergraduates by procuring, providing or subsidizing mobile technologies that can be adopted for learning by education stakeholders. Also, there is a need to add a section for M-learning application to prepare a visible and audible guide for the students.

Keywords: *Learning, Perception, Mobile technology, M-learning, Undergraduate students*

Introduction

The primary objective of every educational institution is to teach so that the students can learn. This connotes that learning is a function of how effective is the teaching experience. Therefore, if teaching is ineffective learning will be ineffective (Houwer, Barnes-Holmes & Moors, 2013). Meanwhile, for learning to take place, the best option is to have effective teaching so that there can be effective learning. Moreover, different people learn through different sense organs. For teaching to be effective and have the right attitudinal change on students they must understand what is being taught, and to do that adequately, e-learning technologies are imperative (Maryam, Abubakar & Musa, 2015). Present developments in the field of computer and communication technologies have opened tremendous opportunities for learning (Shaibu, Mike, Oyelere & Jarkko, 2016). The availability of mobile and wireless devices is enabling different ways of communicating. To buttress this position, Kim, Rueckert, Dong-Joong and Seo (2013) submitted that the advancement in technology has enabled educators to send instructional messages in flexible ways.

Mobile learning, m-learning or m-education as often used interchangeably refers to the use of mobile or wireless devices for the purpose of learning while on the move. With the new technologies

including mobile computers, Pocket PCs, Apple iPhones, Android phones, and tablets, instructors and students can communicate through voice and image as well as text (Lan & Huang, 2012). In addition, mobile technologies have the ability to bridge pedagogically designed learning contexts, facilitate learners' generated contexts and content (both personal and collaborative) while providing personalization and ubiquitous social connectedness which makes it to be different from the traditional learning environment (Cochrane & Bateman, 2009). Using of portable mobile devices in teaching, learning, and training provide the learners and trainees the ability to access the learning materials continuously, anytime anywhere, and at the same time, provide the teachers and trainers the ability to easily deliver homework activities continuously without interruption for learners and trainees, and that are parts of the educational process, which may not be provided by e-learning (Al-Said, 2015).

Mobile learning technologies have some common aspects as portability, small size, interactivity and ubiquity. All these features make these devices more essential (Sönmez, Göçmez, Uygun & Ataizi, 2018). The ease of use, portability and relatively cheap procurement make the mobile technologies ready tools that can be used by students generally (Mosiforeba & Olaniyi, 2014). Davis (1989) proposed Technology Acceptance Model (TAM) as a theoretical model that explains how users come to accept/adopt and use a technology. He submitted that when a user is presented with a new technology, a number of factors influence their decision regarding how and when they will use it. This includes its perceived usefulness and its perceived ease of use. These perceptions predict attitudes toward the system adoption. Then the attitude develops the intentions to use and the intentions cause actual system usage. TAM assumes that perceived usefulness (the degree to which a person believes that using a particular system would enhance his or her performance) and perceived ease of use (the degree to which a person believes that using a particular system would be free of effort) with the influence of pre-existing external variables being the primary determinants for adoption of a new technology.

M-learning can neither replace nor displace classroom or other learning approaches, but only complement and add value to the existing learning methods (Ozuorcun & Tabak, 2012). It can be made to support modern classroom learning tools as well as distance learning and e-learning, as a result of which lectures can be delivered in remote areas for the benefit of people

across countries and continents (Sitthiworachart & Joy, 2008). Three techniques are used in integration of m-learning devices with mainstream of pedagogical instruments. An m-learning device can be a supportive tool, an instructional tool and an assessment tool. As a supportive tool, a mobile device can be used to support communication between learners and their instructors, as a file sharing mechanism, a discussion medium, as well as for information search. As an instructional tool, mobile device can be used by instructors to give learners e-books, educational content, and other learning materials. (Shaibu, Mike, Oyelere & Jarkko, 2016). Also learners, for example, can execute their learning tasks on mobile devices (Ktoridou & Eteokleous, 2005). Furthermore, an m-learning device can be used as a tool to evaluate students learning activities as an assessment tool. Above all, m-learning devices can be used to ease learning ICT modules, particularly in game programming (Oyelere, Suhonen & Sutinen, 2016).

Though, mobile learning, as a novel educational approach, encourages flexibility; students do not need to be a specific age, gender, or member of a specific group or geography, to participate in learning opportunities. Restrictions of time, space and place have been lifted. Mobile learning facilitates provision of educational opportunities (Aderinoye, Ojokheta, & Olojede, 2007). Ownership of a mobile phone has social, economic, psychological and educational consequences on students as it usually influences their attitude and behaviour to academic activities (Mojaye, 2015). In whatever ways they are employed, mobile devices and educational applications should not "complicate the learning process, but facilitate mobile learners' learning" (Jeng, Wu, Huang, Tan, & Yang, 2010). The challenge is that some educational uses of mobile devices result in negative experiences for students who have difficulty with the tools being used (Ting, 2012). Students may also be distracted by multitasking on devices and distract fellow students by their technology use (Bellur, Nowak, & Hull, 2015).

In Nigeria, mobile phones have been instrumental to the rapid increase in telecommunications accessibility. It has become integral part of daily life among the general population and college/university students. Mobile phone devices have become a valuable means of information dissemination since its evolution in the late 1990s' in Nigeria and in most developing countries. Its emergence in the country with internet services has brought about a profound

and diverse pool of knowledge. However, it has also led, unintentionally though, to circumscribed students' commitment to serious academic work, negatively impacted their thinking processes, communication and language skills. This is because its use among students has become habitual thus negatively impacting on conscious efforts required to achieve effective teaching and learning, During examinations students who are not separated from their mobile phones use them to answer examination questions just by keying in the problem into the browser and carelessly copying the result on answer booklets. Thus, some of the constraints posed by ownership of mobile phones to effective learning include inattentiveness, disruption and distraction. Closely associated to these is the use of mobile phones which causes noise and distraction during lecture hours.

There has been an unprecedented expansion in university system in Nigeria. The argument in favour of this expansion revolves round the need to increase access to university education. In furtherance of this drive, Nigerian government established the National Open University of Nigeria for distance education. Policies have also been enacted to maximally benefit from the potentials of emerging technologies increasing access to University education. Most of the earlier studies on the perception of usefulness of mobile technologies for learning in Nigeria focused on students' and teachers' perception and attitude towards the use of mobile technology for teaching and learning which indicate that none of these studies known to the researchers focused on the individual and technological factors that influence the use of mobile technology. Limited studies was carried out to determine the effects of having lectures notes and slides on mobile devices to help students learning and whether m-learning has real impact on students" academic performance in Nigerian universities. Consequently, any study on the effects of m-learning on leaning" perspectives in a developing country like Nigeria can never be underestimated.

The broad objective of this study is to investigate the influencing factors of undergraduate students' adoption of mobile technology for learning in Public Universities in Ogun State. The study will specifically aim to:

1. examine the influence of undergraduate students' perceived satisfaction on the adoption of mobile technologies for learning in Ogun State.

2. investigate the influence of undergraduate students' perceived ease of use on the adoption of mobile technologies for learning in Ogun State.
3. examine the influence of undergraduate students' perceived accessibility on the adoption of mobile technologies for learning in Ogun State.
4. asses if there is any difference in the perception of undergraduate students on the usefulness of mobile technologies for learning according to sex and age.

This study is expected to inform researchers and educators about the perception of undergraduate students on the adoption and usage of mobile technologies in the classroom as it will help them to understand if there is a need to explore more formal mobile learning initiatives at the university level. The results of the study may help the university understand how to best incorporate mobile learning strategies into teaching and learning. The study will also assist to understand how the presence of mobile technologies enters university classrooms and how this may influence the traditional student-teacher dynamic. It will sensitize the management of universities on ways to tackle the falling standards of education, by proffering ways of adequately utilizing the existing m-learning tools and technologies for better pedagogy in the university. This study will focus on undergraduate students from the two public owned universities in the state: Olabisi Onabanjo University and Federal University of Agriculture, Abeokuta to study the perception of undergraduate students on the adoption of mobile technology for learning.

Literature Review
Technology Acceptance Model (TAM) is a theoretical model explains how users come to accept/adopt and use a technology as proposed by Davis in 1989. The model suggests that when a user is presented with a new technology, a number of factors influence their decision regarding how and when they will use it. This includes its perceived usefulness and its perceived ease of use. The model adopts a well established causal chain of "beliefs, attitude, intention, actual behaviour", which was developed from the theory of reasoned action by social psychologists. In Davis's study, two important constructs are identified; perceived usefulness and perceived ease of use. These perceptions predict attitudes toward the system adoption. Then the attitude develops the intentions

to use and the intentions cause actual system usage. TAM assumes that perceived usefulness (the degree to which a person believes that using a particular system would enhance his or her performance) and perceived ease of use (the degree to which a person believes that using a particular system would be free of effort) with the influence of pre-existing external variables being the primary determinants for adoption of a new technology. Perceived ease of use has a direct effect on perceived usefulness and both determine the consumer's attitude toward use, which leads to behavioral intention to use the system and actual use of the system (Davis et al, 2002).
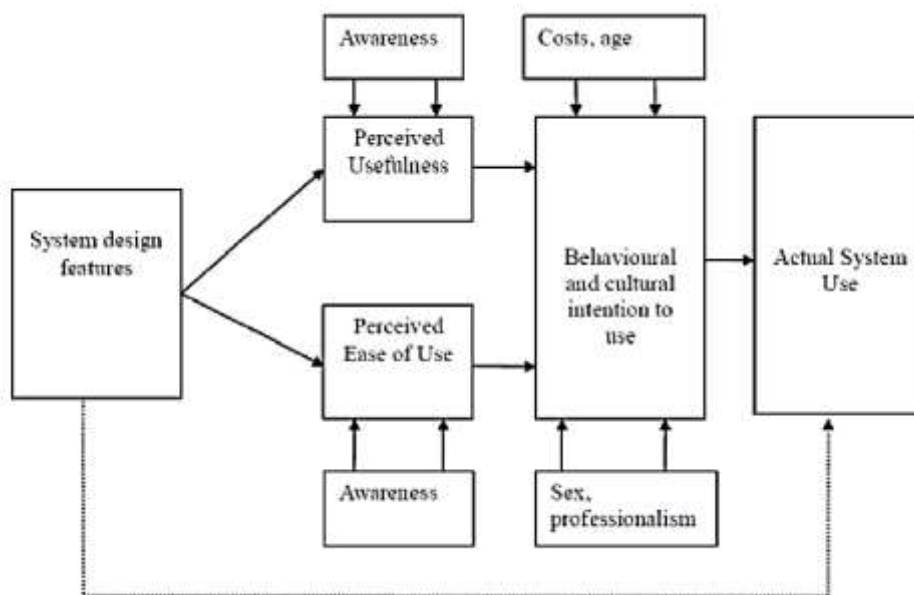

Fig.1: The modified Technology Acceptance Model

In many recent studies regarding technology, TAM is adopted extensively and was shown to contribute to the prediction of individual usage of technology (Fishbein and Ajzen, 1975). However, the TAM does not account for the influence and personal control factors on behavior. Other factors such as economic factors, outside influences from suppliers, customers and competitors are also not considered by the TAM. This theory is relevant to this study because it pointed out the factors that influence individual decision towards the adoption and application new technology to accomplish personal or collective task. These factors as pointed out in the theory are perceived usefulness and its perceived ease of use. Thus, perceived usefulness and perceived ease of use with the

influence of pre-existing external variables (e.g awareness, costs, age etc) will determine the adoption of a new technology.

Diffusion of Innovation Theory

Rogers (2003) developed a general framework which outlines the concept of diffusion of innovation. According to him, diffusion is the process by which an innovation is communicated through certain channels over time among the members of a social system. Rogers goes on to state that there are four main elements of diffusion: innovation, time, communication channels, and social systems. These elements are defined as follows; Innovation which is defined as the idea, practice or object that is developed which is the focus of the adoption; Time which is defined as the acceptance rate of the innovation over time, Communication channel, which discusses how the innovation is introduced or how it is marketed to an individual, and Social system, the elements (such as individuals, groups, organizations and/or subsystem) that are involved in the adoption of the innovation and their impact on each other. These four elements each play a role in the adoption of technology and are the foundation with which mobile technology adoption in education is discussed in this research.

This theory is relevant to this study as it pointed out the channel through innovation is diffused or communicated. The model stated that for innovation to be diffuse it must pass through four main elements of diffusion: innovation, time, communication channels, and social systems. These four elements each play a role in the adoption of technology and are the foundation with which mobile technology adoption in education is discussed in this research. To diffuse innovation in learning, the teachers will be the main players in introducing this tool to their students and how it is being incorporated into the classroom. However, the teacher could influence other teachers seeing mobile technology in use. Such observations may ultimately encourage others to adopt the technology. In addition the user's previous experience of adoption of new tools in education, whether this was a positive or negative experience will also influence the adoption of mobile technology.

Conceptual Review

Most textbook definitions of learning refer to learning as a change in behavior that is due to experience (Lanchman, 1997). Learning has been defined

functionally as changes in behavior that result from experience or mechanistically as changes in the organism that result from experience (Houwer, Barnes-Holmes & Moors, 2013). It is an enduring change in the mechanisms of behavior. Likewise, Lachman typifies learning as a process that underlies behavior. He argues that learning should not be confused with the product of this process- that is, the change in behavior. The concept of mobile technology emanates through the evolution, widespread acceptability and usage of information communication technologies. The term "information and Communication Technologies" refer to transferring, storing, revealing and sharing technology or accessing information. These technologies include radio, television, video, DVD, phone (fixed and mobile), satellite systems, computer and network equipment and software as well as the equipment and services provided (such as video-conference and electronic mail) (Yapici & Hevedanli, 2012).

According to Pollara (2011) a mobile device is any mobile technology with multiple functions and capabilities, especially the ability to access the Internet'. It is defined as handheld information technology devices or artifacts that encompass hardware (devices), software (interface and applications), and communication (network services) (Pamela, 2011). Traxler, (2007) Defined mobile leaning from three perspectives; in terms of devices and technologies or it in terms of the mobility of learners and the mobility of learning, and in terms of the learners' experience of learning with mobile devices. There is also a disagreement on the technologies that can be categorized as mobile learning technology (Sönmez, Göçmez, Uygun & Ataizi, 2018). M-leaning involves connectivity of mobile devices for downloading, uploading, online working via wireless networks, mobile/smart phone networks or both, and linking to university systems such as virtual learning environments (VLEs) and management information systems (MIS) (Hashemi, Azizinezhad, Najafi & Nesari, 2011). Mobile learning is the delivery of educational materials and learning contents through mobile technologies (Sitthiworachart and Joy, 2008). It is the delivery of educational materials and learning contents through mobile technologies (Sitthiworachart & Joy, 2008).

Empirical Review
Maha & Heba (2015) study the relationships of behavioral factors and perceived usefulness of using the mobile application "Say Quran" for learning Quran on students' perceived performance, satisfaction and behavior. In this research a group of 118 students of the Computer Sciences and Information Systems

College at Al Imam Muhammed Bin Saud Islamic University who are studying the Holy Quran course had been asked to use the application to help them on studying the Quran, then a survey had been distributed in order to collect the data. The results from this study provide evidence that there is a positive relationship between mobile application "Say Quran" and students' perceived performance, satisfaction and behavior while engaged in studying the Holy Quran. Mosiforeba & Olaniyi, (2014) investigated the perception of undergraduates on the adoption of mobile technologies for learning. The respondents included 182 randomly selected undergraduates from three universities in Kwara State. The data collected through a researcherdesigned questionnaire were analyzed using percentages, means, standard deviation and the t-test statistics. The results revealed among others that no significant difference existed in the undergraduates' perception on the adoption of mobile technologies for learning based on gender. It was recommended that stakeholders in the education sector should encourage undergraduates by procuring, providing or subsidizing mobile technologies that can be adopted for learning.

Sönmez, Göçmez, Uygun & Ataizi (2018) summarize research findings in the literature by employing literature review. On this basis, research published between 2013 and 2017 was included to the content of this study. Throughout the research, 11 research articles published during that time in 8 prominent peer-reviewed research journals were analyzed. Purposes, methodologies, and outcomes of these researches were explained. Therefore, the study is considered to be important since it tried to reveal the related research trends in mobile learning Seyal, Noah, Ramlie & Rahman (2015) used standard instrument to capture students' responses on the three basic constructs of technology acceptance model (TAM) that includes perceived usefulness (PU), perceived ease of use (PEOU) and attitude. Then data were analyzed through Smart-PLS in order to find out if PU remains the significant determinant of the attitude that in turn predicts the behavioral intention of using the m-learning technology. This model has moderate explanatory power with 38% of the variance in behavioral intention is from the attitude of the students. Based upon the conclusion, some pedagogical recommendations have been made for the relevant authorities.

Olaitan & Olusegun (2017) investigate the attitudes of college students toward mobile phone usage in Nigeria. Six hundred and forty randomly selected 300- and 400- level students of the University of Ibadan, Oyo State and the Federal Polytechnic, Ilaro, Ogun State were involved in the study. It was realized that the academic discipline of the college students as well as their area of residence do not make them perceive or use their mobile phones differently. Also, gender was found to be an important determinant of mobile phone usage among the students. In addition, no significant relationship was established between the mobile phone usage and their academic performance. Shaibu, Mike, Oyelere & Jarkko, (2016) determine the impact of mobile devices for learning purposes by exploring the kinds of interactions that students in Nigerian universities have with their portable gadgets. A sample of 240 higher education students participated in the study by completing the researchers" questionnaire. The results of the study indicate the students use their portable devices to exchange education-related messages and academic files with classmates, search the internet and library databases for academic materials, practice online quizzes or tests and hold discussions with classmates among others. The statistical analyses result show that there is no significant difference in the students" use of mobile devices based on gender. Maryam, Abubakar & Musa (2015) discuses the concept of e-learning explaining that "as learning facilitated and supported through the utilization of information and communication technologies" The population of study comprises of 200 Academics across the Federal college of Education Zaria. The study discovered that was revealed the availability of some of the e-learning technologies in the college and most of the academics do not know how to use the e-learning technology for teaching, and learning and only few of the academics use the e-learning technologies for teaching, they mostly use the technologies for entertainment.

Methodology

This work will adopt a survey design. This is to describe the perception of university students on the adoption of mobile technology for learning. The choice of this type of research design is because it does not involve experimental manipulation. The population for the study consists of all students of Olabisi Onabanjo University Ago Iwoye and Federal University of Agriculture, Abeokuta the two public universities in Ogun State, South West Nigeria.

Sample and Sampling Technique

The sample for the study shall be four hundred (400) students from the two universities. Based on simple random sampling technique, forty (40) students each will be randomly selected from 400level each selected from five faculties in Olabisi Onabanjo University. There are : Faculty of Arts, Faculty of Science, Faculty of Education, Faculty of Law and Faculty of Social and Management Science, while in Federal University of Agriculture, Abeokuta, forty (40) students will be randomly selected from 4oolevel in five Faculties which comprises College of Agricultural Management and Rural Development (COLAMRUD), College of Animal Science and Livestock Production (COLANIM), College of Environmental Resources Management (COLERM), College of Natural Sciences (COLFHEC), and College of Plant Science and Crop Production (COLPLANT).

Research Instrument and Method of Analysis

For the purpose of data collection and data analysis, the researchers intended to adopt only primary data. However, the primary data would be gathered by a means of questionnaires administration so as to collect necessary information from the respondent about the research topic under study. The questionnaire comprises of questions related to the research questions under consideration. The questionnaire is divided into two sections; Section A seeks the demographic and personal information about the respondent which include sex, age, marital status, department. Section B contains items related to the research questions under consideration. It employs a four (4) point likert scale instrument from strongly agree to strongly disagree; where strongly agree is 4 points, and strongly disagree is 1 point. The scale for the variables for the questionnaire are discussed under the following subsections.

The biographic data of participants will be taken using the demographic data form. Items in the form include sex, age, marital status, department. This study will use Technology Readiness Index (TRI) developed by Parasuraman (2000) to measure enduring propensities to embrace new technologies as a second-order formative index (i.e. it is assumed the sub-scale measure independent constructs which in combination cause the latent TRI construct), the TRI combines measures of four constructs which are not highly correlated to provide

an overall assessment of a consumers conflicting attitudes towards and belief about technology. The study adopted 14 of items from Parasuraman's (2000) and followed the well-established multi-item technology scale measures personal disposition towards technology. The learning scale was self developed as a wide variety and also multidimensional in nature. It employs a four (4) point likert scale instrument from strongly agree to strongly disagree; where strongly agree is 4 points, and strongly disagree is 1 point. The scale for the variables for the questionnaire are discussed under the following subsections.

In order to ascertain and ensure face validity as well as content validity and reliability of the questionnaire, the questionnaire will be given to the supervisor for vetting to determine the administration of the questionnaire to the respondents. In addition to further strengthen the validity of the instrument, it was established using the judgment of two experts in the area of test and measurement from the Department of Education of Olabisi Onabajo University, Ago-Iwoye that is a group of knowledgeable and experience researchers examined the instrument and confirm that they appeared capable of measuring what they were designed to measure. After the validity was done, the instrument was tested for reliability. The reliability of the research instrument was achieved through test re-test. A set of sixty (60) questions were administered to determine the reliability of the instrument. All the sixty (60) were returned completed and correlated using SPSS (v20) which then showed a cronbach coefficient alpha (α) of 0.952. This showed a strong reliability of the instrument. Each items of the questionnaire was anchored on a 4 point Likert scale ranging from strongly agrees 4 points and strongly disagree 1 point. The result of the reliability shows that none of the items were negatively related since positive correlation was found for all the variables.

This study will adopt, descriptive statistics like frequencies, percentages means scores and t-test in answering all the research questions. The data gathered will be analyzed using statistical package for social sciences. The data shall be analysed at 0.05 level of significance.

Results and Discussion

Four hundred (400) questionnaires were administered on respondents, out of which only three hundred and ninety six (396) questionnaires were retrieved.

The relationships between these variables are stated in a functional form and in a mathematical regression model as follows:

$$AMTL = f(USPS, USPE, USPA, USEX, UAGE) \qquad \text{- - - - - - - - (4.1)}$$

$$AMTL = \beta_0 + \beta_1 USPS + \beta_2 USPE + \beta_3 USPA + \beta_4 USEX + \beta_5 UAGE + \mu \quad \text{- - (4.2)}$$

Where AMTL = Adoption of mobile technologies for learning

USPS = Undergraduate students' perceive satisfaction

USPE = Undergraduate students' perceive ease of use

USPA = Undergraduate students' perceive accessibility

UAGE = Undergraduate students' age

USEX = Undergraduate students' sex

Intercept is β_0 ..... β_5 .... $\beta_3 \longrightarrow$ regression coefficient

μ = error term

Presentation of Demographic Result

Table 4.1.1: Distribution of Respondents by Sex
Sex

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Female	180	45.5	45.5	45.5
	Male	216	54.5	54.5	100.0
	Total	396	100.0	100.0	

Source: Field Survey, 2019

The result in table 4.1.1 shows that 54.5% of the respondents sampled in the study were male, and 45.5% of them were female. The result shows that, majority of the response was from male respondents which implies that the response upon which the result and conclusion of this study is based is skewed more to the male gender. Having number of male students' greater than female means that, there are more students who can handle technology in the institutions with objective views. This is because gender stereotypes indicate that men are the objective ones, the ones with the scientific world views while women are the social ones, the ones with more emotional and creative outlooks. In terms of technology usage therefore, men better understand the science

behind various technology but the typical woman concentrates on using devices for social interaction.

Table 4.1.2: Distribution of Respondents by Age
Age

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	15-19	180	45.5	45.5	45.5
	20-24	144	36.4	36.4	81.8
	25 and above	72	18.2	18.2	100.0
	Total	396	100.0	100.0	

Source: Field Survey, 2019

The result in table 4.1.2 also shows that 45.5% of the respondents that took part in the study were between age fifteen and nineteen years, 36.4% of them were between the ages of twenty and twenty four years, while the remaining 18.2% were twenty five years and above. This implies that majority of the response in this study were from students who are between the ages of fifteen and nineteen years. Having number of younger students greater than older ones means that, most of the students can easily adopt technology within the shortest possible time and with the ability to process complex information which will help this study to determine with a more precision the effect of technology adoption since the majority of the respondents are younger people that can easily adopt technology within the shortest possible time and with the ability to process complex information. This is true because historically older people are believed to be late adopters to the world of technology compared to compare to their younger compatriots (Sharit & Czaja, 1994).

Table 4.1.3: Distribution of Respondents by Faculty
Faculty

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Education	108	27.3	27.3	27.3

	Frequency	Percent	Valid Percent	Cumulative Percent
Management science	36	9.1	9.1	36.4
Science	108	27.3	27.3	63.6
COLAMIN	36	9.1	9.1	72.7
COLPLANT	72	18.2	18.2	90.9
Others	36	9.1	9.1	100.0
Total	396	100.0	100.0	

Source: Field Survey, 2019

The result in table 4.1.3 also shows that 27.3% of the respondents are students in the faculty of Education, 9.1% of them are students from the faculty of management science, 27.3% are from faculty of science, 9.1% are from the faculty of COLAMIN, 18.2% are from faculty of COLPLAN, while the remaining 9.1% are from other faculties. Hence, it was evident that, majority of the response were from sampled workers with BSC/HND as their highest academic qualification followed by OND. This shows that majority of the participants are from the faculty of Education and science..

Table 4.1.4: Distribution of Respondents by Institution
Institution

		Frequency	*Percent*	*Valid Percent*	*Cumulative Percent*
Valid	OOU	216	54.5	54.5	54.5
	FUNAAB	180	45.5	45.5	100.0
	Total	396	100.0	100.0	

Source: Field Survey, 2019

The result in table 4.1.4 also shows that 54.5% of the respondent that took part in the study are from Olabisi Onabanjo University, while the remaining 45.5% of the respondents are from Federal University of Agriculture Abeokuta. This result shows that majority of the respondents from Olabisi Onabanjo University.

Analysis of Research Questions
Research questions one
Research questions one stated that "What is influence of undergraduate students' perceived satifaction on the adoption of mobile technologies for

learning in Ogun State?" The result of the analysis of the research question is presented in table 4.2.1 below

Table 4.2.1: Regression results showing the influence of undergraduate students perceived satisfaction on adoption of mobile technologies for learning

Model	Coefficients (β)	T	Std.Error	Sig(T-Prob)	F	r^2
Constant	2.282	16.595	0.138	0.000	14.952(0.00)	0.093
Perceive Satisfaction	0.305	3.867	0.065	0.000		

a Dependent Variable: learning
Source: Field Survey, 2019 (SPSS Output, Version 20.0)

The estimated result in table 4.2.3 shows that undergraduate students' perceived satisfaction (β=0.305, t=3.867, p<.05) have a significant positive influence on the adoption of mobile technologies for learning in Ogun State. The coefficient of undergraduate students' perceived satisfaction is positive which indicates that a unit increase in undergraduate students' perceived satisfaction will on the average leads to 31% increase in the rate of adoption of mobile technologies for learning in Ogun State. The result also shows that the explanatory variables accounted for 9% variation in the dependent variable of (R^2=0.093) is not the only predictor of the adoption of mobile technologies for learning in Ogun State. This result supports the position that the usage of mobile technology for learning among undergraduate students in the present day has greatly wide-spread largely due to the perceive satisfaction they believed is derivable from such utilisation.

Research Questions Two
Research question two stated that "What is the influence of undergraduate students' perceived ease of use on the adoption of mobile technologies for learning in Ogun State?" The result of the analysis of the research question is presented in table 4.2.2 below.
Table 4.2.2: Regression results showing the influence of undergraduate students perceived ease of use on adoption of mobile technologies for learning

Model	Coefficients (β)	T	Std.Error	Sig(T-Prob)	F	r²
Constant	2.493	14.479	0.165	0.000	3.392(0.038)	0.023
Perceive Ease of Use	0.151	1.992	0.96	0.038		

a Dependent Variable: learning
Source: Field Survey, 2019 (SPSS Output, Version 20.0)

The estimated result in table 4.2.2 shows that the undergraduate students' perceived ease of use (β=0.151, t=1.992, p<.05) have a significant positive influence on the adoption of mobile technologies for learning in Ogun State. The coefficient of undergraduate students' perceived ease of use is positive which indicates that a unit increase in undergraduate students' perceived ease of use of technology will on the average leads to 15% increase in the rate of adoption of mobile technologies for learning in Ogun State. The result also shows that the explanatory variables accounted for 2.3% variation in the dependent variable of (R^2=0.023) which implies that undergraduate students' perceived ease of use of technology is not the only predictor of the adoption of mobile technologies for learning in Ogun State. The result implies that as more and more number of student perceived more ease in the use of mobile technology for learning increase, the number of students that adopts mobile technology for learning continue to rise.

Research questions three
Research questions three stated that "What is the influence of undergraduate students' perceived accessibility on the adoption of mobile technologies for learning in Ogun State?" The result of the analysis of the research question is presented in table 4.2.3 below.

Table 4.2.1: Regression results showing the influence of undergraduate students perceived accessibility on adoption of mobile technologies for learning

Model	Coefficients (β)	T	Std.Error	Sig(T-Prob)	F	r²
Constant	0.075	0.906	0.96	0.366	8.366 (0.006)	0.821

Perceive Usefulness	2.659	16.138	0.165	0.000

a Dependent Variable: learning
Source: Field Survey, 2019 (SPSS Output, Version 20.0)

The estimated result in table 4.2.1 above revealed that undergraduate students' perceived accessibility (β=2.659, t=16.138, p<0.05) have a significant positive influence on the adoption of mobile technologies for learning in Ogun State. The result also indicates that the explanatory variables accounted for only about 82% variation in the dependent variable of (R^2=0.821). From the result above, it can be seen that undergraduate students' perceived accessibility predict the adoption of mobile technologies for learning in Ogun State adequately. Therefore the null hypothesis (H_O) is rejected. This result supported the claim that, the more undergraduate students perceived mobile technologies accessible for leaning, the more the rate of adoption of mobile technologies for learning in Ogun State.

Research Questions Four

Research questions four stated that "Are there any difference in the perception of undergraduate students in Ogun State on the adoption of mobile technologies for learning according to sex and age?" The research question is tested using the regression analysis, and the result is presented in the table 4.2.4.

Table 4.2.4: Summary table of regression showing the independent and joint influence of the independent on the dependent variable

Variables	*Beta*	*T*	*P*	*R*	*R²*	*P*
Age	0.007	0.069	0.945			
Sex	-0.003	-0.036	0.971			
Perceive satisfaction	0.287	3.054	0.003			
Perceive ease of use	-0.15	2.154	0.018			
Perceive accessibility	0.771	-2.292	-0.026			

Dependent Variable: learning
Source: Field Survey, 2019 (SPSS Output, Version 20.0)

Table 4.2.4 above revealed that age (β=0.007, t=0.069, p>.05) and sex (β=-0.003, t=-0.036, p>.05) do not have a significant joint and independent influence on the adoption of mobile technologies for learning in Ogun State. The table also revealed that undergraduate students perceived accessibility (β=0.771, t=-2.292, p<.05), undergraduate students perceived satisfaction (β=0.287, t=3.054, p<.05) and undergraduate students perceived ease of use (β=-0.15, t=2.154, P<.05) have a positive significant joint and independent influence on the rate of adoption of mobile technologies for learning in Ogun State. The result also showed that the explanatory variables accounted for 82.3% variation in the dependent variable (R^2=0.823). This result supported the position that the perception of undergraduate students on the satisfaction, ease of use and accessibility enhance or promote the adoption of mobile technology for learning among undergraduate students in Ogun state.

Discussion of Findings
From the result of the analysis of research question one, it was found out that undergraduate students' perceived satisfaction have a significant positive influence on the adoption of mobile technologies for learning in Ogun State. In addition, the analysis of research question two established that undergraduate students' perceived ease of use have a significant positive influence on the adoption of mobile technologies for learning in Ogun State. The result of research question three also shows that undergraduate students' perceived accessibility have a significant positive influence on the adoption of mobile technologies for learning in Ogun State. The result of joint and independent effect of demographic variables and mobile technology adoption factors established that age and sex do not have a significant joint and independent influence on the adoption of mobile technologies for learning in Ogun State. It was also revealed that undergraduate students perceived accessibility, undergraduate students perceived satisfaction and undergraduate students perceived ease of use have a positive significant joint and independent influence on the rate of adoption of mobile technologies for learning in Ogun State.
The result was in line with the findings of Seyal, Noah, Ramlie & Rahman (2015) who used standard instrument to capture students' responses on the three basic constructs of technology acceptance model (TAM) that includes perceived usefulness (PU), perceived ease of use (PEOU) and attitude This model has

moderate explanatory power with 38% of the variance in behavioral intention is from the attitude of the students. Findings indicated that students' perceptions of Edmodo and Mobile learning is in "High" level in general, and majority of students have positive perceptions towards Edmodo and Mobile learning since they think that learning using Edmodo facilitates and increases effectiveness communication of learning, and they appreciate Edmodo because it save time.

Conclusion and Recommendations

This study investigates investigate the influencing factors of the adoption of mobile technology for learning in public universities in Ogun State. The study concluded on the basis of the result that the perception of undergraduate students on the satisfaction, ease of use and accessibility enhance or promote the adoption of mobile technology for learning among undergraduate students in Ogun state. In addition, it can be infer from this result that the undergraduate students perceived ease, perceived satisfaction and perceived accessibility have a significant positive influence on the adoption of mobile technology for learning among undergraduate students. The following suggestions are offered: Sstakeholders in the educational sector should encourage undergraduates by procuring, providing or subsidizing mobile technologies that can be adopted for learning. There is a need to add a section for M-learning in the universities to start application of M-learning and prepare a visible and audible guide for using of M-learning in teaching and learning. There is a need to set-up a special supportive team to facilitate teacher adoption of mobile technology.

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