MOBILE LEARNING ADOPTION IN HIGHER INSTITUTE IN NORTHERN NIGERIA: STUDENTS PERSPECTIVES

A THESIS SUBMITTED TO THE GRADUATE SCHOOL OF APPLIED SCIENCES OF NEAR EAST UNIVERSITY

By AHMAD IBN AHMAD AYITOGO

In Partial Fulfillment of the Requirements for the Degree of Master of Science in Computer Information Systems

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I Ahmad Ibn Ahmad Ayitogo hereby declare that all the information in this document are retrieved and presented in accordance to the academic rule and ethical conduct. I also declare that, as required by the rules and conducts, I have fully cited and referenced all material and results that are not original to this work.

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To my Family…

ABSTRACT

We are all well aware that the used of portable devices for educational and learning purpose is known to be Mobile learning and as such, majority of students have access to mobile phone in northern Nigerian universities. The aim of this study is to conduct a survey on the adoption of Mobile learning by students in Northern Nigerian Universities and to investigate factors that affect the behavior of students to adopt this technology. Questionnaire was used as the main instrument for data collection and 402 students were randomly selected to participate in the study. The researcher built five (5) research hypotheses from the data collection for the study. Pearson correlation was used to analyze the hypotheses developed by the researcher. Results showed that it was also discovered that there is a positive attitude toward behavioral intention with the external factors which are students' willingness to use, quality of service, relative advantage, facilitating condition, self-management of learning. This thesis will interest consultants, experts and specialist on mobile learning, lecturers and for academic purposes and also it recommends that future study should try to use mixed method like the quantitative and qualitative methods to get more prolific understanding of the study.

Keywords: TAM; mobile learning; mobile learning adoption; mobile devices; mobile technology

ÖZET

Taşınabilir cihazların eğitim ve öğretim amaçlı kullanılmasının mobil öğrenme olarak bilindiği ve bu nedenle öğrencilerin çoğunun Kuzey Nijerya Universitelerinde cep telefonuna erişimi olduğunu biliyoruz. Bu çalışmanın amacı Kuzey Nijerya Universitelerdeki öğrencilerin mobil öğrenmeyi benimseme davranışlarını etkileyen faktörleri araştırmaktır. Veri toplamada aracı olarak anket kullanılmıştır ve rastgele örnekleme yöntemi ile seçilen 402 öğrenci çalışmaya katılmıştır. Araştırmacı, araştırma için 5 hipotez oluşturdu. Araştırmacı tarafından geliştirilen hipotezleri analiz etmek için Korelasyon analizi kullanılmıştır. Sonuçlar öğrencilerin istekli olmaları, hizmet kalitesi, göreceli avantaj, koşulu kolaylaştırıcı olanaklar, öğrenenin öz denetimi gibi diş etkenlere ve davranişsal niyete karşi olumlu tutumun sahip olduklarını ortaya cikardi. Bu tezin mobil öğrenme uzmanlarına, öğretim görevlileri ve akademisyenlere yararlı olduğu düşünülmektedir. Ayrıca gelecekteki çalışmaların daha verimli bir şekilde anlaşılması için nicel ve nitel yönetmeleri birlikte kullanılması önerilmektedir.

Anahtar Kelimeler: TAM; mobil öğrenme; mobil öğrenmenin benimsenmesi; kuzey Nijerya; mobil Teknoloji

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BI: Behavioral Intention

FC: Facilitating Condition

FUL: Federal University Lafia

ML: Mobile Learning

NN: Northern Nigeria

NSUK: Nasarawa State University Keffi

QS: Quality of Service

RA: Relative Advantage

SWU: Students Willingness to Use

SML: Self-management of learning

TAM: Technology Acceptance Model

TRI: Technology Readiness Index

UTAUT: Unified Theory of Acceptance and Use of Technology Model

CHAPTER ONE

INTRODUCTION

In this chapter, the general overview of mobile learning adoption in higher educational institutes in northern Nigeria is been enumerated and encapsulated vividly.

1.1 Overview

Mobile learning is a form of learning done across different platforms; it could be social or content interaction. This is a learning that is normally done by the use of mobile device mostly personal. In this form of learning, distance does not have effect on learning process as the learner can gain knowledge at his/her convenience. Mobile learning has become part of humans' day-to-day activity. Mobile learning is the future of learning (Ahmed et al., 2018). Technology is developing to be a powerful tool in every aspect of life and it is dominating the educational sector rapidly. The continues advancement of technology in the recent decades has given room for the availability of mobile devices and internet which in turn has now lead to mobile learning. Mobile learning is the recent trend worldwide of learning in higher education (Shorfuzzman & Husseini, 2016).

Technology has moved to another level as it has evolved human activities to be dependent on it. Mobile learning makes learning easier for all the parties involved as from management to staff, lecturers and to students themselves. Adopting mobile learning in your institution in this era is the best idea the management will take. Students have shown that with mobile learning, learning is easier, faster, and more convenient as sharing data and relevant information is almost immediate with student on the same platforms using same contents which amongst enables instant feedback. This process shows that scores from exams have improved from 50%-70% as dropout rate has reduced by 22%. Mobile learning has removed the use of big books and replaced it with small devices, which can be used as the wish. Furthermore, mobile learning is cost effective as the costs of these devices are sharply dropping making it cheaper to adopt than the traditional books. For example, the cost of one digital textbook is one-third of half its price on paper.

Nigeria is a developing country and northern Nigeria is even more backwards in terms of technology adopting and acceptance. Major part of Nigeria's university are gradually adopting mobile learning and the aim of this study is to figure out how far have they gone in doing this and the students perspectives of adopting mobile learning. Adopting mobile learning will bring a lot of improvement in educational sectors but will face many challenges in the process. The Nigerian government has overlooked the research to investigate the factors that tend to hinder the adoption of mobile learning and student readiness to adopt and that are why we are still lacking behind in these aspects.

1.2 Problem Statement

The introduction of information technology has changed the face and method of delivering knowledge. Technology enhanced learning unlike the traditional way of learning brought about convenient and effective learning for students. Mobile learning as one of the technology enhanced learning delivers learning to students through mobile and personal device assistants. However, developing nations in particular Nigeria is lagging behind the adoption of mobile learning and ceased to enjoy the benefits that come with the adoption of mobile learning. Different studies such as Mosiforeba and Olaniyi (2015) have examined the adoption of mobile learning in selected Nigeria universities. Similarly, Francis and Clive (2013) examined the prospect and challenges of mobile learning adoption in Nigeria universities. However these studies did not examine the factors that affect mobile learning adoption the Nigerian universities. In order to understand the reason for not adopting mobile learning among Nigerian universities, this study seeks to bridge this research gap and examine the factors that influence the adoption of mobile learning.

1.3 Aim of the Study

The main objective of this study is to investigate the adoption of mobile learning in higher educational instituted in Northern Nigeria based on students' perspective.

1.4 Importance of the Study

Technology based learning in particular mobile learning has become the latest trend of delivering knowledge to students. This is due to the speed and convenience of sharing knowledge. Many

universities However, few examination has been conducted to examine the factors that influence mobile learning adoption. Many of the studies on the adoption of mobile learning in Nigerian universities examined the challenges or prospects of mobile learning adoption. Also few studies were found to use a model to examine the factors that influence mobile learning adoption. This study is important to bridge this research gap and add to the existing stock of knowledge on the factors that influence mobile learning adoption. This study will bring to light the various factors that affect mobile learning adoption among Nigerian universities.

1.5 Limitations of the Study

The researcher encountered some restriction during the course of this study. It is important to not the limitations of this study, as it will serve as improvement for future studies. The following limitations encountered during this study have been noted below:

The limitations of the study:

- This study is limited to students from northern Nigerian universities only. Examining more universities will expose more about the research topic.
- Study duration, which was done during the spring semester, does not give room for examining more countries and accessing more students. If more students are surveyed from different countries, more insight about the research topic are likely to be gained.
- The study made use of only qualitative research type, the use of both qualitative and quantitative research type will enhance the knowledge and information gotten from this study.

1.6 Overview of the Thesis

Chapter One: This is the introductory part of the thesis as it indicates the problem statement, the main aim of the study, its importance, and limitations of the study and the overview of the whole study.

Chapter Two: This chapter gives information about the studies previously carried out by other researcher on the topic which updates one on the theoretical guide to research about mobile

learning adoption in higher educations. Results from these studies were evaluated and displayed along with missing gaps of the studies.

Chapter Three: This chapter provides the theoretical framework of the study as it looks into the model adopted in this study, the barriers and challenges of the study. It also displays the advantages and disadvantages of the study.

Chapter Four: Details about the methodology used in data gathering, demographic data analysis, research model are all displayed on this chapter and explain vividly.

Chapter Five: In this chapter, the researcher enumerates the hypotheses and discussed testing and results of each one of them. It also shows the overall summary of all the tested hypotheses.

Chapter Six: In this chapter, the researcher did well to encapsulate the entire thesis showing the main results and also showing the possible solutions and recommendations for future research.

CHAPTER TWO

RELATED RESEARCH

In this chapter, the researcher has reviewed and showed the results from other papers and have summarized them for better and easy accessibility. Mobile Learning has been studied by very talented and well-brained academic experts and below are some of the reviews of their studies.

2.1 Factors Influencing Mobile Learning Adoption

Hodjat and Amir (2018) conducted a study on the analysis of the essential factors for the adoption of mobile learning in higher education. A case study of students of university of technology which analyses the adoption of mobile learning in higher education. This study explores the factors that determine the adoption and application of educational information system which is created by students. The study was based in the history of technology adoption and covered student. A study in university of technology Iran sees 300 members of information technology students join the study. The case study was subdivided and classified in seven categories which are; ease to use, trust, characters, personal qualities, context, perceived usefulness and culture of using a research model. It is said that m-learning is one of the promising educational technologies for development in educational sector. There is a positive effect of the context application on the ease to use factor and also usefulness. The ease to use has positive effect on usefulness factors. The trust factor has a positive effect of behavioral intention. The character factor has positive effect on culture of using and culture of using has positive effect on behavioral intention.

Ahmed et al. (2018) in their study about m-learning displayed the factors that have influence in students' intention to adopt and their readiness to accept and use m-learning in higher education in Jordan. The study happens to investigate the Jordanian students requirement and also what they like the most in using m-learning which is the design. The data collection also shows that the study was a paper based questionnaire which also investigates the factors of M-learning adoption. The result shows that most of the students' readiness to adopt m-learning is being affected by different factors like relative advantage, complexity, social influence, perceived

enjoyment, self-management of learning. A clear image of the willingness of how m-learning adoption by student is provided and this paper also gives room and guidance for developers of applications to the designs and installation of a successful m-learning system application. The proposed created in this study reports that 68% variance of student behavioral intention to adopt mobile learning. It demonstrates that relative advantage, complexity, social influence, facilitating condition and perceived enjoyment represent key facilitators of Mobile learning. Self-management of learning is considered as key factor in terms of the adoption of m-learning. Application design to be developed should be compatible with students' needs promoters should emphases and encourage the use of m-learning.

Chye et al. (2014) made research which shows the factors that influence the acceptance of mobile learning in higher education in Malaysia. The study went on to look into the 5 independent variables factors one after the other and how they affect adoption of m-learning effort expectancy, performance expectancy, perceived playfulness, and self-management which has a very important positive relationship with behavioral intention to use m-learning. It was also said in the study that a social influence affects relationships towards the behavioral intention in a negative way to use mobile learning. All the results from the study happen to display the factors that affect students' intention to accept the use of m-learning in higher institution in Malaysia both positively and negatively which promotes the efficiency of adopting mobile learning in Malaysia. After the study, a conclusion has been drawn that 43.5% of the behavioral intention of mobile learning acceptance. This also explains that all hypotheses of the study are being accepted except the effort expectancy to behavioral intention. From the study, we have seen the result and it shows insight to further research on related topic to mobile learning in higher educational institutes.

A study conducted by Elogie, et al. (2015) showed that, they were looking into the factors that influence the adoption of smartphone by undergraduates' students in Nigeria schooling at Ambrose Alli University Ekpoma. In their studies, the employed Roger's innovation adoption theory to help describe in details the factors that tend to influence the adoption of smartphones among undergraduates students in Nigeria's first state owned university. The targeted 226 students and find out that the only technological characteristic that explains adoption is relative

advantage and the complexity. But on the contrary, trial ability, observability and compatibility with life style weren't able to properly predict adoption. Furthermore, undergraduate students' adoptions of smartphone were not sufficiently predicted by socio-demographic characteristics. The study uses a questionnaire and was carefully given to selected respondents. The result from this study will be given to universities that want to implement mobile learning and also companies that design, produce and market smartphones so as to help in their production and knowledge in what the students want. This could also be important or rather helpful for mobile phone developers.

Jumoke et al. (2015) explored to identify the effects of mobile phone on student's academic performance in tertiary institution. The study was conducted on internet enabled mobile phones and its effects on students. This study was carried out using the federal polytechnic students of Ilaro, Ogun state in Nigeria. A structured questionnaire was used which was passed to 45 students. More so, 15 interviews were made also simultaneously to further examine the details derived from the students. The result from this study state that mobile phones have negative influence on the students as they focus mostly on chatting, social medias, music's, and other distractive applications while their academic activities are neglected. Furthermore, it was discovered during this study that the use of mobile phone has become unstoppable and uncontrollable as a result causes lack of poor performance by students. From this study, most students blame their poor performance on the frequent use of mobile phones. We believe the biggest effect of using mobile phone is the addictive desire to use the social networks. They also believe that more percentage of students use social networks more than eBooks.

2.2 Mobile Learning Usage

Having gone through the study conducted by Jamine and Dijana (2015), the focused their research on usage of m-learning in higher education and identify the elements and characteristics of students to adopt m-learning in Croatia. The study went on to make an online survey on usage of m-learning in general by students that have been enrolled into Croatian territory. The result of the study states that the frequency of use of M-learning in smartphones differs compared to that in tablet. The student who possesses smartphones have higher percentage with (83.7%, N=461) while the percentage of students with tablet is lesser with 27.4%. Although, most student with

Mobile devices do not use it for educational purpose with (37.7% N=126). But the study was conducted for student from 14 different institutions. In this study, Jasmine and Dijana found out that 44.4% of students use their Mobile devices to communicate with their lecturers.

According to the study by Ayoade (2015), he used the UTAUT model to explore students' behavioral intention to adopt and use M-learning in higher institutions in Nigeria. The study uses a questionnaire followed by a quantitative approach for data collection. A total of 250 students were selected from five different institution and the discovered four hypotheses. The data gotten were tested against the research model using regression analysis. With performance expectancy is the highest predictor the result of the study showed that 2 other factors affect the intention to adopt Mobile learning by students except facilitating conditions which are social influence and effort expectancy. More so, the study shows that the proposed model describes 48.2% of the variance in the adoption. Intention to use mobile learning services must be developed based on students' suggestion in order to meet their performance expectation. The service must be compatible with different mobile devices and their operation systems. The study also made it known that educational institutes should create awareness about the important and benefits of Mobile learning to student. Also the services providers to should conduct training for early adopters which can later persuade others into adopt the devices

Cavus (2016) explained that an application has come into play which can be used to teach English as a language by the use of kids' stories on mobile devices. This study was made to discover the level of help that which this product can give interactive environment on mobile devices for student to be able to develop the English skill and ability in areas of writing, speaking(oral) and abilities to read and understand passages for private studies. Furthermore, this application was developed with speech recognition engine that recognizes the word and helps student take note of pronunciation error. This study looked into 37 learners which were assessed after a pre-test and post-test in order to get a view on the abilities of learning language. The result shows that student have improved based on statistics in their ability to learn language (skill) by using this application hence the application can possibly be used for English teaching purpose to foreign users.

John and Irene (2017) said on their research about mobile learning adoption in college of educations: students' perspectives that 26% of the total country's (Nigeria) population has no access to education. A case study in Nigeria with 320 students involved from colleges of education, a quantitative research designed was distributed. In the study, a descriptive and regression analysis were done and according to the unified theory of acceptance and use of technology model, the result of the study displays the effort expectancy, social influence, performance expectancy and mobile learning conditions have positive effect with behavioral intention. mobile learning states, performance expectancy and effect expectancy significantly predict students' intention to adopt Mobile learning. Even though mobile learning is not going to solve all the problem of learning in Nigeria, it plays a key role in easing the challenges of accessibility to learning From the study conducted, the researchers concluded that the students in colleges of education in Nigeria have a positive view of mobile learning and as such, they are ready and willing to embrace it as it has not been adopted yet.

Mostapha and Khaled (2017) in their study about attitude towards the use of mobile learning which they seek to examine if there is an existence of a significant difference between the students' behavior and instructors attitudes towards the use of m-learning with respect to sex and origin. The study stated that students in the UAE have positive behavior towards the use of mobile learning than those in the Oman. However results indicate that 99% of students possess a smartphone or a tablet. More so, the study had two different questionnaires' which was share amongst students and faculty members with a total number of 383 and 54 questionnaires collected from students and instructors respectively. The researcher concluded and recommended that the study will help policy makers in making decisions for the development of mobile learning infrastructures in higher educational institutions in general.

2.3 Mobile Learning Related Study on Challenges and Barriers

Khaleel (2015) study was to investigate the barriers to which affects mobile learning and to also explore the students' perception level of mobile learning at Taubah University KSA. In the study, Edmodo application was adopted as mobile learning platform, two scales were applied to the research sample, and one aims to consist of 36 statements to help determine the perception of student to mobile learning and Edmodo. The second tend to explain measure the barrier with 17

items. This study was made in the second semester of 2013/2014 academic year. Result from the study indicates that in a general sense, students' perception for Edmodo and mobile learning is high because they think it saves time and it is much easier to use Edmodo facilities and enhanced effective communication of learning. However, every new technology has implementations barriers and this system is no different. These barriers hindering the development, full implementation of mobile learning are to be overcome in the near future. For instance, mobile device batteries could be upgraded to last longer or be replaced by solar power technology. The processor could also become faster. The researcher recommended that the institutes should encourage the addition of a section for mobile learning to start application, hold workshops for both students and professors to prepare a manual guide for learning and teaching mobile learning.

Amiaya, et al. (2015) in their study about the challenges and benefits of mobile learning adoption in OTM program in Delta state Polytechnic, Nigeria states that to guide their study, the had to employ a descriptive survey design, two null hypothesis and two research questions. The targeted population and sample includes the 55 lecturers and 210 HND II students. Data collections were made through the use of the ten item questionnaire for each research question and t-test analyses to test the null hypothesis. The benefits of mobile learning in OTM is huge and in this study, it is believed that more than 80% of lecturers and students agree with all the benefits regardless of the challenges in adopting and implementing mobile learning. A recommendation by the researcher states that the lecturers should be encouraged to adopt mobile learning so as to ease their way of lecturing. It can ease communication and stress as lecturers can deliver lectures or send vital information about lectures on their travels or at home same applicable to students. Students travelling from other states or from the capital can now enjoy their studies from their comfort zone. They also considered the adoption of mobile learning in the country and ensure for stakeholders like perception of the lecturers and students, mobile learning environment, security challenges, costs of bandwidth and motivation of lecturers are being developed.

Rana (2016) conducted a research to examine both students and instructors behavior towards this new learning and investigate the effectiveness and challenges that affects the adoption and

installation of mobile learning. The study was carried out in Kuwait where the researcher distributed 499 questionnaires to students and instructors across different higher educational institution. The result of the study displays that students and instructors have positive attitude towards mobile learning and agrees that mobile learning escalates the rate of learning and teaching in Kuwait.

Francis et al. (2013) conducted a study on the prospects and challenges of mobile learning implementation in Nigeria given 270 questionnaires been shared to six different geo political regions to get a diverse view and high population of students. They concluded in their study that although the challenges faced, the educators and students still feel adopting mobile learning and as such, mobile learning will change education for better in Africa as they believe it's a new trend worthy of adopting. They then recommended that if the challenges faced in Africa on technological infrastructures are to be gradually solved, then with the positive mindset of students and educators, education in every part of the continent will improve drastically.

Paul and Kevin (2016) used a mixed-method longitudinal research design to create a quantitative questionnaire to investigate the behavior, belief and attitudes of pre-service teachers concerning technological usage to learn or teach at classrooms in north of England. A total number of 140 questionnaires were share and results shows that lecturers' ideology is seen as a barrier and as an important factor in knowing exactly how technologies are being used as teaching tool. In this study, they also stated that infrastructures, access and training are big challenges for technology acceptance and adoption. They now recommended that questions that were not answered in their thesis should be reviewed by others and analyze so as to get a better understanding about how the various attitude and beliefs of lecturers is being challenged and activated with the ability to obtaining mobile learning.

2.4 Missing Gap in Literature Review

In this chapter, related studies on mobile leaning have been examined and the results are shown above. The Table 2.1 summarizes the studies done by different research on mobile learning. The table shows the Author of the studies, the location, the demography, the research title, results and recommendations. Studies like Amiaya et al. (2015), Khaleel (2015), and Jumoke et al. (2017) talked about the challenges, barriers, effects and benefits of mobile learning adoption in Nigeria and KSA. Other studies such as Ahmad et al. (2018) and Chye et al. (2014) conducted research on the factors that influence mobile learning adoption in Jordan and Malaysia respectively. More so, Elogie et al. (2015) also stated in their study about the factors that influence the adoption of smartphones by undergraduate students in Nigerian schools that's it isn't sufficient to predict adoption by socio-demographic characteristics. John and Irene (2017) from the study they conducted, the researchers concluded that the students in colleges of education in Nigeria have a positive mindset of adopting mobile learning and as such, they are ready and willing to embrace it. These studies did not specifically talk about mobile learning adoption in northern Nigerian higher institutes and since mobile Learning is a new learning technology to be adopted in Nigeria, the result of this thesis will help in the adoption of mobile learning and fill the research gaps.

Table 2.1: Summary of related research papers

Author	Research Type	Demography	Mobile learning evaluated
Jamine and Dijana (2015)	Quantitative	Students	Adoption of devices for m-learning
Hodjat and Amir (2018)	Quantitative	300 Students of information technology	M-learning adoption
Ahmed et al. (2018)	Quantitative	Higher institutes Student	Mobile learning readiness
Chyne et al.(2014)	Quantitative	Students	Mobile learning acceptance
Cavus and Dogan (2016)	Quantitative	37 voluntary students	Learning English using mobile device
Ayoade (2015)	Quantitative	250 selected students'	Mobile learning adoption
Jumoke et al. (2015)	Quantitative	60 polytechnic students'	Mobile devices effect on students'
Paul and Kevin (2016)	Qualitative	140 instructors	Mobile learning usage by instructors
John and Irene (2017)	Quantitative	320 students	Mobile learning adoption
Elogie et al.(2015)	Quantitative	226 students from Alli university	Smartphones effects on mobile learning
Francis et al.(2013)	Quantitative	270 students	Challenges mobile learning
Mostafa and Khaled (2017)	Quantitative	383 students and 54 instructors	Mobile learning usage
Khaleel (2015)	Quantitative	students	Barriers of mobile learning
Amiaya, et al. (2015)	Quantitative	265 students and instructors	Challenges and benefits of mobile learning
Rana (2016)	Quantitative	499 students and 110 instructors	Challenges of mobile learning

CHAPTER THREE

THEORITICAL FRAMEWORK

In this chapter, the background of the study is been encapsulated. It went on to explain the advantages and disadvantages of the study, the types and the proposed model of the study.

3.1 M-Learning

Mobile learning which is also known as m-learning is an advance way of accessing learning tools and content from mobile devices (Mohammed and Laila, 2012). As the world evolves, the advancement in technology has brought about continues improvements in devices which leads to the developments of new educational applications that can help teachers, students and management succeed in their endeavors. Communication which is one of the key to success between students and lecturers is made easy as the can interact with one another from anywhere at any point in time. This days, each lecture has a group that which the lecturer communicates and send relevant information to the students. The best part of these technological advancements is that students and lecturers gets immediate feedback from their questions and gives them time to make corrections and assignments. With the technological advancement and educational adoption of these technologies, m-learning is gradually taking over educational sectors and becoming the more valuable way of learning as it is quick, efficient and flexible to use (Sunil, 2017). Because of its flexibility, interactive nature and comfort, it attracts a wide range of learners. Mobile Learning is becoming globally recognized and necessary as it provides less stress and more knowledge to its users. Mobile Learning is generally adopted in different developing countries but although many other under developed, countries are yet to adopt these technologies due to factors that are to be discussed in this study.

Mobile learning has been around since from the early times of 2000s and with continues development in technology; it was inevitable to reach this stage in mobile learning adoption in our day-to-day lives. As we can all attest, more lecturers and students are adopting personal

computers since it was developed and it is now key to success for students and lecturers as the learning and do assignment with them and record grade respectively. With mobile devices, students can go into online classes to join thousands of other students around the world, the use it to watch in structural videos, taking multiple-choice test online and many others (Karine et al., 2012).

3.1.1 Advantages of Mobile Learning

The following are some of the advantages of the adoption of mobile learning as seen by (Gautam, 2018):

3.1.1.1 Convenience

One of the advantages of mobile learning is the ability to learn, teach, or attend a conference from your bed. This is trying to imply that, mobile learning has brought ease in day-to-day activity as it has made education easy anywhere at any point in time. By this, we mean studying is not confided to a specific place and not at a specific time instead, student can learn on the move at a speed best for them. This will enable student willingly involve themselves in learning as a result, it will seem as if they are empowering themselves instead of being just another time in school.

3.1.1.2 Privatizing learning

 My favorite thing about mobile learning is its flexibility. Because of it flexibility, learners and instructors are able to learn on move at their speed. Also because of this flexibility, it can give room for privatization. By privatization we mean, students will be able to use their personal mobile devices to access and do assignments, course materials, quiz etc. that has been shaped to their abilities. Students and education as a whole were been studied and still being studied. Moreover, from our results it is seen that students are diverse and cannot be contained to group but with the aid of mobile learning's flexibility, student's diversity can now be better addressed.

3.1.1.3 Teaching methodology

Teaching processes are made easy to adopt as mobile learning provides a friendly environment. Part of education like visual learning supports mobile learning as part of visual learning like audio, videos; pictures can easily be support the adoption of mobile learning for educational purposes.

3.1.2 Disadvantages of Mobile Learning

The following are some examples of the disadvantages of mobile learning:

3.1.2.1 Dependency

Gautam P. (2018) expressed that because of the advancement in technology, human activities are now are now strictly dependent on technological devices. It is as this result, students these days happen to lost touch of old hand skills that do not depend on technology. Old special hands skills like tailoring, carpentry, arts and crafts, shoe-making, plumbing etc. are being neglected for technological advanced methods. These skills are important skills not to be allowed to die off.

3.1.2.2 Distraction

Innovation of mobile learning is good but it also comes with disadvantage. It is a disadvantage in the sense that, student or learners tend to get distracted from learning with social media application and pop ups, games, while using their devices and as such it diverts the attention of the learners to other things other than concentrating on learning (Gautam, 2018).

3.1.2.3 Lack of resources

Lack of proper resources like internet connection while adopting mobile learning is a problem because, the availability of internet place a major part in mobile learning because without internet there is no mobile learning. (Criollo et al., 2018).

3.1.2.4 Failure in recollection

This is one of the disadvantages of mobile learning. Mobile learning also contributes to the failure to recall what have been thought mostly because you multi-task as you are learning

with mobile devices. In other studies about this, it is seen that using the traditional method of pen and paper to write from a lesson is more reliable for recollection (Robert, 2015).

3.1.3 Challenges Faced in Adoption of Mobile Learning in Higher Institution

Francis et al. (2013) in their studies stated the following challenges faced while adopting mobile learning:

3.1.3.1 Privacy

Platforms like the social platform ensure the collection of personal information about an individual registering to it and as such displays the private information. Many institutions create rooms and groups on these social media and ask student to join for easy communication and sharing of documents and with that, the students need to have an account to enable him/her join the group. When the account is created, everybody on the social platform will then be able to view the profile and if your share your private information, everybody will have access to it.

3.1.3.2 Diversity

There are numerous devices out there with different hardware output and designs; there are different operating systems which tend to confuse the user. Operating systems like IOS, Android and others are making name for themselves but this tend to confuse users who are familiar with only one system. More so, all these devices with different operating systems and different hardware tend to have different user interface and as such, users might find it difficult to use a particular device.

3.1.3.3 Prices of technological devices

Northern Nigerian is known for its population, which brings more poverty in the society. Northern men do not consider family planning. They just get children and send them to Almajiri School. Poverty level is very high in northern Nigeria and as such tends to reduce the level of exposure. The northerners are just experiencing growth and development and are still yet to be conversant with the devices. Technology acceptance here is low but mobile learning happens to be making waves in this few years. However, Higher institutions are adopting

mobile learning in a fast rate as they want to move along with global trend but the student are mostly poor and cant accord some advanced devices which are a little expensive, this hinders the growth and adopting of these technologies and mobile learning

3.1.3.4 Culture

The Author thinks that in Nigeria, a developing country, which has about 200million people, still has a long way to go in terms of technology acceptance, as the cultural diversification will not allow full adoption. This has been an issue in Nigeria as new advancement approaches, the run from it as they don't understand what it really means and will conclude on not to adopt. However, as technology encroaches from different angels, the adoption has improved. Nigerians believe strongly on their code and conduct so trespassing is not tolerated.

3.1.4 Barriers of Mobile Learning

Mike and Ade (2014) in their study about mobile learning stated the following barriers to mobile learning adoption:

3.1.4.1 Dependency

The survey revealed that one third of the population heavily relies on mobile devices as student uses their mobile devices more often than they attend classes. This is because they are now aware that they can have access to learning materials on the internet other can going to school. The idea is not quite a bad idea, but there are certain things they are missing out like; classroom discussions or quizzes.

3.1.4.2 Lack of infrastructures

Majority of the respondents stated that one of the element that restricts mobile learning adoption to develop or advance is the lack of infrastructures to supports it installation as well as the existence of consistent power supply. This power supply are does needed to keep the m-learning servers and network devices running. Nigeria is well known with the facts that there is no consistent power supply and with that, it is a negative effects on developmental projects designed for upgrading m-learning facilities.

3.1.4.3 Political and legal issues

The political influences serve as a big concern as it obstructs the development of M-learning in the country. This is due to the facts that all national programs are been politicalized and as such, legal medium of passage will be altered and installations will not be completed appropriately. Agbatogun (2012) described in his study that largely, the level of technological integration in Nigerian higher institutions is dependent on government politics.

3.1.4.4 Curriculum design

One of the main challenges faced in Nigerian universities is the modification and alignment of the curriculum to accommodate mobile learning. Majority of the respondent believe that if the institutes administrated have to upgrade their present curriculum to mobile learning context, the academic will have to degrade the new technology in their module.

3.2 Technological Acceptance Model (TAM)

This is a well recognize model mostly known as Technology Acceptance Model (TAM). It is normally used in literature to explain the readiness to adopt information technology. TAM was initially developed to determine the readiness to adopt technology by users. Davis in 1989 developed this model that has two major factors which are PU and PEU. PU is to determine that when one adopts the technology, to which extent it will influence his /her performance. PEU is to determine the extents to which one agrees that the system to be free of effort. These two appear to be the best but there are others, which are; Behavioral factor is one, which dictates the level that which one adopts a system. The external factor/variables is one that some up all the other factors that will consider an individual to accept technology like; students willingness to use factors, social factors and facilitating condition factors. Finally, the attitudes toward using a system which is the users' ideology about what he desires while using the system.
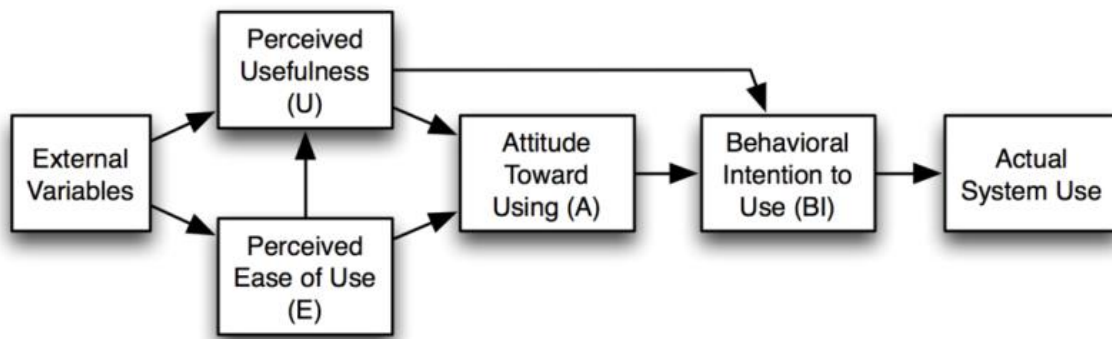
Figure 3.1: Technology Acceptance Model (Davis, 1989)

The following factors have been defined and explained by Davis in his study and also by Sun and Zhang (2006);

3.2.1 Perceived Usefulness (PU)

This is defined in a general sense as the subjective ideology that a technology can in turn enhance performance and job efficiency which will directly affect user's adoption of the technology. Individual sometimes use or done use the application to the extent that it helps them do their work better.

3.2.2 Perceived Ease to Use (PEU)

This was defined and known to be what an individual thinks to an extent is effortless to use technology. Other related studies states that there are some dimension to PEU like; ease to use, ease to learn, ease to understand and begin to be skilled.

3.2.3 External variables (EV)

These are other factors that influence user's adoption and acceptance of a technology which could be willingness to use, cultural factors, social factors, etc.

3.2.4 Attitude of user (A)

This simple is the attitude on an individual towards the use of a system or technology. Attitude of user can also be said to be the desire of one towards the use of a system.

3.2.5 Behavioral intention (BI)

This is an individual's feelings of like or dislike towards a particular behavior. It is also known as an individual's efforts whether him/her is willing to try and how motivated one is to do a behavior.

3.3 Extended Technology Acceptance Model

An extended technology acceptance model was first developed by Davis and Venkatesh which showcases usage intention and perceived usefulness as it correlated with social influence and cognitive instrumental. In their study, the indicated that perceived usefulness is usually based on usage intention in many empirical technology acceptance models. Although the initial TAM model was based on the perceived ease of use determinant, the determinant of perceived usefulness gives room to organization to develop organizational intervention that will enable the ease of acceptance of new system and its usage. Because of this, Davis and Venkatesh organized a study that was published in 2000 to extended TAM which perceived usefulness and usage intention changes with the continued usage of information system (Maureen, 2016).
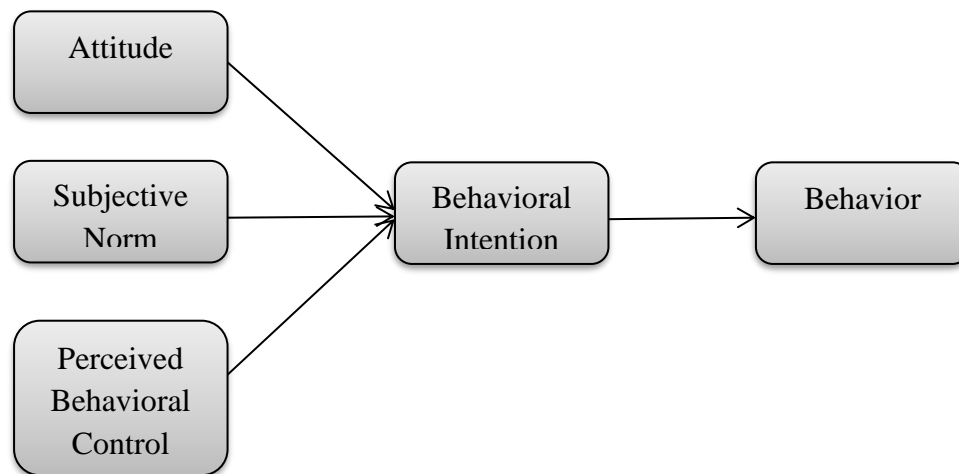
Figure 3.2: Extended Technology Acceptance Model (Fishbein and Ajzen, 1975)

The theory of planned behavior has now become one of the most influential and well known conceptual backgrounds of the study of human action Ajzen (2001). Different authors have developed various extended TAM. The aim of technology acceptance model is to examine other variables that are not in the original TAM. Similarly, this study adopted extended TAM because the TAM does not fully fit into the aim of this study to examine factors that influence the use of mobile learning. A similar extended TAM by Fisbein and Ajzen (1975) is adopted for the study because it contains some variables this study aim to examine. More so, each variable of the model is been explained by Fishbein and Ajzen, (1975) in their study which are;

3.3.1 Attitude

This is the believe of the outcome of doing a behavior and the worth of the outcome has influence on the intention to do behavior.

3.3.2 Subjective norm

This is an act of performing a determined or desired behavior by an individual as organizational and social pressure pushes for the performance.

3.3.3 Perceived behavioral control

The performance of a behavior is highly influenced by the availability of resources and the ability to dominate behavior.

3.3.4 Behavioral intention

This is known as an individual's subjective probability that he or she will embark a given behavior. Ajzen (1991) expressed himself as he indicated that a BI display how far and hard an individual is willing to try and also how properly motivated him/her is to do the behavior.

3.3.5 Behavior

This is the manner on which one conducts himself or act mostly towards others. Behavior could be in either positive or negative manner.

CHAPTER FOUR

METHODOLOGY

In this chapter, we discuss the master plan of the study. It entails the detail description of the study, the duration, sampling size, the data collection and the targeted population.

4.1 Research Model

After careful consideration and analysis, different dimensions were selected to test the relationship between independent variable and dependent variables. 5 dimensions (students' willingness to use, quality of the service, relative advantage, facilitating conditions, and self-management of learning) were taken to determine the existing relationship. In this study, the survey method was used in the collection of data. The figure below displays the research model of the study and the hypotheses to be tested. This model was derived from the (Fishbein and Ajzen, 1975) study of extended TAM. The variable didn't match the criterial so a new model is developed from that extended TAM to fit the study.
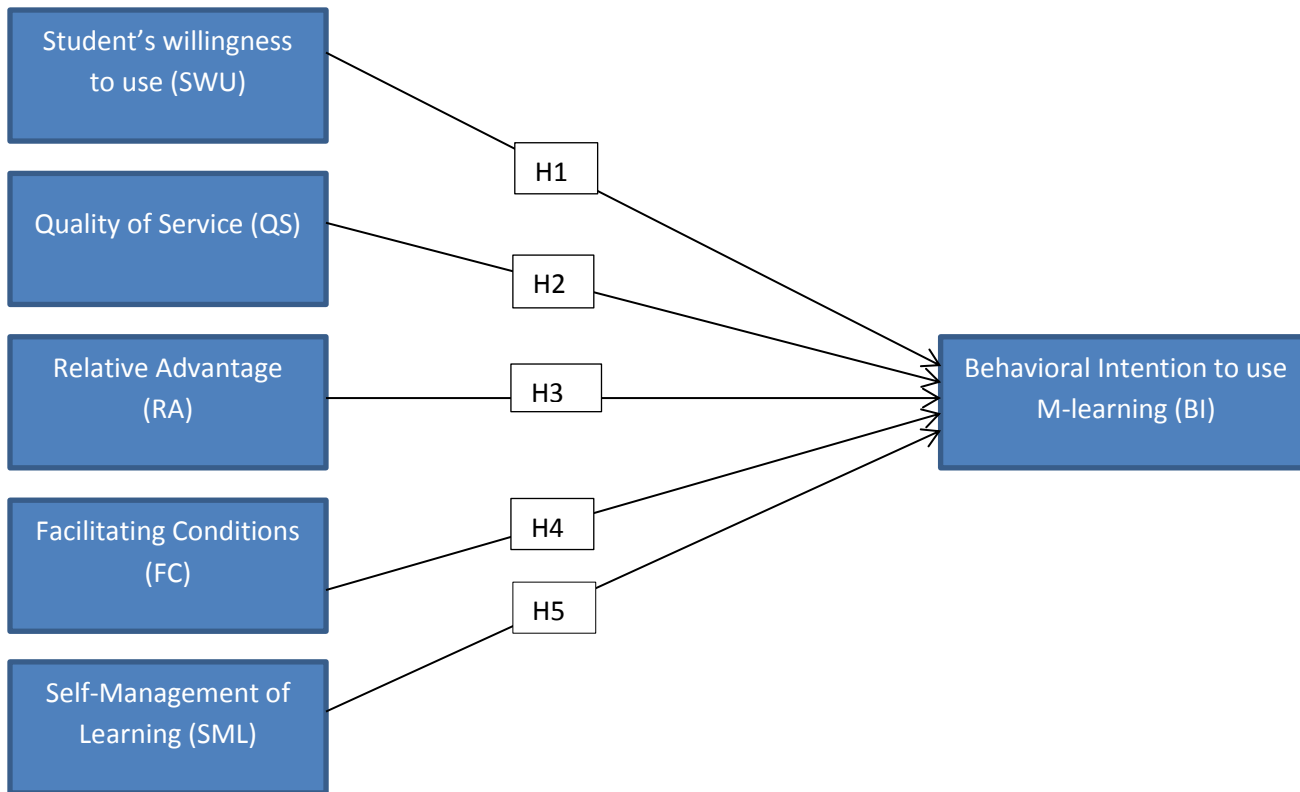
Figure 4.1: Research model of the study

4.1.1 Students' willingness to use (SWU)

This can be defined as self-ideology or mentality of a student to being capable of completing educational or learning tasks. It is divided into mobile self-efficacy and student commitment (internal). Mobile self-efficacy has from foundation formed upon the general concept of self-efficacy. Although, the construct of computer self-efficacy as ones mentality is that he/she has the ability to complete a task while using a computer.

4.1.2 Quality of services (QS)

This refers to the quality of the content if the system is reliable and it response, the personalization, privacy and its security. The quality of a service is hypothesized to have a positive effect on behavioral intention and as such, hives room for acceptance of mobile learning (Mohammed et al., 2014).

4.1.3 Relative advantage (RA)

Rogers (2005) defines relative advantage as the extent that which a technology reaches to be seen as satisfying more usefulness than it initial estimation. The relative advantage of the new mobile learning compared to the old traditional learning processes is the innovation of mobile devices. These devices have features that make them distinct like accessibility; its ubiquity, flexibility, and connectivity, student will tend to develop interest in mobile learning as it allows them access information at their convenience without restriction of time or place using their favorite devices. This variable was pick from (Ngo and Gim, 2014)

4.1.4 Facilitating conditions (FC)

The unavailability of facilitating condition can bring a negative effect on the use of it and behavioral intention as the unavailability of facilitating resources can bring blockage to usage or can deform the arrangement of negative behavioral intention towards usage (Ahmad et al., 2018).

4.1.5 Self-management of learning (SML)

When we are talking about m-learning, the skill of self-directed learning is paramount to success when it comes to participating with flexible delivery, distance education, and resource-based learning like m-learning (Prajapati and Patel, 2014)

4.1.6 Behavioral intention (BI)

This is known as an individual's subjective probability that he or she will embark a given behavior. Ajzen (1991) expressed himself as he indicated that a BI display how far and hard an individual is willing to try and how properly motivated him/her is to do the behavior.

4.2 Research Hypothesis

In other to properly investigate the factors that influence the adoption of mobile learning among higher institute students, five hypotheses were tested:

H1: Students' willingness to use has a significant influence on behavior intention.

The first hypothesis is stated to examine the relationship between student's willingness to use and behavior intention. This aim of this hypothesis is to determine if student willingness to use promote the behavior to use mobile learning among the students. Similar study by Megan and Joymara (2014) examined the intention to use mobile learning among university students. They revealed that the willingness to use mobile learning applications motivates the students to consider mobile learning in their studies.

H2: Quality of service has a positive effect on behavior intention.

The second hypothesis is stated to examine the relationship between quality of service and behavior intention. This aim of this hypothesis is to determine if quality of service enjoyed using mobile learning promote the behavior to use mobile learning among the students. Similar study by Mohamed et al. (2016) examined what motivates students to use mobile learning. They found that the quality of service enjoyed during first time use of mobile learning application pomote future use of mobile learning. In the light of this,

this hypothesis is stated to examine how quality of service influence behavior to use mobile learning.

H3: Relative advantage has a significant influence on behavior intention.

The third hypothesis is stated to examine the relationship between relative advantage and behavior intention. This aim of this hypothesis is to determine if relative advantage promote the behavior to use mobile learning among the students. Similar study by Ngo and Gim (2014) examined the benefits of mobile learning and how it influence future use of mobile learning applications by students. They found that the students relate advantage or benefit of using mobile learning to behavior to use mobile learning. In the light of this, this hypothesis is stated to examine the relationship between relative advantage and mobile learning.

H4: Facilitating condition has a significant influence on behavior intention.

The fourth hypothesis is stated to examine the relationship between facilitating condition and behavior intention. This aim of this hypothesis is to determine if the condition to use mobile learning promote the behavior to use mobile learning among the students. Similar study by Ahmad et al. (2018) examined mobile learning and the condition of use among students. They found that condition to use mobile learning facilitates the use of mobile learning applications by the students. This hypothesis is therefore stated to confirm the results by the authors and determine the relationship between facilitating condition and behavior intention of mobile learning.

H5: Self-management of learning has a significant influence on behavior intention.

The last hypothesis is stated to examine the relationship between self-management and behavior intention. This aim of this hypothesis is to determine if self-management promotes the behavior to use mobile learning among the students. Similar study by Jongpil et al. (2012) examined personal learning management and mobile learning application use among students. They found that the ability to have personal learning and management of self-learning promotes further use of mobile learning applications.

In the light of this, this hypothesis is stated to confirm the assertion that self-management learning influences the behavior to use mobile learning application.

Table 4.1 Research model dimensions

Dimension	Reference
Students Willingness to Use (SWU)	Megan and Joymara (2014)
Quality of Service (QS)	Mohamed et al. (2016)
Relative Advantage (RA)	Ngo and Gim (2014)
Facilitating Conditions (FC)	Ahmad, Amr and Zahra (2018)
Self-management of Learning (SML)	Jongpil et al. (2012)
Behavioral Intention(BI)	Ahmad, Amr and Zahra (2018)

4.3 Research Participants

The researcher conducted the study with the students from Northern Nigeria Universities. Masters and undergraduate students were selected from different departments in order to investigate the factors that influence the adoption of mobile learning amongst them. These students were selected from different departments and different age groups. A total of 430 questionnaires were distributed to the student to collect information useful to determine the adoption of mobile learning but on 402 were retrieved and analyzed as the respondents did not all return the questionnaires given a 93.5% of response.

4.3.1 Demographic data of participants

Based on table 1 statistics of the research participants in both universities, it is clearly displayed that the percentage of males to that of females is 49 to 51. The lowest age group ranges from 15-20 years which had 28.6% of the whole research while the middle age range was from 21-24 years which had 31.3% of the participants. The final age

group that is 25^+ years had the highest percentage of individuals who participated in the study with 40%.

Table 4.2: Demographic data of participants

Country	Demographic (variable)		Number	Percentage (%)
	Gender	Male	197	49
		Female	205	51
	Age Group	15-20	115	28.6
		21-24	126	31.3
		25^+	161	40
Nigeria		Smart phone	147	36.6
	Mobile Type	Ipad	71	17.7
		Pc/Palmtop	67	16.7
		All	117	29.1
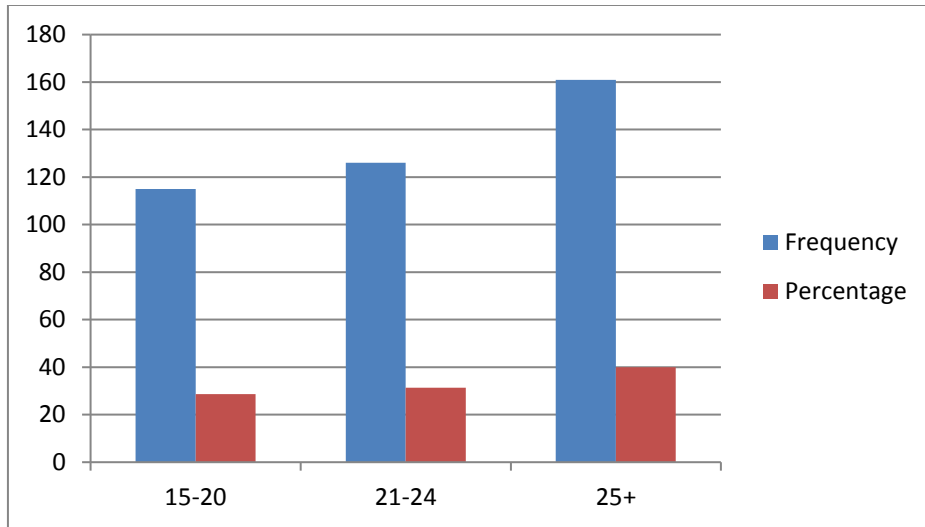
Figure 4.2: Age distribution of participants

The qualifications of the students that participated in the study are displayed as follow; Students from 1ST year have the total of 31 people which has 7.7%, students from 2nd, 3rd and 4th year have 12.4%, 32.1%, and 28.4% respectively. Students studying masters have a total number of 78 with a percentage of 19.4%.
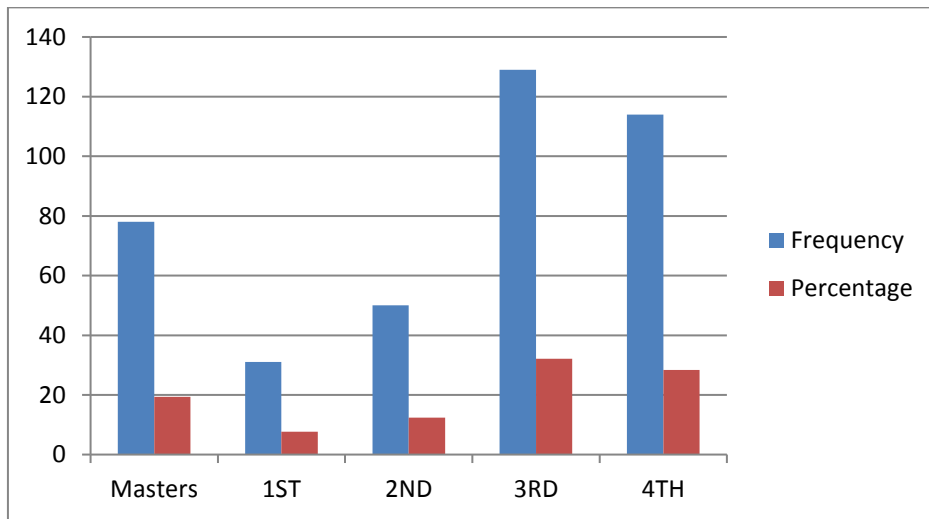
Figure 4.3: Educational qualification of participants

Federal University has (192) 47.8% while state university had (210) 52.2%. The departments the participated in the study are computer information system (cis) with

(138) 34.3%, computer engineering with (127) 31.6%, information technology (126) 31.3%, others with (11) 2.7%
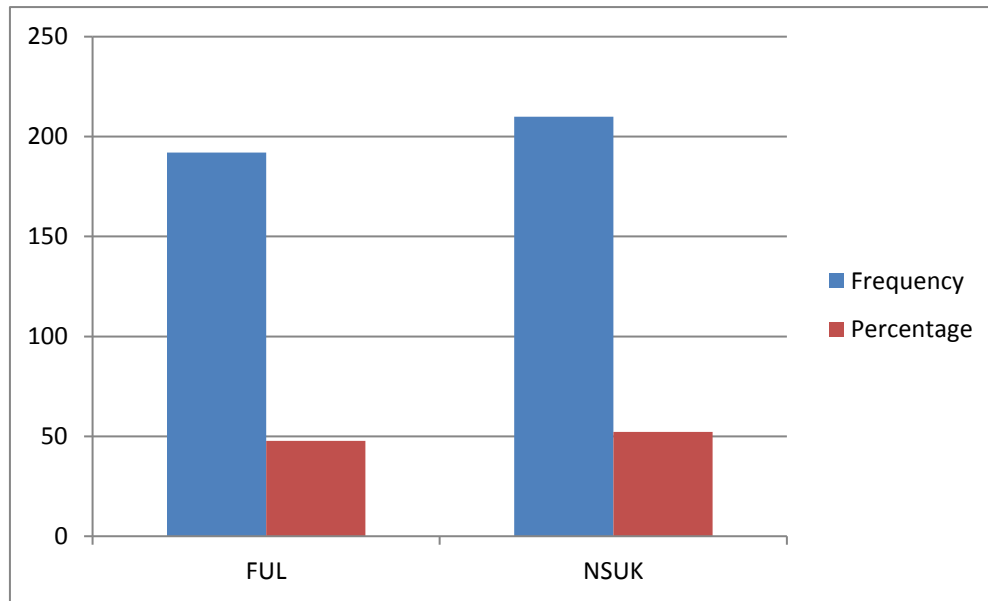
Figure 4.4: Schools of participants
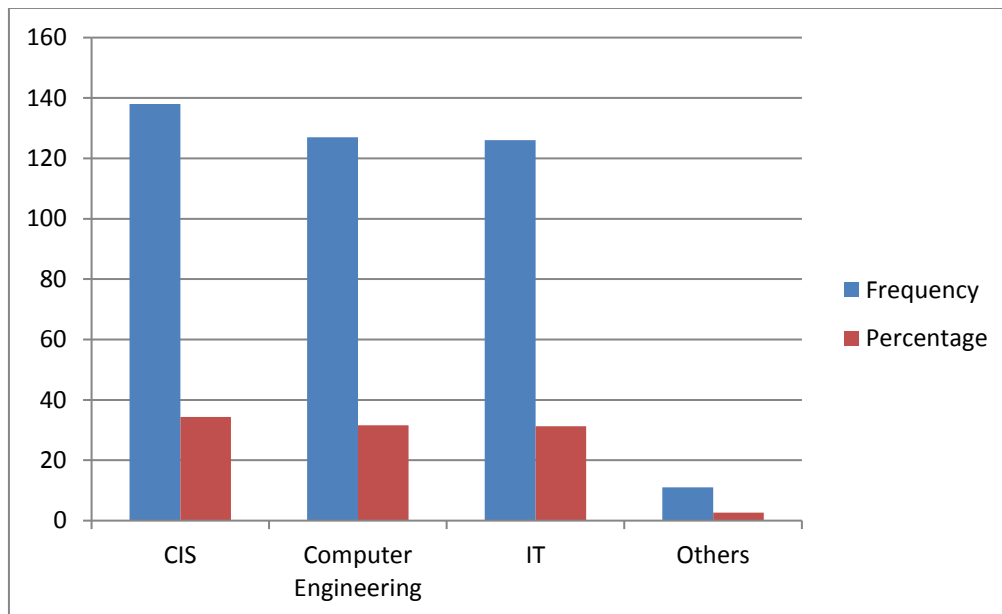
Figure 4.5: Department of participants

The questionnaire gave a lot of room to retrieve information about mobile learning adoption in higher institutions in Northern Nigeria. Questions like how long have you been using mobile devices, how often do you use the devices? Do you use mobile device for learning, how often do you use it for learning. After all questions were answered, it was discovered that 53.5% of the students uses mobile phones for learning as the availability of internet is somewhat limited. It is easier to get data for browsing on mobile phones than to get Wi-Fi for other devices like PCs' and desktops. It was also discovered that 98.0% of student uses mobile devices, 36.3% of students uses mobile device for learning 1-20 times in a year, 31.6% uses it 20-50times while 32.1% uses mobile devices learning 50times and above. More so, data collected showed that 31.6% of student use their mobile devices at school. 36.6% uses theirs at home while 31.8% said the use their MD in transit.
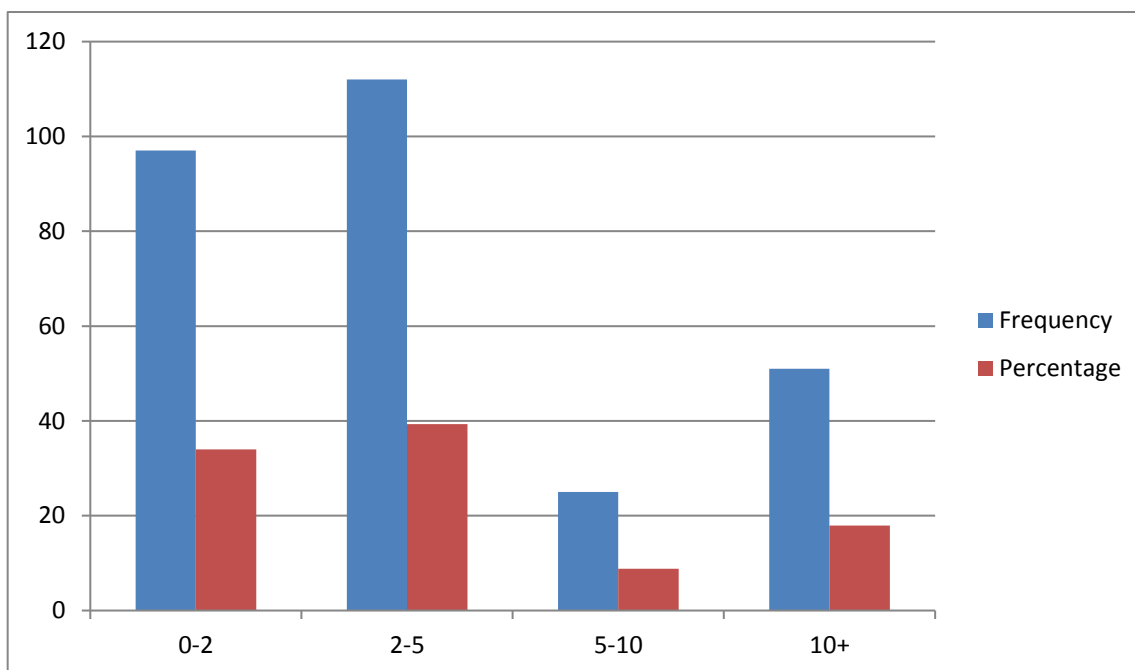
Figure 4.6: Percentage of mobile devices usage of the participants

4.4 Data Collection Tool

After a proper analysis of the settings of the study, a questionnaire was found suitable for the collection of data. Sample size was determined and a total number of 402 questionnaires were distributed to students. Designing the questionnaire was aided by the supervisor for this thesis. Students from northern Nigerian universities were approached and briefed about the study, and then they were given the questionnaire to try their best to answer the questions although not all the students agreed to be part of the study and none were forced to carry it out. The items in questionnaire contain three dimensions which can be seen in Figure 4.7 below.

SECTION I

- **Personal Information**
  - 7 items

SECTION II

- **Mobile learning experience**
  - 6 items

SECTION III

- **Factors Influencing mobile learning adoption**
  - Willingness to use (5 items)
  - Quality of service (5 items)
  - Relative advantage (5 items)
  - Facilitating condition (5 items)
  - Self-management of learning (5 items)
  - Behavioral intention (4 items)
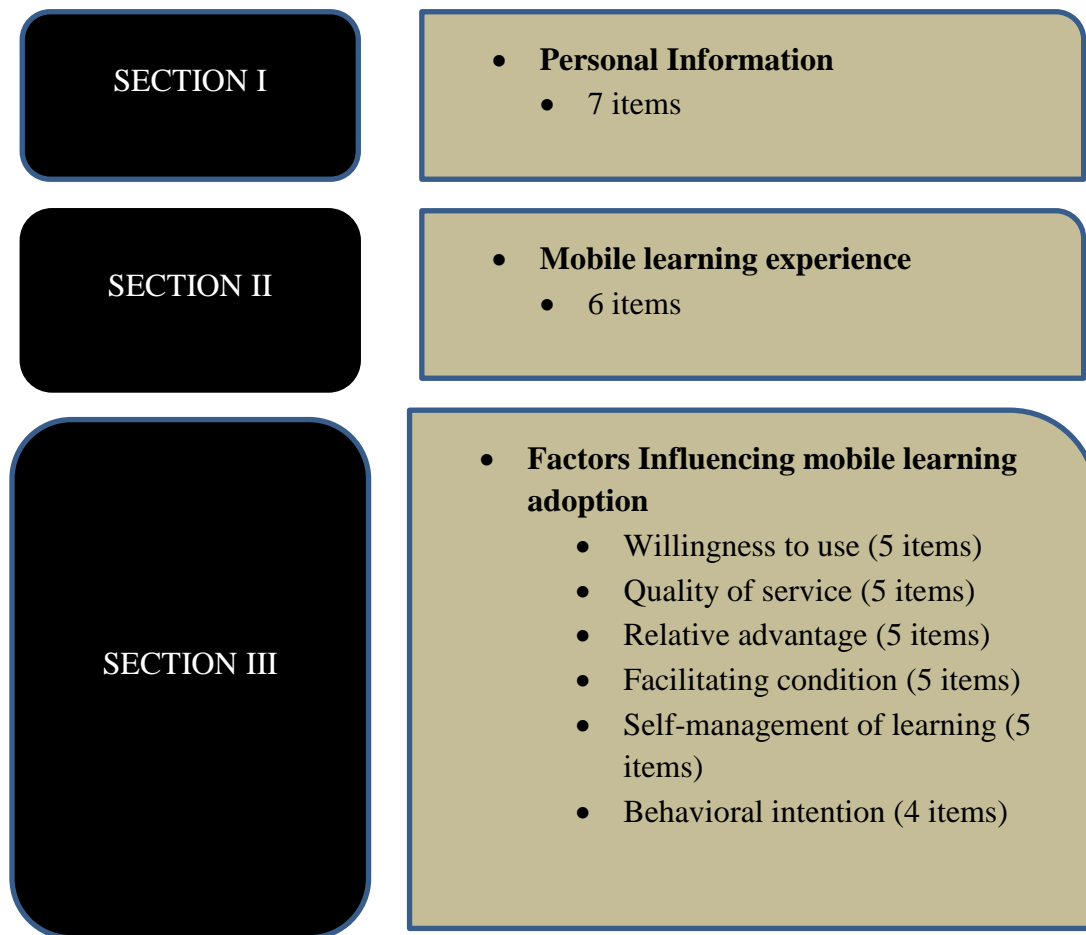
Figure 4.7: Structure of questionnaire

4.4.1 Reliability

It is given that whenever the result from a reliability testing is equal to or less than .50, it is tagged as unacceptable. When the result is from .50 to .60 it is seen as poor reliability, from the range of .61 to .70 we say the result is questionable but when the reliability result comes out as .71 to .80, we say the result are acceptable (Malley and George, 2003). From the study, it is known that when reliability is over .80, it is a good reliability more so, when reliability is above .90, it is said to be an excellent reliability.

Table 4.3 Questionnaire construct and reliability test results

Construct	Number of Items	Cronbach Alpha
Students Willingness to Use	5	.853
Quality of Service	5	.901
Relative Advantage	5	.896
Facilitating Condition	5	.819
Self-management of Learning	5	.710
Behavioral Intention	4	.792
Total	**29**	**.965**

4.5 Data Analysis Methods

Data collected from respondents were analyzed using the following:

- Analysis based on demographic data with descriptive evaluation.
- Pearson correlation was used to find correlation between the variables.

4.6 Procedure

Here are the procedures taken by the researcher in conducting the study:

i. A vivid review was done on previous studies on the research area in order to gain more insight on the thesis to be conducted.

ii. The researcher prepared a proposal summarizing the thesis and submitted it to the department of computer information system.

iii. Responds was given by the thesis supervisor concurrently in order to ensure that the quality of the thesis is top class.

iv. With the help of the thesis supervisor, a perfect questionnaire was developed.

v. Ethical committee form was filled along with the questionnaire and submitted for approval.

vi. After the approval, the questionnaires were now distributed for data collection.

vii. After the collection of data, the data were then imputed into the SPSS for analysis.

viii. Data was analyzed by the appropriate analysis method and results were displayed.

ix. During all the processes of the thesis, the thesis supervisor is being updated and the researcher being guided appropriately to complete the thesis perfectly.

x. The final edition of this thesis was presented to the jury for defense and the thesis was edited based on the correction given by the ethical committee.

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┌─────────────────────────┐        ┌─────────────────────────┐        ┌─────────────────────────┐
│ 1.  Literature Review   │        │                         │        │ 3. Receiving approval   │
│                         │   ⇨    │ 2. Finding questionnaire│   ⇨    │ for thesis topic by     │
│   • Theoretical         │        │ suitable for the study  │        │ ethical committee       │
│     framework           │        │                         │        │                         │
└─────────────────────────┘        └─────────────────────────┘        └─────────────────────────┘
                                                                                    ⇩
┌─────────────────────────┐        ┌─────────────────────────┐        ┌─────────────────────────┐
│ 6. Data Analysis        │        │ 5. Reliability Test     │        │ 4. Data collection      │
│                         │        │                         │        │   • Paper based         │
│   • Descriptive         │   ⇦    │   • Cronbach Alpha      │   ⇦    │     questionnaire       │
│     statistics          │        │                         │        │   • Ethical             │
│   • Pearson Correlation │        │                         │        │     consideration       │
└─────────────────────────┘        └─────────────────────────┘        └─────────────────────────┘
            ⇩
┌─────────────────────────┐
│ 7. Data                 │
│                         │
│   • Interpretation and  │
│     reporting           │
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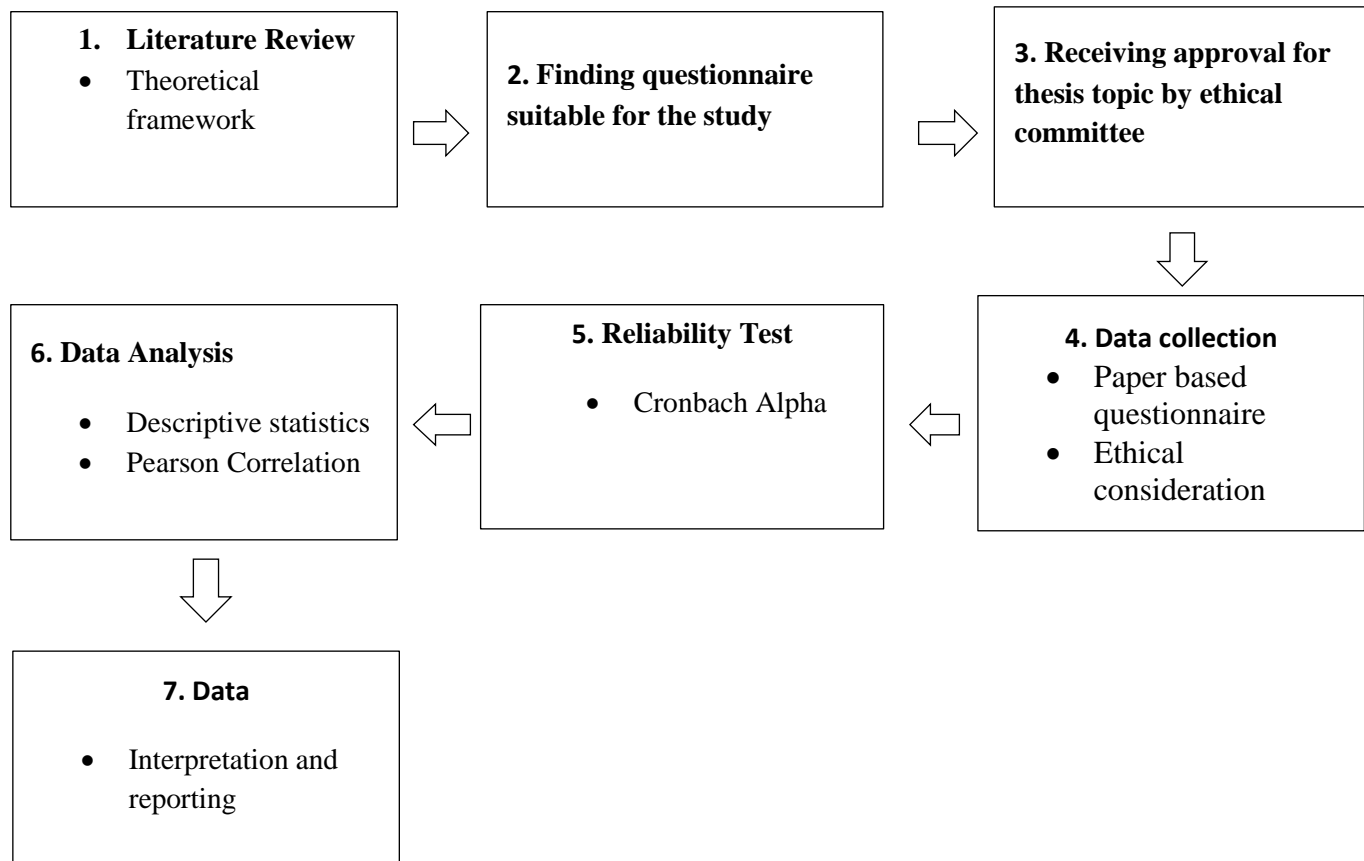
Figure 4.8: Research procedure

4.7 Ethical Considerations

To conduct a research in Near East University, it is considered necessary to request approval for the topic to be researched on as it is critical in the school to. Ethics are norms that differentiate between right and wrong. Why is ethical approval very important in research? Normally, the ethical roles are against the faking of data and therefore, dismiss any element of lies/fake and encourage the truth of the knowledge to be analyzed and displayed as it is the main aim of researching. A copy of my approval can be found in Appendix I.

4.8 Research schedule

The table below shows the duration of each step taken during the study.

Table 4.4: Research schedule

Procedure	Duration(weeks)
Literature Review	5
Thesis proposal	4
Drafting questionnaires	2
Testing questionnaires on a sample	1
Checking and analyzing sample data	1
Distributing the final questionnaires to students	3
Data collection processes, analysis and entry	5
Writing chapters	5
Thesis submission for review	1
Correction and checking of thesis	2
Jury and final correction	1
TOTAL	**30 weeks**

CHAPTER FIVE

RESULTS AND DISCUSSION

This chapter gives a detailed result of the data collected and analyzed. More so, results from the data collected were explained.

5.1 The Correlation of Students Willingness to Use on Behavioral Intention

H1: Students' willingness to use (SWU) has a significant influence on behavioral intention (BI).

In determine relationship that exists between students willingness to use and behavioral intention amongst students in both institutions, a Pearson correlation was required. Based on the result displayed in Table 5.1 with reference to northern Nigeria, There exist a moderate positive Correlation amongst Student willingness to use and Behavioral intention with r=.701, n=402 and p=.000. Since there is a positive correlation between the two variables at .701 and p<=.01, we therefore accept the hypotheses and conclude that SWU increases the attitude towards behavioral intention among the students in the both universities. This result shows that this study has a close result to Megan and Joymara (2014) as it also came to a conclusion that the students' willingness to use mobile learning applications motivates the students to consider mobile learning in their studies.

Table 5.1: The correlation of SWU on BI

		SWU	BI
SWU	Pearson correlation	1	.701**
	Sig. (2 tailed)		.000
	N	402	402
BI	Pearson correlation	.701**	1
	Sig. (2 tailed)	.000	
	N	402	402

** Correlation significant at the 0.01 level (2-tailed).

5.2 The Correlation of Quality of Service (QS) on Behavioral Intention (BI)

H2: Quality of Service (QS) has a positive correlation with behavioral intention (BI).

It is stated that there is a positive relationship between qualities of service towards behavioral intention to use. To find relationship that exists between QS and BI amongst students in both universities, a Pearson correlation was used. According to the result displayed in Table 5.2 with reference to northern Nigeria institutes, result shows an average positive Correlation amongst quality of service to behavioral intention with r=.695, n=402 and p=.000. Since we discovered that there is a positive relationship between the two variables at .695 and p<=.01, we therefore conclude that the hypotheses is accepted and QS has a positive influence toward behavioral intention to use among the students in the both universities. After concluding, result also shows that just like in (Mohamed et al., 2016) study, quality of service enjoyed during first time use of mobile learning application promote future use of mobile learning.

Table 5.2: The correlation of QS on BI

		QS	BI
QS	Pearson correlation	1	.695**
	Sig. (2 tailed)		.000
	N	402	402
BI	Pearson correlation	.695**	1
	Sig. (2 tailed)	.000	
	N	402	402

** Correlation significant at the 0.01 level (2-tailed).

5.3 The Correlation of Relative Advantage on Behavioral Intention

H3: Relative Advantage (RA) has a significant influence on behavioral intention (BI).

It was discovered from the hypotheses tested that relative advantage has a positive relationship with behavioral intention. The relationship that exists between Related Advantage and Behavioral Intention amongst students is to be determined, and Pearson correlation was required to accomplish this task. After the analysis with Pearson correlation, the result displayed in Table 5.3, says that there is a considerable positive Correlation amongst Relative Advantage and Behavioral Intention with r=.655, n=402 and p=.000. Considering that Relative advantage stimulus increase in behavioral intention at .655 and $p<=.01$, we therefore accept the hypotheses and conclude that the students relate advantage or benefit of using mobile learning to behavior to use mobile learning. More so, it was discovered that the result was similar to the result gotten from Ngo & Gim (2014) in their study.

Table 5.3: The correlation of RA on BI

		RA	BI
RA	Pearson correlation	1	.655**
	Sig. (2 tailed)		.000
	N	402	402
BI	Pearson correlation	.655**	1
	Sig. (2 tailed)	.000	
	N	402	402

** Correlation significant at the 0.01 level (2-tailed).

5.4 The Correlation of Facilitating Condition on Behavioral Intention

H4: Facilitating Condition (FC) has a significant influence on behavioral intention (BI).

There is a positive effect between facilitating condition to the behavioral intention of respondents to use. Investigating the relationship that is between Facilitating Condition and Behavioral Intention amongst students in both universities, Pearson correlations was adoption and used to determine the relationship. The result from Table 5.4 shows that there was a positive Correlation that exist between facilitating condition and behavioral intention with r=.969, n=402 and p=.000. Since there exist a positive correlation between facilitating condition and behavioral intention at .969 and p<=.01, we therefore accept the hypotheses and conclude that FC has a strong positive effect toward behavioral intention among the students in the two institutions similarly by (Ahmed et al., 2018) which came to conclude that condition to use mobile learning facilitates the use of mobile learning applications by the students.

Table 5.4: The correlation of FC on BI

		FC	BI
FC	Pearson correlation	1	.969**
	Sig. (2 tailed)		.000
	N	402	402
BI	Pearson correlation	.969**	1
	Sig. (2 tailed)	.000	
	N	402	402

** Correlation significant at the 0.01 level (2-tailed).

5.5 The Correlation of Self-management of Learning on Behavioral Intention

H5: Self-management of learning (SML) has a significant influence on behavioral intention (BI)

To find the relationship that is between Self-management of learning and Behavioral Intention amongst students, a Pearson correlation is required. Based on the result displayed in Table 5.5 with reference to northern Nigeria institute, There was a positive Correlation that exist between Self-management of Learning and Behavioral Intention with r=.972, n=402 and p=.000. Since there is a positive relation between self-management of learning and behavioral intention at .972 and p<=.01, we then accept the hypotheses and conclude that SML has a strong positive effect toward behavioral intention. More so, Jongpil et al. (2018) in their study about mobile learning stated that self-management of learning states that the ability to have personal learning and management of self-learning promotes further use of mobile learning applications. With this, we accept the hypothesis

Table 5.5: The correlation of SML on BI

		SML	BI
SML	Pearson correlation	1	.972**
	Sig. (2 tailed)		.000
	N	402	402
BI	Pearson correlation	.972**	1
	Sig. (2 tailed)	.000	
	N	402	402

** Correlation significant at the 0.01 level (2-tailed).

5.6 Summary of Hypotheses

From the hypotheses tested the first hypothesis which was to determine the relationship that exists between the students' willingness to use technology for learning and their behavioral intention to use. As seen in Table 5.1, the SWU variable has a moderate positive correlation as after they have been testing to behavioral intention. Secondly, the variables tested after the first hypothesis was to discover the correlation between quality of service and the behavioral intention to use. The testing was carried out and it was found that there is a considerable degree of relation between them as QS has a positive effect on behavioral intention of student to use. The third hypothesis tested which was RA also gave a positive interrelation with behavioral intention as seen in Table 5.3. In addition, two other hypotheses were tested as to see how the influence students behavioral intention to use. These variables were facilitating condition and self-management of learning. And as displayed in Table 5.4 and 5.5, the both have positive effects on BI and the whole hypotheses were accepted.

Table 5.6: Summary of findings

Hypothesis	External variables	Supported	Correlation coefficient (+/- Positive/Negative)	R value
H1	SWU	YES	Moderate+	.701
H2	QS	YES	Moderate+	.695
H3	RA	YES	Moderate+	.655
H4	FC	YES	Strong+	.969
H5	SML	YES	Strong+	.972
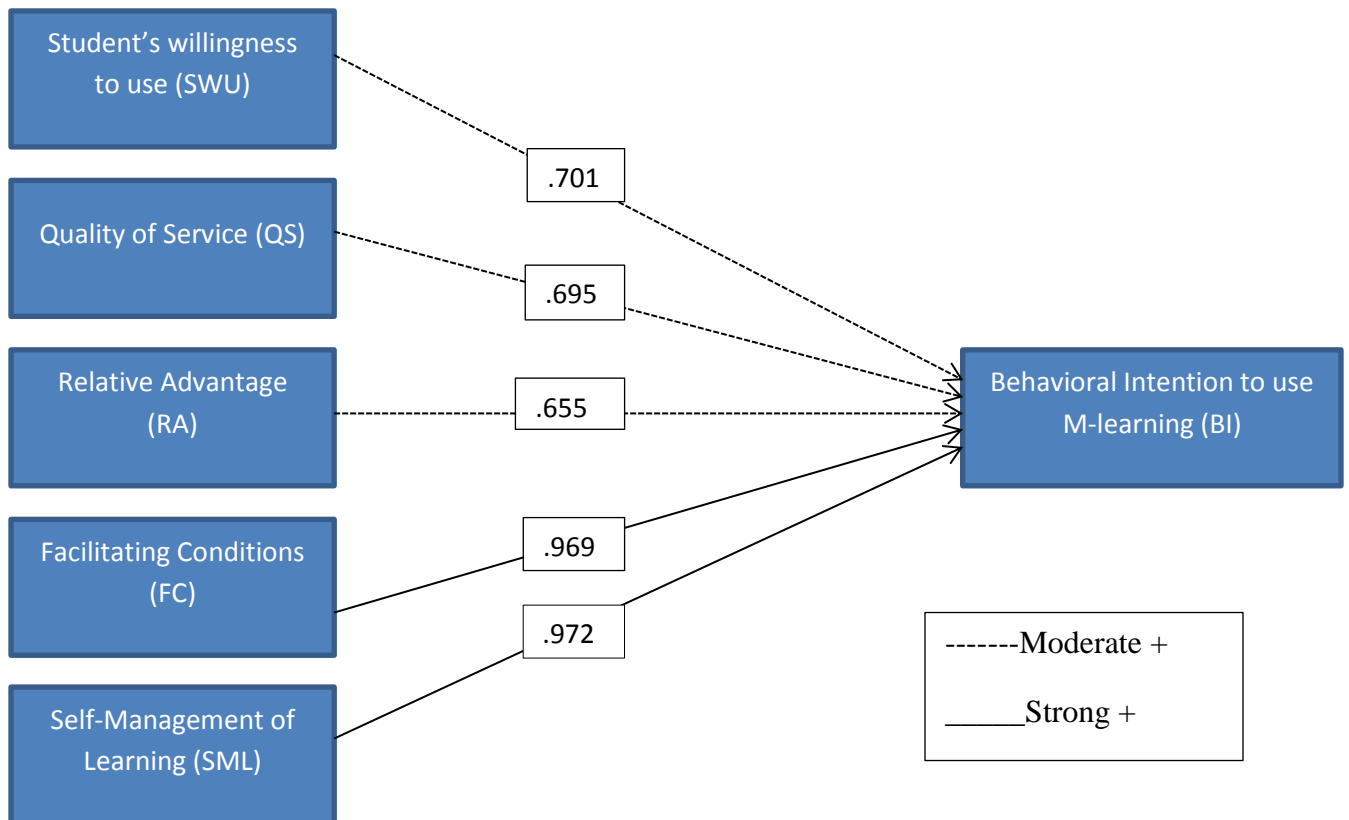
Figure 4.9: Research model showing the R value

CHAPTER SIX

CONCLUSION AND RECOMMENDATIONS

This chapter presents the summary of the result that was gotten from analyzing the data collected and the recommendation for a future study.

6.1 Conclusion

Relative Advantage (RA) is seen as a major factor facilitating m-learning acceptance by student and adoption. When mobile learning becomes increasingly useful as an instrument to increase performance, students will be more willing to use mobile learning. Many institutes and universities in developed countries have adopted mobile learning to easily provide services and make communication easy amongst university stakeholders. The more the population increases the more the likelihood of more people adopting mobile learning. The research after all consideration and analysis came to conclude that mobile learning adoption is at high rate in Northern Nigerian higher institution as the students are willing and ready to participate in learning processes with advanced technological devices at their comfort time. Nigeria is a developing country and northern part of it isn't left behind and as such, the northern part of the countries educational standard is significantly improving as mobile learning methods are taking over the sector. In order to properly implement mobile learning, it is paramount to look into both educators and learners perspectives on the concept. This study focuses on students perspectives as to determine their intention to or not to use mobile technology for learning. The main reason for this study is to investigate the adoption of mobile learning by student in the northern part of the country. To successfully achieve this aim, the researcher tested 5 hypotheses. The comprehensive conclusion on the entire research is listed as follow:

- The external factors that influence mobile learning adoption as seen in chapter 5 which are students' willingness to use, quality of service, relative advantage,

facilitating condition, and self-management of learning were all tested using Pearson correlation to determine the relationship they have with behavioral intention.

- Result shows that most students are willing and ready to adopt the use of technological devices for learning even with basic infrastructural, economic and political problems that are faced by citizens and students by politicians, institutions are being forced to adopt mobile learning as the world now revolves around technology.

- All 5 hypotheses tested in northern Nigeria gave a positive correlation between the hypotheses tested.

6.2 Recommendations

Here are some of the recommendations given after the study for future studies and expansion of related research:

- Like other studies, this study contains many restrictions or limitations as it selected students from two universities in northern part of Nigeria. Future study should ensure expansion of the sample population by including students of other universities to get broader knowledge.

- As writing in the barrier of this study, the inadequate funding by government of the country and the management of the institutions are top of the list of the problem of adopting mobile learning. If this problem can be solved, then there will be improvement in educational sectors across the country. Furthermore, not only the stated problem are the main issues as the lack of infrastructures and incomplete curriculum also have to be looked into and other barriers

- This study focuses on investigating students' perspectives and intention towards adopting mobile learning. Future study should try and look into the actual use of mobile learning in higher educational institutions.

- This study aimed at retrieving information from respondent through the use of questionnaire. Further study may try to use mixed method like the quantitative and qualitative methods to get more holistic understanding of the study.

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APPENDICES

APPENDIX 1

ETHICAL APPROVAL LETTER
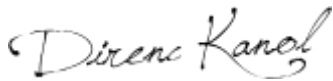
05.07.2019

Dear Ahmad Ibn Ahmad Ayitogo

Your application titled "**Mobile learning adoption in higher institutions in northern Nigeria**" with the application number YDÜ/FB/2019/58 has been evaluated by the Scientific Research Ethics Committee and granted approval. You can start your research on the condition that you will abide by the information provided in your application form.

Assoc. Prof. Dr. Direnç Kanol

Rapporteur of the Scientific Research Ethics Committee

Note:If you need to provide an official letter to an institution with the signature of the Head of NEU Scientific Research Ethics Committee, please apply to the secretariat of the ethics committee by showing this document

APPENDIX 2

QUESTIONNAIRE

Dear Student,

The purpose of this study is to determine the readiness of student to adopt the use of mobile learning in higher institutions and also to ascertain the factors that influence and the factors that affects the adoption in student. This questionnaire is aimed at getting your opinion on how you feel about mobile learning adoption among student in universities by choosing the correct answer or the answer closest to. After compilation, the result of this research will only be used for educational purpose as a report from a research.

Thank you for your interest in participating.

Ahmad Ibn Ahmad Ayitogo
Prof. Dr. Nadire Cavus

SECTION 1: Personal Information

1. Gender   a) Male   b) Female

2. Nationality   a) Nigerian   b) TRNC   c) TC   d) others……………

3. Institute   a) FUL   b)NSUK

4. Age   a)15-20   b)21-24   c)25+

5. Department   a) CIS   b) IT   c) Computer Engineering
   d) others specify………………

6. Year   a)1st b) 2nd c)3rd d)4th e) Master

7. Mobile device Ownership a) Smart phones   b) iPad   c) Pc/Palmtop   d) all

SECTION 2: M-learning experiences

1. How often do you use your mobile phones a) frequently b) sometimes c) never
2. Where do you use your mobile phone the most? a) School b) Home c) In transit
3. Do you have internet connection on your phone? YES ☐ NO ☐
4. how long have you known about M-learning a) 1-2   b) 2-5   c) 5-10   d) 10 above
5. have you ever used a mobile device for learning   YES ☐ NO ☐
6. If yes, how frequent do you use a mobile device for learning in a year? a) 1-20 b) 20-50 c) 50 and above

SECTION 3: Exploring M-Learning

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
STUDENT'S WILLINGNESS TO USE					
1. I can effectively use a mobile device to study					
2. I am capable of accomplishing a learning task					
3. I am willing to commit to learning on my device					
4. getting notifications and lecture slides on mobile devices like smart phones, iPad, personal computers motivates me in my learning process					
5. I think adopting M-learning will bring about more success and ease in my education					
QUALITY OF SERVICE					
1. The performance of the Mobile device depicts its acceptance by me					
2. I find privacy while using Mobile devices					
3. Using M-devices for learning is					

safe					
4. Mobile devices provide you with the best content in your learning process?					
5. Mobile devices are efficient and user friendly					
RELATIVE ADVANTAGE					
1. Using m-learning increases my learning productivity					
2. I am getting lecture notes, course materials available on your M-device would help in the success of my study process					
3. If I adopt M-learning, it will be beneficial to me.					
4. Accessibility and connectivity of M-devices are paramount for M-learning					
5. I will increase my chances of getting promoted by using mobile learning					
FACILITATING CONDITION					
1. I have resources necessary to use mobile learning					
2. I have the knowledge necessary to use mobile learning					
3. I have technical support manuals to help me in its usage.					
4. Purchasing device with necessary requirement to complete my school work is important to my learning success					
5. I have devices with adequate storage and processor space to enable their behavioural intention to adopt good to adopt					
SELF-MANAGEMENT OF LEARNING					
1. I have the zeal to study and can be self-direct					
2. I plan my study time well that I complete my expected task at the right time					

3. I find myself capable of reading on my own and setting up home works for myself					
4. I set objectives in my studies and I have to accomplish them.					
5. I manage my study and can multi-task when necessary with m-learning					
BEHAVIORAL INTENTION					
1. I intend to use mobile learning in the future					
2. I predict I would use mobile learning in the future					
3. I aim to use mobile learning instead of the traditional ones					
4. I plan to use mobile learning in the future					

APPENDIX 3

SIMILARITY REPORT