FACTORS INFLUENCING THE ADOPTION OF SOCIAL NETWORKING AMONG FINAL YEAR PRE-SERVICE TEACHERS IN FEDERAL UNIVERSITY OF TECHNOLOGY, MINNA, NIGERIA.

BY

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2016/1/64069BT

DEPARTMENT OF EDUCATIONAL TECHNOLOGY
SCHOOL OF SCIENCE AND TECHNOLOGY EDUCATION
FEDERAL UNIVERSITY OF TECHNOLOGY MINNA

APRIL 2023

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THE PROJECT WORK SUBMITTED TO DEPARTMENT OF EDUCATIONAL TECHNOLOGY, SCHOOL OF SCIENCE AND TECHNOLOGY EDUCATION FEDERAL UNIVERSITY OF TECHNOLOGY MINNA, NIGER STATE IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE AWARD OF DEGREE OF BACHELOR OF TECHNOLOGY (B.TECH) IN EDUCATIONAL TECHNOLOGY

APRIL 2023

ABSTRACT

This study aimed at evaluating the Factors Influencing the Adoption of Social Networking among Final Year Pre-Service Teachers in Federal University of Technology, Minna, Nigeria. Six research questions and six hypotheses were drawn to guide the study. Related literatures were reviewed after the conceptual framework based on the major variables of the study. A survey research design was adopted for the study. The population of the study comprised all four hundred and forty five (445) final year pre-service teachers in the School of Science and Technology Education, Federal University of Technology Minna Nigeria. A sample size of three hundred and fifty five (355) final year pre-service teachers was used for the study using simple random sampling technique. A structured questionnaire tagged 'Factors Influencing the Adoption of Social Networking Among Final Year Pre-Service Teachers in Federal University Of Technology, Minna, Nigeria' was used for data collection. It comprised six (6) different sections and harmonized in one single questionnaire. The findings of this study revealed that: All the four independent variables account for 12.9% of the total variance in the adoption of mobile social networking for learning.(R Square= 0.129, $p<0.05$). Thus all these four variables taken together significantly influence pre-service teachers' adoption of mobile social networking for learning. Only two out of the four independent variables account for significant variance in adoption of mobile social networking for learning. These two variables are: skill acquisition and interest. Skill acquisition accounts for 5.3% of the total variance in adoption of mobile social networking for learning while interest accounts for 7% (R Square for skill acquisition and interest are 0.053 and 0.070 respectively, $p<0.05$).Using the value of R Square to arrange the variables in the descending order of influence on adoption of mobile social networking, the order is as follows: Interest> Skill Acquisition>Affordability>Accessibility. There is a significant difference between male and female pre-service teachers' accessibility skill acquisition and adoption of mobile social networking for learning (t=-1.140, 1.023 and -2.938 respectively, $p<0.05$). Nigerian government should review the existing curriculum in order to include possible instructional support that could help students to learn effectively, one of such is mobile phone usage. The government should integrate mobile learning technology into the curriculum, starting form senior secondary school to tertiary level.

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CHAPTER ONE

INTRODUCTION

1.0 Background to the Study

Education is a systematic process through which a child or an adult acquires knowledge, experience, skill and sound attitude. Education is a systematic process through which a child or an adult acquires knowledge, experience, skill and sound attitude. It makes an individual civilized, refined, cultured and educated. In any society, education is the only means of attaining fulfillment, order and sustainable development. Its goal is to make an individual enlightened, productive and useful. Many societies give priority to education because it is a panacea for progress and a way of breaking the cycle of poverty. It is the key to solve the various problems of life. The educational world is experiencing an escalating transformation driven by the emergence of mobile devices and wireless communication technologies (Shih & Mills, 2007). Mobile phones and social networking can assist students in carrying out their assignments, obtaining data and analysis procedures and as well as submitting their assignments to their teachers. Students can get more information to add to what the teacher gives them in the class and also read ahead to discover latest developments and issues on the topics listed in the course outline. Students are able to link up with their supervisors regardless of distance.

Anasi (2005) explained that Information and Communication Technology (ICT) encompasses all those technologies that enable the handling of information and facilitate different forms of communication. These include all communication devices or applications such as radio, television, cellular phones, computers and network, hardware, software, satellite systems as well as various services and application associated with them like video conferencing and teleconferencing. Mobile learning can be conceptualized around the technology components and

focus on the devices and technical details of the delivery methodologies, or it can be focused around the mobility of the learner and the portability of learning across contexts (Traxler, 2007). The term mobile learning refers to the use of mobile and handheld information technology devices, such as personal digital assistants, mobile phones, laptops, tablets and personal computers in teaching and learning (Szucs, 2009).

In education, mobile phones have led to the evolution of new paradigm known as mobile learning (Muyinda, Mugisa,. & Lynch 2007). The rapid growth of access to mobile phones around the world especially in Africa region is commendable. Mobile phones have the potential of improving teaching, learning and institutional efficiencies to enable national education system transformation (UNESCO, 2013).

In a research like this, it is important to explore variables that can logically predict students' adoption of mobile social networking such that these multi predictor variables will be treated as independent variables. Evidences from literatures have shown that variables or factors like affordability, accessibility, skill acquisition, and interest have been linked with students' adoption of mobile social networking. For instance, Smith and Koehlmoos (2011) asserted that interest and attitude towards technology is related with adoption of technology. They defined ease of use as the degree to which prospective user expects the target system to be free of effort, while utilization deals with the way a specific application is perceived to increase job performance within an organization.

These variables (affordability, accessibility, interest and skill acquisition) have been shown to positively impact the learners' usage intention of social networking (Shen & Chen, 2008). The adoption of social networking has been positively impacted by affordability, accessibility and interest (Escobar-Rodriquez, Monge-Lozano & Romero-Alonso, 2012). Joo, Lim and Kim,

(2012) suggested that learning environment should be designed in such a way to encourage utilization and adoption of information on the internet. Research have indicated affordability as a major determinant of attitude towards a technology usage (Lim & Ting, 2012; Teo, 2001). Findings indicated that the rate at which people can afford a technology would have positive effects on both perceived usefulness and enjoyment of the information system. Affordability was found to have significant positive impact on consumers' perceptions and attitudes towards adoption of mobile and social networking (Green & Pearson 2011).

Accessibility of information sources is an important theme in this research work. However, Agulu and Aguolu (2002) submitted that resources may be available in the library and sometimes there may be identified bibliography relevant to one's area of interest, but the user may not be able to locate the material. One may identify citations in indexes but may not have access to the sources containing the relevant articles. Youngsters especially students and researchers spend most of their time in cyber café and because this is not available in the university community, they risk travelling a further distance to transact one business or another on the Internet. These members of the university community use the Internet for the resources it provides which according to Ikoro (2002), include e-mailing, world wide web browsing, telephoning, and telex/video conferencing and others.

Skill acquisition has been found to also be a determinant of adoption and acceptance of technology. Davis, Bagozzi and Warshaw (1992) found that technology is rejected by users due to the lack of skill even if the technology was easy to use. Research has shown skill acquisition as a significant variable that gives users free hand to adopt and be satisfied with technology usage across the world. The combination of skill acquisition and interest has been shown to have significant positive impact on learners' intention to use technology. Davis, Bagozzi and

Warshaw (1992) stated that usefulness and interest together represent a simple yet powerful explanation of what influences computer usage intentions. The continued user's usage intention of social networking services have been shown to be predicted by user personal interest and technology manipulation skills (Kim, 2011).

Users' interest has been shown to be a key determinant of technology usage. Research indicated that high user's involvement ultimately increases frequency of use. User interest has been found to be the "most prominent predictor" of intention to use Wikis (Shu & Chuang, 2011).

Gender has been identified as one of the factors influencing pre-service teachers' adoption of the use of social media. Gender is a range of characteristics used to distinguish between males and females, particularly in the cases of men and women and the masculine and feminine attributes assigned to them (Wikipedia, 2012). The gender issue is likely to have major implications for education and ICT use in the future. In order to ensure good communication between teachers and pupils, it is vital to understand how different groups may approach the use of ICT.

Pre- service teachers' areas of specialization were also examined to see whether they affect their perception in integrating mobile phones and social networking in learning. Empirical evidence on how teachers' areas of specializations influence on the use mobile learning are inconclusive. For instance, Akkoyunlu and Soylu (2008) found that there is no relationship between a chosen course of study and the ability to operate a computer.

1.2 Statement of the Problem

Undoubtedly, there are benefits of social networking. Some of which include: personal learning, group learning, new discoveries, possibility to contact peers, obtaining data and analysis procedures, submitting assignments and projects online, distant learning, enhancing self-esteem and feelings of well-being. However, it is quite unfortunate that our youths, students from

various institutions have abused the use of mobile social networking such that what they do with it are account hacking, cyber bullying, uploading and downloading pornography pictures, fraudulent acts, internet marriage, watching films via You tube. There is also a need to educate learners on the proper manner of using mobile phones and social networking in order to get their maximum benefits.

Studies have shown that many students crave to have application phones, computer, Android, Ipad, IOS not because they want to use them for academic purpose but to suit their self desires. There are insinuations in some quarters that mobile phones and social networking have adverse effects on students' learning. Those who share this opinion always refer to the time students spend on their devices, coupled with the issue of cyber abuse (bullying, unwanted sexual advances and cyber crime). In view of this, it is important for students, teachers, parents, counselors, guidance to be knowledgeable in the positive aspects mentioned above. Also stakeholders should also be aware of the adverse effect phone and social media can bring if wrongly used. Such negative effects include: low academic achievement, feelings of depression, guilt, shame, as well as self-harm.

No doubt, this study will serve as a guide, primarily to the undergraduate pre-service teachers on how to get the maximum benefits when using mobile phones and social networking for learning. It will also clear the erroneous belief on the use of mobile phones for learning. More so, there is need to fashion out some means and methods of selecting and using the social networking sites responsibly. Against this backdrop, this research examined Multi-predictor evaluation of undergraduate pre-service teachers' adoption of mobile social networking for learning in Federal institutions in North Western Nigeria.

1.3 Objectives of the Study

This study examined the factors influencing the adoption of social networking among final year pre-service teachers in Federal University of Technology, Minna, Nigeria. Specifically, this study determined the:

(i) The level of affordability of social networking for learning among the final year pre-service teachers of Federal University, Minna.

(ii) The Accessibility of social networking for learning among the final year pre-service teachers of Federal University, Minna.

(iii) The level of skill acquisition of social networking for learning among the final year pre-service teachers of Federal University, Minna.

(iv) The level of interest in social networking for learning among the final year pre-service teachers of Federal University, Minna.

(v) The level of adoption of social networking for learning among the final year pre-service teachers of Federal University, Minna.

(vi) Federal University of Technology, Minna pre-service teachers' mean scores in affordability, accessibility, skill acquisition, interest and adoption of social networking in each area of specialization.

(vii) Difference among factors (affordability, accessibility, skills and interest) taken together on the pre-service teachers' adoption of social networking for learning.

(viii) Difference between male and female pre-service teachers' adoption of social networking based on affordability, accessibility, skill acquisition, interest and adoption.

1.4 Research Questions

(i) How affordable is social networking for learning among the final year pre-service teachers of the Federal University of Technology, Minna?

(ii) How accessible is social networking for learning among the final year pre-service teachers of the Federal University of Technology, Minna?

(iii) What is the level of skill acquisition of social networking for learning among the final year pre-service teachers of the Federal University of Technology, Minna?

(iv) What is the level of interest in social networking for learning among the final year pre-service teachers of the Federal University of Technology, Minna?

(v) What is the level of adoption of social networking for learning among the final year pre-service teachers of the Federal University of Technology, Minna?

1.5 Hypotheses

Ho_1: There is no significant difference between male and female Students' adoption of social networking based on affordability, accessibility, skill acquisition, interest and adoption.

Ho_2: There is no significant difference in the Students' affordability, accessibility, skill acquisition, interest and adoption of social networking for learning.

1.6 Significance of the Study

The outcome of this study will be of tremendous benefit to stakeholders in education which include students (Undergraduate), teachers, parents, counselors, school administrators and policy makers thereby improving the quality of education.

It is obvious that undergraduate pre-service teachers in Northern state may have a clear understanding and the importance of using phones and social networking in learning.

The adoption of social networking for learning will surely benefit the Students in that, it enhances their engagement and participation in learning activities, provide them with a more interactive and collaborative learning experiences, where students can connect with each other, share ideas, and collaborate on project. Students will also benefit from this study because mobile phones devices have been identified as tools that help students study digital contents. It can also be used to help students prepare for examinations. Some wireless providers allow users to download sets of flashcards, drills, and practice tests onto the handset. This provides students a very handy way to study for their tests. It may also expose teachers to new innovation of delivery instruction through phones technology, which many instructors in the western world are now practicing and they believe it is effective as an alternative learning strategy that leads to higher achievement. It is hoped that it will enhance the quality of teaching and learning which will in turn improve the performance of the students.

Parents would have a clear understanding of the importance and usefulness of the mobile phones devices and social networking and should therefore willingly give their total support by purchasing mobile phones devices, laptops that have all the facilities and have higher capacity to retain the large instructional contents and software applications for their children.

The study will help the policy maker to discover the potentials of mobile phone in teaching and learning. It may help the policy maker to have directions as to allocate resources to technology in order to achieve maximum success in the issue of integrating the use of mobile phones in tertiary institutions. Curriculum developers may have a better understanding of what is happening in the world of mobile phones technologies and social networking; thereby infusing the use of mobile learning to existing policy and curriculum. Researchers and Scholars in tertiary institutions who wish to carry out some researches on the Students' perception of integrating the use of mobile

phones in learning in tertiary institutions would also benefit from the findings of this study by knowing some of the factors that influence perception on the use of mobile phones and social networking. It is hoped that the findings of this research would intimate the school authorities, management, Ministry of Education to understand the perception of pre-service teachers on the use of mobile phones and social networking. Finally, it is also expected to serve as reference materials for the students, lecturers and researchers in the same or similar discipline.

1.7 Scope of the Study

This study on Factors Influencing the Adoption of Social Networking Among Final Year Pre-Service Teachers in Federal University of Technology, Minna, Nigeria. Federal University of Technology, Minna. The Nigerian university adopted for this study is the Federal University of Technology Minna, Niger State. The respondents for the study were lecturers from all the schools in the university. The dependent variables include affordability, accessibility, skill acquisition and interest, the independent variable adoption of Social networking. Students' gender and area of specialization are the moderating Variables.

CHAPTER TWO

REVIEW OF RELATED LITERATURE

2.1 Introduction

This chapter is focused on the review of related literature to the study. Areas examined include:

2.1 Introduction

2.2.1 The Concepts/Overview of Mobile Phones and Social Networking

2.2.2 Accessibility of Mobile Phones and Social Networking

2.2.3 Adoption of Social Networking Sites (SNS) for Learning Augmentation

2.4 Skill acquisition/Self efficacy of Mobile Social Networking

2.2.5 Internet Accessibility, Adoption and Utilization

2.2.6 Students' Interest in Using Mobile Social Networking

2.2.7 Challenges, Chances and Benefits of Mobile Phones

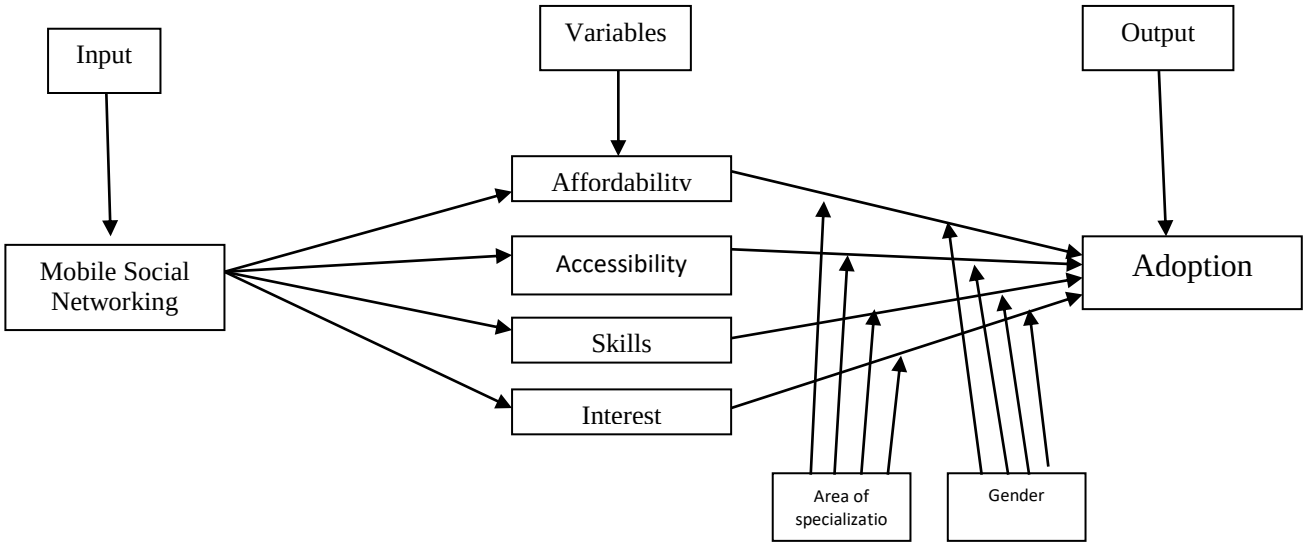
2.3 Theoretical Framework

2.2 Conceptual Framework

Affordability is the extent to which social networking is capable of being owned because of its cost. Accessibility is the quality of being able to use social networking freely irrespective of location. Skill acquisition is the level of proficiency acquired or gained to enable an individual use social networking competently. Interest is a great attention, concern and curiosity of using social networking for learning. Adoption has to do with utilization of a particular facility. This is the degree of willingness or readiness of users to utilize or make use of mobile social networking in their learning activities. Social Networking is communication with people who share the same interests using a website or other services on the internet. Mobile Phones cell phones, hand

phones that can make and receive telephone calls over a radio link while moving around a wide geographic area.

Conceptual Framework Diagram



2.2.1 The Concepts/Overview of Mobile Phones and Social Networking

There is no universally held or single definition of social networking. Social networking and mobile phones technologies in education have been viewed as tools that enable the use of participatory pedagogies, able to address the problems that have traditionally plagued distance education: creating a sense of presence, community-building, and learner participation in interactive discussions (Brady et al., 2010; Lee & McLoughlin, 2010; Naveh et al., 2010). The use of mobile phones in learning activities and teaching online course is an innovative educational technology in higher education. Mobile Phone Usage and Features Modern phones have a variety of features that simply were not possible years ago: Mobile phones are not just for voice communication anymore (Ishii, 2006). College students can access the Internet, send or receive text messages, check email, and even video chat with others quite literally from the palm of their hand. In addition, students can access a variety of social network sites (SNS) from their

mobile phones. Scholars boyd and Ellison (2008) explain that SNS are online services that allow people to create a profile, create a list of other users who share a connection with the user, and view the lists of connections created by others within that system.

2.2.2 Accessibility of Mobile Phones and Social Networking

As mobile phone use has expanded, so have concerns about overuse of the technology. A major issue has been multitasking: texting while attending a class lecture or business meeting; talking on the phone while sitting at a restaurant with a friend; texting while crossing the street; talking or texting while driving. Some situations violate traditional norms of social behavior, while others become safety issues.

In a clever experiment, (Hyman, Boss,, Wise, McKenzie, Caggiano, 2009) had a clown ride a unicycle across the main square of a university campus in the U.S. Student passersby who were on their mobile phones were less than half as likely to notice the clown as those who were not using personal electronics (such as a mobile phone or iPod). Moreover, those on mobile phones took nearly 83 seconds to cross the square, compared with 75 seconds for those without electronic devices. Use of mobile phones can also become physically dangerous. In November 2009, the Pew Internet and American Life Project reported that one–quarter of American teenagers of driving age admitted they had texted while driving (Madden & Lenhart, 2009). In a study six months later, adults acknowledged the same rate of texting (Madden & Rainie, 2010).

Despite the risks of both social inappropriateness and physical safety, mobile phone use continues to increase. One possible rationale is that standards of social acceptability have changed: While 10 years ago we may have thought it was rude for Person X to be texting while conversing face–to–face with Person Y, perhaps we are no longer bothered (Hubbard, *et al.*,

2007). In the past, notions of appropriate usage etiquette for communication technologies has shifted over time, such as in the case of landline phones (Baron, 2002). Today, etiquette for mobile phone use may be undergoing another such evolution (Humphreys, 2005). One justification often given for talking (or texting) while driving is that "I can do it safely". However, evidence consistently suggests that even talking with a hands–free device is more distracting than conversing with a person physically sitting next to you (Chabris and Simons, 2010).

2.2.3 Adoption of Social Networking Sites (SNS) for Learning Augmentation

Mobile phones are increasingly affordable for women and girls in developing countries, offer additional freedom in deciding when and where to use them for learning, and can provide on-demand access to voice-and text-based instructional materials. It is argued that they are a perfect vehicle for making educational opportunities accessible to rural girls in places and times that are more convenient than formal schooling (Kumar et al, 2010). Mobile phones are an attractive and affordable means to maintain literacy skills, to obtain information, and hold great potential for reaching marginalized girls and women by providing them access to further learning and development. "Making girls and women wait for access to education when mobile phones are available (or becoming available) to them could be one of the greatest missed opportunities in the coming decade" (Zelezny-Green, 2013).

In a study of the use of alternative social networking sites in education, Brady et al. (2010) put forward that, to date, the higher educational community has been noticeably slow in adopting social networking technologies into the curriculum. Ajjan and Hartshorne (2008), support the call for students, faculty, and administrations to explore the use of SNSs in education in their research into faculty decisions to adopt Web 2.0 technologies in their classrooms. The authors

suggests that social networking sites and mobile phones could be used to establish a series of academic connections, or to foster collaboration and cooperation in the higher education classroom. There are some instances where this potential for the use of social media has been recognized. Griffith and Liyange (2008) suggest that the positive aspect of SNSs, mobile phones and their use is starting to be seen, as students are using SNSs in their academic studies for group and team-based work.

2.2.4 Skill acquisition of Mobile Social Networking

Survey shows that 800 American young people between ages 12 and 17 regarding their use of mobile phones are very accurate in information Lenhart, *et al.* (2010) . The researchers report that half of the teens were sending 50 or more messages a day, with older teenage girls sending an average of 100 messages daily. Clearly, text messaging on mobile phones is a vital element of the lives of many American teenagers, though voice calls remain part of their communication patterns as well (Nielsenwire, 2010). Even before the explosion of mobile phone use in the U.S., international research has documented the pervasive use of mobile phones by teenagers and young adults in other parts of the world (*e.g.*, Ito, *et al.*, 2005; Kasesniemi, 2003).

2.2.5 Internet Accessibility, Adoption and Utilization

Ani (2010) investigated the extent and level of Internet access as well as the use of electronic resources by undergraduate students in three Nigerian Universities. Ani's findings revealed that undergraduate students use the Internet extensively. However, access to the Internet in the university libraries, departments/faculties and university computer/ICT centers was grossly poor due to the infrastructure. The majority of the respondents relied on private, commercial Internet services, and cybercafés. It was also found that Internet education for the respondents is needed for the use of electronic resources and databases. Luambano and Nawe (2004) investigated the

Internet use by students of the University of Dar es Salaam. Their findings revealed that the majority of the students were not using the Internet due to the inadequacy of computers with Internet access, lack of skills in Internet use and slow speed of computers. It was also revealed that most students who used the Internet did not use it for academic purposes. It was suggested that more computers connected to the Internet should be provided and that training should be given to the students on the use of Internet.

2.2.6 Students' Interest in Using Mobile Social Networking

Schools all over the world are challenged to prepare their students for a global 21st century marketplace, which needs to teach 21stcentury skills (e.g. self-directed and collaborative learning) (Norris, Hossan, & Soloway 2011). For most people living in developing countries, cellphones are the only computing technology they know and have access to. This makes mobile phones a potential alternative for computer-supported learning. The cellphone has been argued to be an appropriate device for educational delivery in the so-called developing world (Browne 2003, Kam et al. 2009). Cellphones have the potential to improve education for millions of underprivileged users; it is set to become a catalyst for narrowing the digital divide in developing countries. The cell phone has the potential to provide an alternative access and participation mechanism for those who have previously been "digitally excluded " (Ford & Botha,2009).

2.2.7 Challenges, Chances and Benefits of Mobile Phones

Mobile phone adoption enables direct access to multiple applications. They offer a number of advantages and indicate great potential as learning tools, depending on its proper use. Teens prefer using their mobile devices to going online. Because the Internet makes things more transparent and people can post anonymously, kids may come across extreme messages about gender roles that they may not be exposed to in their everyday lives (cyber mobbing, sexting).

The deeper media messages are embedded in young people's social media lives, the more important it becomes to teach them how to recognize gender biases and empower them to challenge harmful stereotypes. Each child should be appropriately educated to be aware of the dangers in the virtual environment and should know the basic self-protection techniques. With Social Networks they can make an effort to not perpetuate gender stereotypes in the videos, images, comments, and messages that they share. Games and media applications can play an important role in introducing new functions. On the other hand, such applications can distract the actual learning process. However, owning a mobile phone does not necessarily assure that students use the device for learning purposes. The effective use of mobile phones depends much on internalized moral values of individual student rather than forcing them through rules and regulations which prohibit students from accessing mobile phones.

Goodfellow and Hewling (2005) suggest that cultural issues in an online learning environment, such as an e-learning platform, mobile learning system, and so on, were related first to the development of inequities arising from dominant cultural values embodied in learning resources and methods (e.g., Gunawardena, Wilson, & Nolla, 2003) and second to the potential online social interactions arising from cultural difference (e.g., Wong & Trinidad, 2004). Discussion forums exist in a variety of distance learning platforms, such as e-learning platforms (Moodle, Blackboard, e-tutor, etc.) or mobile platforms (WhatsApp, etc.). These forums provide online students opportunities to collaborate and cooperate together to construct knowledge (Chan, 2005). Researchers in the field of collaborative and cooperative learning consider discussion forums to be effective tools for training (Gillingham & Topper, 1999). Researchers in the field of online learning suggest that discussion forums promote the creation and development of learning communities and support the learning process (Bober & Paz Dennen, 2001; Browne, 2003;

Bodzin & Park, 2002; Rich & Hibbert, 2004; Rogers, 2000). Synchronous and asynchronous communication between students promotes learning effectiveness (Zengin, Arikan & Dogan, 2011). The online discussion integrated in mobile devices provides opportunities for students to interact socially with their instructor to facilitate learning and solve learning difficulties.

Facebook: A Social Networking Site (SNS)

Facebook was initially designed by Mark Zuckerberg, Dustin Moskovitz and Chris Hughes in 2004 as a means by which fellow Harvard students could share study-related information and socialize with peers at the University level (Calvi, Cassella, & Nuijten, 2010; Ellison, Steinfield, & Lampe, 2007). The popularity of Facebook and other social networking sites is growing to include applications in formal educational settings, such as learning management systems and augmentation of content, and in informal educational settings, such as relationship management systems, in sharing, communication, information discovery, and creative forms of behavior (Forkosh-Baruch, & Hershkovitz, 2012; McLoughlin & Lee, 2008). Despite these statements by Forkosh-Baruch and Hershkovitz (2012), this growth in popularity of social networking sites appears to be underdeveloped in the field of education, with only about 30% of college respondents reporting using SNSs in their courses, despite the fact that about half of these same students use SNSs to collaborate with classmates about course-related topics (Smith & Caruso, 2010).

Mobile phones in historical and social context

While mobile phones date back to the 1950s, the technology came of age in the 1990s with development of the GSM network in Europe, the appearance of several transmission systems in the U.S., launching of NTT DoCoMo in Japan, and simultaneous growth in the Middle East, the

rest of Asia, and Africa (Agar, 2003; Ling and Donner, 2009). As of 2009, there were almost 4.7 billion mobile phone subscriptions (ITU, 2009), out of a world population of about 6.8 billion. Today's mobile phones range widely in price and functions. Besides texting and voice capabilities, most phones offer tools such as an address book, a variety of ring tones, a camera, an alarm clock, a calendar, and perhaps an MP3 player or radio. Smart (3G or 4G) phones have Internet access and video capabilities. Mobile telephony has permeated across cultural groups, economic strata, and age cohorts (Katz, 2008; Ling and Donner, 2009). However, since they were first introduced, mobiles have enjoyed an especially high uptake among teenagers and young adults.

Ning: A Social Networking Site (SNS)

Brady et al. (2010) studied one online and two hybrid graduate courses that used the Ning social network (http://www.ning.com/). After surveying the students, these researchers found that the majority of participants agreed that communication and collaboration were appreciably enhanced after using Ning. Results suggest that there are potential learning benefits derived from the SNS, leading these researchers to argue that the tool can potentially be used to improve learning experiences. Similar findings were reported by Wang, Woo, Quek, Yang, and Liu (in press), where the researchers found that students in two teacher education hybrid courses were satisfied with the use of the Facebook Group as an LMS, though features that were perceived to be of value to education (e.g., threaded discussions) were missing from this platform. Arnold and Paulus (2010) also integrated Ning into a blended course. In their case, Ning was used as a space to host blogs, discussion forums, and course information. Students in this study believed that social networking features of the site encouraged community-building and the public nature of the tasks allowed for modeling and feedback. Nevertheless, student activity was generally

limited to assigned tasks, even though the authors argue that further student activity might have taken place that was "invisible" to them. The authors argue that such activity (e.g., reading other students' entries but not responding) is important, and though sometimes pejoratively described as "lurking," may be a vital form of participation. Focusing specifically on online education, Dron and Anderson (2009b) studied an online undergraduate course taught via the Elgg social networking platform (which is the same platform used in this study). While their findings reveal that the learner experience was generally positive, these researchers also discovered that students were "lost in social space" and needed support and scaffolding to participate in the social network.

The review of this literature suggests that SNSs hold promise for online education. Nevertheless, considerable gaps exist in the empirical literature, especially with regards to what the student experience is like in these environments. A contributing factor to these gaps is the scarcity of studies reporting on the use of social networks in formal education, with Arnold and Paulus (2010), Brady et al. (2010), Dron and Anderson (2009b), and Wang et al. (in press) being the exceptions at the time of writing.

WhatsApp: A Means of Instant Messaging and its Benefits

WhatsApp instant messaging is a cross-platform smartphone messenger that employs users' existing Internet data plan to help them network socially in real time (WhatsApp, 2010). WhatsApp provides online users with the ability to send and receive a variety of media, such as images, videos and audio media messages. Client software is available for Apple iOS, Google Android, Blackberry OS, Microsoft windows phone, among others. WhatsApp Inc. was created in 2009 (Albergotti, MacMillan & Rusli, Evelyn, 2014) by Jan Koum and Brian Acton, both formerly of Yahoo (Eric, 2012). WhatsApp instant messaging handled ten billion messages per

day in August 2012 Olanof, (2012). During June 2013, WhatsApp Inc. announced that they handled 27 billion messages every 24 hours (Sushma, 2012). WhatsApp had over 450 million monthly active users. Additionally, 700 million photos are shared daily, and 10 billion messages are also shared daily Parmy (2013). The WhatsApp platform has the following collaborative features WhatsApp, (2010).

 Provide online students with the ability to exchange text messages, images, videos, and voice notes to their social network or group and contacts.

 Provide students or instructors with the ability to create a group (social network group) that supports the social interactions of up to 11 group members. Members can engage in discussion forums.

 WhatsApp Messenger provides the ability for students to send messages without limits. The application uses a 3G/EDGE Internet data plan or Wi-Fi to ensure continuous data transmissions across the WhatsApp mobile system.

 Students using WhatsApp through a variety of mobile devices, such as smart phones, Galaxy tablets, and so on can message one another through texts, images, videos, and so on.

The impact of mobile devices in education around the world cannot be overemphasized. The most up-to-date content can be accessed immediately, from anywhere, and it can be repeatedly reviewed for better comprehension and understanding (UNESCO 2013).When it comes to mobile devices and education, most parents believe that mobile devices open up learning opportunities, benefit students' learning and can engage students in the classroom. Many parents also believe that mobiles and apps teach academic skills and content (Grunwald Associates 2013). Learning with mobile devices.

Educational benefits of mobile phones and social networking

Students at universities and major institutions of higher education use mobile communication based text messaging and instant messaging. Texting is based on short messages service (SMS) between students through mobile devices (Kasesniemi & Rautiainen, 2002). Instant messaging is based on sending brief, typed messages over the Internet between two work stations or computers. Students use both texting and instant messaging in higher education (Johnson 2007; Kennedy et al. 2008; Smith, Salaway, and Caruso 2009). Furthermore, the majority of the institutions of higher learning are willing to use both text and instant messaging for educational purposes (Jeong 2007; Kennedy et al. 2008). Motiwalla (2007), in his research related to the use of instant messaging for educational purposes, suggests that popularity and support for mobile devices within the student population is great and that the majority of students at universities benefit from texting through mobile learning devices. Other research in this field found that students in universities are oriented and positive about using mobile learning in educational fields, which argues for why researchers in this domain should investigate how mobile learning technology can be best utilized in education Litchfield et al. (2007). Other studies in the field of principal factor influencing students' motivations to engage in social interactions. Cheung et al (2008) confirmed the principal role of online social presence in determining students' engagement through mobile technologies.

2.3 Theoretical Framework

Technology Acceptance Model (TAM)

Since its introduction by Davis in the 1980s, the Technology Acceptance Modal (TAM) has been one of the most tested and widely adopted acceptance models (Teo, 2009). The modified Technology Acceptance Model (TAM) was adopted and guided the study. The model describes how a technology may be adopted to facilitate performance of a particular activity. Yang and Lin

(2010) describe TAM to be the most influential model for testing information system. According to Alrafi (2005), TAM helps to assess how potential users of a particular technology come to accept and use it. The model explains the causal relationships between system design features, perceived usefulness, perceived ease of use, attitude toward using, and actual usage behaviour. The model assisted in assessing the mobile applications used by teaching staff and the perceived usefulness of mobile phones in teaching and learning. The model will be used to assess perceived ease of use, behavioral and cultural intention to use. It was also be used to assess the actual use of mobile phones for teaching and learning. Technology Acceptance Model is a model designed to facilitate the adoption of technology by learners. The researcher will therefore go further to ensure that not only the learners will adopt the technology but should also use the technology for academic purposes.

Perceived Ease of Use (PEOU) & Perceived Usefulness (PU)

PEOU and PU have been found to positively influence aspects of mobile marketing. PEOU and PU were shown to have positive impact related to use of mobile coupons (Venkatesh & Davis, 2000; Han, Yoon & Cameron, 2001; Hsu, Wang & Wen, 2006; Jayasingh & Eze, 2010). Amin (2007) found that PEOU and PU were key predictive variables regarding customer adoption of mobile phone credit cards. These two variables have been shown to positively impact the consumer usage intention of mobile advertising (Shen & Chen, 2008). The adoption of e-prescriptions and automated medication management systems were positively impacted by the relationship between PEOU and PU (Escobar-Rodriquez, Monge-Lozano & Romero-Alonso, 2012). PEOU and PU have been found to affect adoption and acceptance of online learning. Lee, Hsieh and Hsu (2011) found that PEOU and PU had a significant positive impact on behavioral intention to use online learning systems. Online academic achievement was influenced to such a

degree by PEOU and PU that "the design of the learning environment should be centered around learners so that every feature and function of the online system is useful and easy to use" (Joo, Lim & Kim, 2012, p. 323). PEOU and PU have been shown to be major predictors of learning achievement and user satisfaction in online MBA programs (Arbaugh & Duray, 2002). Research has indicated the positive influence of PEOU and PU on the behavior intention to use university blended learning systems – a mixture of traditional and online learning (Tselios, Daskalakis & Papadopoulou, 2011).

Perceived Usefulness of Mobile Social Networking

PU has been found to also be a determinant of adoption and acceptance of technology. Davis, Bagozzi and Warshaw (1992) found that technology is rejected by users due to the lack of perceived usefulness even if the technology was easy to use. Research has shown PU to have a significant variable of user adoption and satisfaction across a range of technologies. PU was found to be a significant predictor of user satisfaction of an ecommerce website (Green & Pearson, 2011). Studies also indicated the PU was related to the adoption of mobile coupons (Jayasingh & Eze, 2010) and computers (Davis, Bagozzi & Warshaw, 1989). The expectancy of PU of a technology was stronger for men and younger workers (Venkatesh, Morris, Davis & Davis, 2003). However, usefulness of a technology should be promoted regardless of gender (Goh, 2011).

Perceived Usefulness & Enjoyment of Mobile Social Networking

The combination of PU and enjoyment has been shown to have significant positive impact on technology usage intention. Davis, Bagozzi and Warshaw (1992) stated that "usefulness and enjoyment together represent a simple yet powerful explanation of what influences computer

usage intentions". The continued user's usage intention of social networking services have been shown to be predicted by user PU and perceived enjoyment (Kim, 2011).

Involvement

User involvement has been shown to be a key determinant of technology usage. Research by Swanson (1974) indicated that high user involvement ultimately increases frequency of use. User involvement has been found to be the "most prominent predictor" of intention to use Wikis (Shu & Chuang, 2011, p. 861). *1.8 Awareness* The level of awareness of technology plays a key factor in its usage. Top-of-mind awareness was highly correlated with higher usage (Nedungadi & Hutchison, 1985) while the lack of awareness was the main reason for lack of usage of e-books among college students (Abdullah & Gibb, 2006). *1.9 Gender* Research confirms gender differences exist for already adopted technologies (Selwyn, 2007) and among genders aged 16 to 25 year olds (Goh, 2011). Females were found to have lower levels of satisfaction with and desire more training with enterprise planning software compared to males (Bradley & Lee, 2007). Sohn and Lee (2007) found females more likely than males to adopt text messaging. First year college female students were found to be less confident using computer technology than males (Madigan, Goodfellow & Stone, 2007). Males had a higher level of beliefs about using software packages successfully compared to females (Hartzel, 2003).

Diffusion Theory and Instructional Technology

The purpose of this theory is to describe how the theory of innovation diffusion has been incorporated into the field of instructional technology. Professionals in a number of disciplines have used the theory of innovation diffusion to increase the adoption of innovative products and practices. Instructional technologists, faced with a growing realization that innovative instructional products and practices have suffered from a lack of utilization, are beginning to turn

to diffusion theory in an effort to increase the adoption of instructional technologies. Diffusion is defined as the process by which an innovation is adopted and gains acceptance by members of a certain community. A number of factors interact to influence the diffusion of an innovation. The four major factors that influence the diffusion process are the innovation itself, how information about the innovation is communicated, time, and the nature of the social system into which the innovation is being introduced (Rogers, 1995). Diffusion research, in its simplest form, investigates how these major factors, and a multitude of other factors, interact to facilitate or impede the adoption of a specific product or practice among members of a particular adopter group.

The study of diffusion theory is potentially valuable to the field of instructional technology for three reasons. First, most instructional technologist do not understand why their products are, or are not, adopted. In a very real sense, the underlying causes of instructional technology's diffusion problem remain a mystery to the field. There appear to be as many reasons for instructional technology's lack of utilization as there are instructional technologists. Some instructional technologists blame teachers and an intrinsic resistance to change as the primary causes of instructional technology's diffusion problem, others cite entrenched bureaucracies and inadequate funding (Schneberger and Jost, 1994). By better understanding the multitude of factors that influence adoption of innovations, instructional technologist will be better able to explain, predict and account for the factors that impede or facilitate the diffusion of their products. Second, instructional technology is inherently an innovation-based discipline. Many of the products produced by instructional technologists represent radical innovations in the form, organization, sequence, and delivery of instruction. An instructional technologist who

understands the innovation process and theories of innovation diffusion will be more fully prepared to work effectively with clients and potential adopters (Schiffman, 1991).

Third, the study of diffusion theory could lead to the development of a systematic, prescriptive model of adoption and diffusion. Instructional technologists have long used systematic models to guide the process of instructional development (ID). These systematic ID models have resulted in the design and development of effective and pedagogically sound innovations. A systematic model of diffusion could help guide the process of adoption and diffusion in a similar manner and, perhaps, with similar results.

General Diffusion Theory

Before discussing how diffusion theory has been incorporated into instructional technology, I will provide a brief background and overview of general diffusion theory. The most important fact to consider in discussing diffusion theory is that it is not one, well-defined, unified, and comprehensive theory. A large number of theories, from a wide variety of disciplines, each focusing on a different element of the innovation process, combine to create a meta-theory of diffusion. The most likely reason why there is not a unified theory of diffusion is that the study of innovation diffusion is a fairly recent field. Rogers (1995) points out that a 1943 study by Ryan and Gross at Iowa State University provided the genesis of modern diffusion research. The Ryan and Gross (1943) study, from the field of rural sociology, used interviews with adopters of an innovation to examine a number of factors related to adoption. The interview-based methodology used in the Ryan and Gross study has remained the predominant diffusion research methodology ever since (Rogers, 1995). A number of researchers from rural sociology (e.g., Fliegel and Kivlin, 1962) and other disciplines (e.g., Weinstein, 1986) have built on the Ryan

and Gross' work to conduct studies and develop theories related to the diffusion of innovations. The researcher who has done the most to synthesize all of the most significant findings and compelling theories related to diffusion is Everett M. Rogers. Rogers' book Diffusion of Innovations, first published in 1960, and now in its fourth edition (Rogers, 1995) is the closest any researcher has come to presenting a unified theory of diffusion.. Four of the theories discussed by Rogers are among the most widely-used theories of diffusion: Innovation Decision Process; Individual Innovativeness; Rate of Adoption; and Perceived Attributes.

Innovation Decision Process

The Innovation Decision Process theory (Rogers, 1995) states that diffusion is a process that occurs over time and can be seen as having five distinct stages. The stages in the process are Knowledge, Persuasion, Decision, Implementation, and Confirmation. According to this theory, potential adopters of an innovation must learn about the innovation, be persuaded as to the merits of the innovation, decide to adopt, implement the innovation, and confirm (reaffirm or reject) the decision to adopt the innovation. This theory has been so widely cited in the instructional technology literature that Sachs (1993) writes, somewhat derisively, "after looking at [the literature] in our field, one might get the impression that the only important thing we need to know about how to encourage the adoption of innovations or how to be better change agents is that there are five stages to the innovation adoption process (p. 1)". While Sachs correctly concludes that many other important theories of innovation diffusion are overlooked, the Innovation Decision Process theory remains among the most useful and well known.

As mentioned above, the two major categories of IT-related diffusion research can be sub-divided into two subcategories. The result is a breakdown of IT-related diffusion theory into four

areas. The areas are shown in Figure 4. I will now describe the two subcategories, Developer Based and Adopter Based, in more detail

PHILOSOPHY		GOAL: Systemic Change (Macro)	GOAL: Product Utilization (Micro)
	Developer (Determinist)	Focus on the structure and establishment of an effective organizational framework.	Focus on process of designing, developing, and evaluating effective instructional products
	Adopter (Instrumentalist)	Focus on the social, political, and professional environment in specific organizations	Focus on the needs and opinions of potential adopters and characteristics of the adoption site.

Figure 4. Overview of Instructional Technology Diffusion Theories showing diffusion goal and philosophical view.

Developer Based (Determinist) Theory

The goal of developer based theory is to increase diffusion by maximizing the efficiency, effectiveness and elegance of an innovation. The developer, or architect, of superior technology is seen as the primary force for change. The underlying assumption of developer based theories is deterministic in its belief that superior technological products and systems will, by virtue of their superiority alone, replace inferior products and systems. Developer based theories of diffusion see change as following directly from a technological revolution.

Developer based theories in instructional technology assume that the best way to bring about educational change is to create a system or product that is significantly superior to exiting products or systems. Potential adopters are viewed as being predisposed to adopt innovations that are quantifiably superior. Top down school reform efforts such as the Goals 2000 initiative (Mehlinger, 1995) are excellent examples of developer based diffusion theories. These top down reform efforts seek to diffuse educational change by proposing educational systems that are

superior to existing systems. By specifying goals, organizational structures, managerial philosophies, instructional products, and fiscal strategies that have been proven to be, or at are least theorized to be, superior to existing practice, top down school reformers are counting on technological superiority to bring about change.

Instructional development (ID) models are another example of developer based theories of diffusion. Diffusion is not an element overtly described in a typical ID model (Andrews and Goodson, 1991), but the adoption of an innovation does have an implied place in the ID process. Diffusion through technological superiority is the implicit goal of the process. Andrews and Goodson (1991) list four purposes of systematic instructional design: Improved learning; improved management (of the ID process), improved evaluation (of products); and theory building. Three of the four purposes center on the creation of technologically superior products. The instructional development process assumes that technological superiority is a sufficient condition that will lead directly to the adoption and diffusion of innovative products and practices.

In order to maximize the potential benefit of diffusion theory, instructional technologists should adopt a more instrumentalist philosophy of technology. No reasonable diffusion theorist would suggest that technological superiority is the only necessary condition for diffusion. Instructional technologists have been seduced by the simplicity and basic logic of technological determinism. Superior technology does not always steam roll inferior technology, as the determinists believe. Nor does a superior technology explode onto the scene in a glorious, perfect form -- it creeps along in fits and starts. Technology's advance may be inevitable, but it is gradual. Instructional technologists should, therefore, look to the potential adopters to show us ways to gradually introduce our innovations into their societies. Of course, while a less determinist philosophy

would be beneficial to instructional technology, a totally instrumentalist philosophy would be disastrous. Turning out technically inferior and pedagogically weak products that people want to use is not the answer. Every technologist is inherently a determinist. There is no danger in being driven to improve society by improving instructional technology. The danger is to ignore the society we are attempting to improve.

2.4 Review of Empirical Studies on Adoption and the use of Mobile Social Networking

It is a widely accepted view that mobile social networking plays a vital role enhancing learning activities both in the school and outside the school. Traditional-formal learning no longer comprises the majority of our learning. Learning at present is a continuous process and technology rewires our brains (Siemens 2004).

A study conducted by Schaeffert & Ebner (2010) titled 'New Forms of Tools for Cooperative Learning with Social Software in Higher Education.' In an era of fundamental changes in education brought about by virtual worlds and augmented reality, dominated by mobile devices and applications, it is necessary to rethink the academic work environments based on the use of social applications like Facebook, YouTube, or Twitter, in accordance with the skills and learning needs of students. In this context the authors discuss how today's Romanian higher education actors perceive and use social media, trying to find out the answers to questions such as: How faculty members use social media as reflective and collaborative teaching and learning tools, also for research and professional development? Which are the potential benefits, challenges, and disadvantages in using social media in universities? Is there a need for training the educational actors in this topic? Thus in order to shed light on the research issues, they developed and applied an online questionnaire for scholars from different universities and colleges from Romania. Although the findings revealed an increasing use of social media by

educational actors for the time being, only a few universities have adopted coherent strategies and policies for pedagogical integration of social media and development of the best methods for teaching and learning based on these strategies.

Arnold and Paulus (2010) carried out a research titled 'Using a social networking site for experiential learning: Appropriating, lurking, modeling and community building'. This exploratory research investigates how students and professionals use social network sites (SNSs) for various activities. The findings show how users, both students and professionals, appropriate social network sites from their mobile phones as rich educational tools in informal learning contexts. The analysis revealed explicit forms of educational content embedded in Facebook, such as quizzes and case presentations and associated deliberate learning practices which are typically found in formal educational settings.

2.5 Summary of the Literatures Reviewed

This chapter reviewed the degree of how mobile phones and social networking have been used for teaching and learning purposes most especially in higher learning institutions. Specifically the chapter was able to elaborate more on adoption of mobile social networking and how mobile phones and social networking facilitate the teaching and learning process, identified the mobile phone applications used for teaching and learning, determined the types of learning activities facilitated through mobile phones and assessed the common limitations of m-learning that may be confronting the usage of mobile phones and social networking in learning in tertiary institutions. Some concepts that were reviewed based on various studies done by an individual or as corporate studies are: the concepts of mobile phones and social networking, mobile phones in historical and social context, young people and mobile phones, growing concern about mobile phones, researching the dark side of mobile phones, facebook: A social networking site, Ning: A

social networking site, educational benefits of mobile phones and social networking, whatsapp: A means of instant messaging and the prospects of mobile learning. All in the quest to encourage the use of mobile phone and social networking in learning in tertiary institutions.

Learners have turned to online distance learning as a reliable alternative to face-to-face education (Brady, Holcomb, & Smith, 2010; DeSchryver, Mishra, Koehleer, & Francis, 2009). One in four higher education students in the United States now takes at least one online course during their undergraduate career (Allen & Seaman, 2010). Distance education offerings have traditionally been organized and supported through learning management systems (LMSs) or content management systems (CMSs), such as Blackboard and Moodle, because these systems offer opportunities for organization, efficiency, and security (DeSchryver et al., 2009; Lee & McLoughlin, 2010; West, Waddoups, & Graham, 2006). Nevertheless, researchers have argued that these platforms have generally been used as static repositories of content, failing to provide the robust social experience found on platforms that have garnered societal interest and appeal, such as Facebook or YouTube (Brady et al., 2010; Lee & McLoughlin, 2010; Schroeder et al., 2010; Whitworth & Benson, 2010). Based on all the literatures that were reviewed, it was discovered that, there was not a particular research that covered all the four independent variables (Affordability, Accessibility, Skill acquisition and Interest) at once in ensuring adoption of mobile social networking. At the same time, most of the research that were conducted on adoption of mobile social networking for learning were carried out in southern part of Nigeria. In view of these, this research will fill the gap by combining the four independents variables (Affordability, Accessibility, Skill acquisition and Interest) at once in ensuring adoption of mobile social networking for learning. The research will also be conducted in North Western part of Nigeria.

S/N	Name of Department	SSTE 500Level

CHAPTER THREE

RESEARCH METHODOLOGY

3.0 Introduction

This chapter discussed the research design, population of the study, sample and sampling technique, research instrument, validity of research instrument, reliability of research instrument, method of data collection and method of data analysis used for the study.

3.1 Research Design

The research design that was adopted for this study is descriptive survey research design. Rahi (2017) defined descriptive survey design as a popular research design in social sciences that is associated with a deductive research approach where strategic information was collected using a pre-designed questionnaire. Since questionnaires were used to collect the needed and valuable data from the respondents (Undergraduate students) on multi-predictor evaluation of students' adoption of social networking for learning in a Nigerian University. Therefore, descriptive survey research design was appropriate for this study.

3.2 Population of the Study

The Nigerian University selected for this study is the Federal University of Technology (FUT) Minna. The target population for this study comprises of all the Final Year Students of the School of Science and Technology Education (SSTE), Federal University of Technology.

1	Educational Technology Department	140
2	Industrial and Technology Education Department	181
3	Library and Information Science Department	60
4	Science Education Department	63
	Total	**444**

Table 3:1 Population of final year pre-service teachers in SSTE, FUT, Minna, Nigeria

Source: SSTE Dean's Office, 2023

3.3 Sample and Sampling Techniques

A sample size of 355 was used for this study. A purposive sampling technique was used to select the participating School for this study. This is because this research work is to assess Final Year Pre-service Teachers of the Federal University of Technology, Minna who can only be found in the School of Science and Technology Education. Below is the breakdown of the sample. The sample size of 355 respondents is considered enough for a target population.

Table 3.2 Random sampling of pre-service teachers from four Federal University of Technology, Minna, Nigeria

S/N	Department	Actual Population	Sample Size
1	Educational Technology Department	140	85
2	Industrial and Technology Education Department	181	130
3	Library and Information Science Department	60	85
4	Science Education Department	63	55
	Total	**444**	**355**

Source: SSTE Dean's Office, 2023

3.4 Research Instrument

A structured questionnaire developed by the researcher was used for data collection. The questionnaire titled Factors Influencing the Adoption of Social Networking Among Final Year Pre-Service Teachers in Federal University of Technology, Minna (FIASNAFYPT), Nigeria consist of 55 items.

The questionnaire for the research work was designed based on the topic of the research. The questionnaire has 6 sections which contains 55 items in all. Section 'A' is on demographic data of the Students and section 'B' has 10 items on affordability, section 'C 'has 10 items on accessibility, section 'D' has 10 items on skill acquisition, section 'E' has 10 items on interest and section 'F' has 10 items on adoption. The items in the questionnaire are designed and grouped to answer the research questions. The respondents supplied answers to the questionnaire items drawn on Four-point rating scale, categorized as the follows: Strongly Agree (SA = 4), Agree (A = 3), Disagree

(D = 2), Strongly Disagree (SD = 1). The respondents indicated their level of agreement or disagreement with each item listed in the section B to F of the questionnaires.

3.5 Validity of Instruments

The instrument adopted for this study was validated by three experts from three departments. They are three senior lecturers in the areas of Educational Technology, Educational Psychology and English Language who carried out the face and content validity of the instrument and was ascertained by the researchers' supervisors. Validity is done to make sure that an instrument measures what it is supposed to measure. The suggestions and the criticisms of the experts were incorporated in the final copy.

3.6 Reliability of the Instrument

Since the instrument was adopted by the researcher. Crombach's Alpha reliability co-efficient for each of Sections B to F which measured affordability, accessibility, skill acquisition, interest and adoption are: 0.90, 0.81, 0.75, 0.86 and 0.91 respectively. According to Fulekar (2009), an instrument is said to be reliable when the reliability coefficient can be approximated to one. This shows that the instruments used in this study are reliable.

3.7 Method of Data Collection

The researcher collected an introductory letter from the Head of the Department of Educational Technology, Federal University of Technology Minna. The letter was used to obtain permission from the Heads of Departments in the various departments where the research was conducted. Respondents were briefed on the aim of the study. Questionnaires were administered and collected within two weeks.

3.8 Method of Data Analysis

The research questions were answered and the hypotheses were tested in the order earlier presented in chapter 1 at 0.05 level of significance. The SPSS 23.0 version was used to analyze the results. All the six research questions were answered using descriptive statistics. Research questions 1 to 5 were answered using frequency counts and percentages. Research question 6 was answered using means, percentages and bar charts. All the hypotheses were tested using inferential statistics. Hypotheses 1 was tested using t-test. Hypothesis 2 was tested using Analysis of Variance (ANOVA).

CHAPTER FOUR

RESULTS AND DISCUSSION

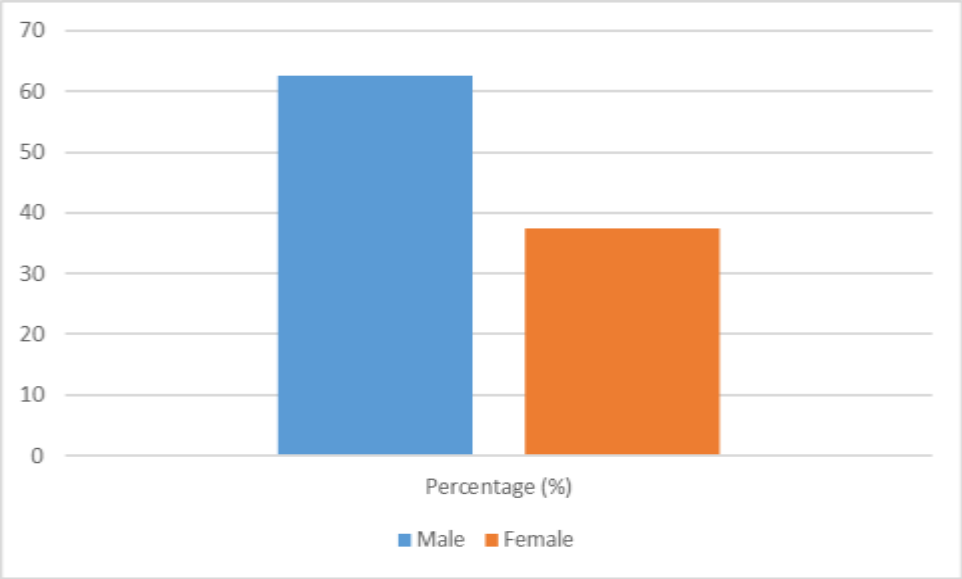
4.1 Introduction

This chapter presents the results of the data obtained from the study. The analyses of the data were based on research questions and the null hypotheses advanced in chapter one. The results obtained from the data collected for this study are presented in the following tables:

4.2 Demographic Data of the Respondents

Table 4.1: Frequency and Percentage Distribution of Respondents by Gender

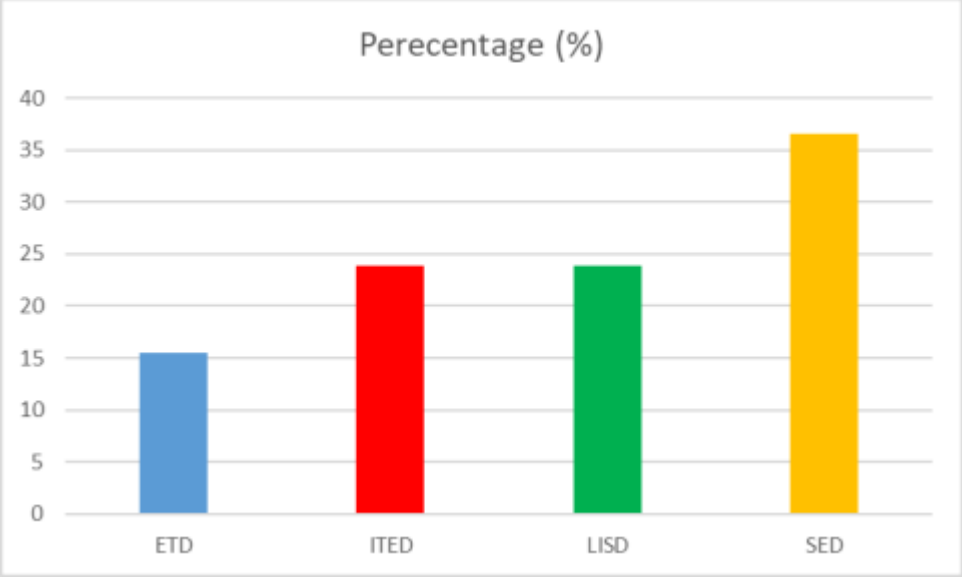
Respondents	**Frequency**	**Percentage**
Male	222	62.54
Female	133	37.46
Total	**355**	**100.00**



In Table 4.1 and Figure 4.1 above, 222 (62.5%) of the respondents were males while 133 (37.5%) were females. This means that there were more male than female pre-service teachers that took part in the study.

Table 4.2: Distribution of Frequency and Percentage of Respondents according to Departments

Department	Frequency	Percentage
Educational Technology Department (ETD)	55	15.49
Industrial and Technology Education Department (ITED)	85	23.94
Library and Information Science (LIS) Department	85	23.94
Science Education Department (SED)	130	36.62
	355	**100.00**



In Table 4.2 and Figure 4.2 above, 55 (15.49%) of the respondents are in the area of Technology, 85(23.94%) are the Social Sciences, 85(23.94%) are also in Arts while 130 (36.6%) are in Science.

4.3: Research Questions

Research Question One: How affordable is social networking for learning among the final year pre-service teachers in Federal University of Technology, Minna Nigeria?

Table 4:4 Final year pre-service teachers' response on affordability of social networking for learning

S/N	ITEMS	SA	A	D	SD	MEAN	STD.DEV
1.	I cannot afford the cost of smart phone	78 22.00%	92 25.90%	118 32.20%	67 18.90%	2.49	1.03
2.	Data for browsing is too expensive for many students	105 29.60%	150 42.30%	68 19.20%	32 9.90%	2.06	0.92
3.	The cost of using cybercafé for social networking is cheaper than mobile phone	70 19.70%	65 18.30%	100 28.80%	120 33.80%	2.76	1.21
4.	There is no free Wi-Fi in my school therefore I cannot afford buying data for smart phone	50 14.10%	76 21.40%	84 23.70%	145 40.80%	2.91	1.81
5.	Provision of good infrastructure will reduce costs and enhance the use of mobile social networking	145 40.80%	135 38.0 %	54 15.20%	20 5.60%	3.15	0.88
6.	University management has not been subsidizing for broadband access for students therefore affordability is difficult	76 21.4%	98 27.60%	134 37.70%	47 13.20%	2.43	0.70
7.	I cannot afford buying data because of indiscriminate charges by Network providers	74 20.80%	109 30.70%	115 32.40%	57 16.10%	2.44	0.99
8.	Low–cost of public internet access in public libraries school and community centres encourages me to use mobile social network	113 31.80%	123 34.80%	98 27.60%	21 5.90%	2.92	0.91
9.	Lack of parental support for using social networking does allow me to have smart phone	70 19.70%	119 33.50%	110 31.00%	56 15.80%	2.43	0.98
10.	I cannot afford regular purchase of data because of applications that consume data.	82 23.10%	116 32.70%	108 30.40%	49 13.80%	2.35	0.98
11.	I cannot afford buying power bank to support my phone battery	75 21.10%	113 31.10%	126 35.50%	41 11.50%	2.37	0.94

12.	My scale of preference will not allow me to subscribe to browsing data for social networking	97 27.30%	127 35.80%	98 27.00%	38 9.90%	2.19	0.95
	Cumulative Mean					**2.54**	

Decision Mean = 2.50

Table 4.4 above shows the final year pre-service teachers' responses on affordability of mobile social networking for learning. Their cumulative response is on the positive side of the agreement scale. The cumulative mean of 2.54 is slightly higher than the decision mean of 2.50. Thus, respondents are in the 'agreement zone' which shows they can afford mobile social networking for learning. The highest mean is on item 5 which says: 'The provision of good infrastructure will reduce the cost and enhance the use of mobile social networking'.

Research Question Two**:** How accessible is social networking for learning among the final year pre-service teachers in Federal University of Technology, Minna Nigeria?

Table 4.5 Final year pre-service teachers' response on accessibility of social networking for learning

S/NO	Items	SA	A	D	SD	Mean	Std. Dev
1.	I don't have free internet access at home	156 43.90%	110 31.00%	60 16.90%	29 8.20%	1.89	0.96

2.	There is no internet service in my community	92 25.90%	96 27.00%	91 25.60%	76 21.4%	2.43	1.09
3.	Disruptive power supply prevents me from having regular interaction on social networking	90 25.40%	149 42.00%	70 19.70%	46 13.00%	2.21	0.97
4.	Internet service is very slow in my school	65 18.30%	108 30.40%	114 32.10%	68 19.20%	2.52	1.00
5.	There is poor infrastructural facilities by the University management	62 17.50%	91 25.60%	127 35.80%	75 21.10%	2.61	1.01
6.	There is no free Wi-fi in my campus	67 18.90%	74 20.80%	112 31.50%	102 28.70%	2.70	1.08
7.	My parents do not allow me to use the internet for social networking	52 14.60%	68 19.20%	131 36.90%	104 29.30%	2.81	1.02
8.	Breakdown of optical fibre cable in my school prevents me from having internet access	44 12.40%	106 29.90%	734 37.70%	71 20.00%	2.65	0.94
9.	Internet service is not stable in Nigeria	71 20.%	130 36.60%	106 29.90%	48 13.50%	2.27	0.95
10.	The use of video streaming and downloading of heavy documents affect the speed of internet network	73 20.60%	143 40.3%	110 31.00%	29 8.20%	2.27	0.88
11.	The features of my mobile phones could not connect to Wi Fi network	62 17.5%	78 22.0%	117 33.00%	98 27.6%	2.71	1.05
Cumulative Mean						**2.47**	

Decision Mean =2.50

Table 4.5 above shows final year students' access to mobile social networking for learning. The decision mean is 2.50. The cumulative mean of 2.47 is slightly lower than the decision mean. It can also be said that cumulative mean is approximately the same as decision mean. Thus, respondents' opinion is not strictly in 'agree' or 'disagree' zone concerning the items on accessibility to social networking for learning. The highest mean is 2.81. The mean of the item with the highest mean is clearly in 'agreement zone'. It is the item that the highest majority of

the respondents agree with. Item 7 has the highest mean, it reads: 'My parents do not allow me to use the internet for social networking'.

Research Question 3: What is the level of skill acquisition of mobile social networking for learning among the final year pre-service teachers in Federal University of Technology, Minna Nigeria?

Table 4.6 Final year pre-service teachers' response on level of skill acquisition of social networking for learning

S/N	Items	SA	A	D	SD	Mean	STD
1.	I can communicate effectively with my lecturers and co-students via Facebook, WhatsApp, Twitter etc	97 27.30%	92 25.90%	116 32.70%	101 28.50%	2.76	0.98
2.	I have enough competency in the use of mobile social networking for learning	98 27.60%	148 41.70%	75 21.10%	34 9.60%	2.87	0.98
3.	I can send and download relevant materials from the internet using email	108 30.40%	163 45.90%	55 15.50%	29 8.20%	2.99	0.89
4.	I can interact with my lecturers and co-students via Skype	56 15.80%	109 30.70%	101 28.50%	89 25.10%	2.37	1.03
5.	I can download my lecture tutorials and other academic videos from you tube	79 22.30%	121 34.10%	82 23.10%	73 20.60%	2.58	1.05
6.	I can upload assignments to lecturers using various media platforms such as email whatsapp, blogs etc	95 26.80%	136 38.30%	71 20.00%	53 14.90%	2.77	1.01
7	I can have group discussion with my lecturers and co-students using blogs etc	63 17.70%	114 32.10%	118 33.20%	60 16.90%	2.51	0.97
8	I can upload and share my lecture presentation using slide share	87 24.50%	116 32.70%	91 25.60%	61 17.20%	2.50	0.99
9.	I can download podcast for learning my course(s)	79 22.30%	129 36.30%	93 26.20%	54 15.20%	2.66	0.99
10.	I can collaborate with reputable scholars via LinkedIn, Researchgate,academia.edu, slides shares, etc	66 18.60%	131 36.90%	88 24.80%	70 19.70%	2.54	1.01
	Cumulative Mean					**2.67**	

Decision Mean = 2.50

Table 4.6 shows that skill acquisition level of final year pre-service teachers in using social mobile networking for learning. The cumulative mean of 2.67 is higher than the decision mean of 2.50. Thus the respondents' general opinion is skewed to favour of high skill acquisition level in mobile social networking for learning. Item 3 has the highest mean of 2.99 which reads : 'I can send and download relevant materials from the internet via email. This is a good skill in the use of mobile social networking for learning.

Research Question 4: What is the level of interest in mobile social networking for learning among the final year pre-service teachers in Federal University of Technology, Minna Nigeria?

Table 4.7 Final year pre-service teachers' response on level of interest in social networking for learning

S/N	ITEMS	SA	A	D	SD	MEAN	STD. DEV
1.	I am interested using mobile social networking for learning	183 51.50%	117 33.00%	37 10.40%	18 5.10%	3.31	0.85
2.	Mobile social networking will enhance my learning	149 42.00%	146 41.10%	39 11.00%	21 5.90%	3.19	0.86
3.	I like to use mobile social networking for social activities	121 34.10%	155 45.70%	63 17.70%	11 3.10%	3.28	0.76
4.	I will like to learn more on the on the use of mobile social networking to improve my study	143 40.30%	140 39.40%	47 13.20%	25 7.00%	3.13	0.90
5.	I am prepared to know various ways of using mobile social networking application for learning	138 38.90%	148 41.70%	37 10.40%	32 9.00%	3.10	0.92
6.	I am not willing to use mobile social	66 18.60%	94 26.50%	87 24.50%	108 30.40%	2.67	1.10

	networking to support my learning						
7.	I imagine myself being in a lecture room where mobile social networking is used for collaborative learning	129 36.30%	135 38.00%	66 18.60%	25 7.00%	3.04	0.91
8.	I like using mobile social networking to do my assignments	130 36.60%	141 39.70%	59 16.60%	25 7.00%	3.06	0.90
9.	Mobile social networking will help me to catch up with my contemporaries across the globe	136 38.30%	136 38.30%	57 16.10%	26 7.30%	3.08	0.91
10.	I am always afraid of using mobile networking for learning	49 13.80%	81 22.00%	115 32.40%	110 31.00%	2.86	1.03
Cumulative mean						**3.05**	

Decision Mean =2.50

Table 4.7 above shows final year pre-service teachers' interest in the use of mobile social networking for learning. The cumulative mean of 3.05 is higher than the decision mean of 2.50. Thus, the general response is skewed in favour of 'strongly agree' and 'agree' side of the response scale. This implies that majority of the final year pre-service teachers have interest in using social networking for learning. Item 1 has the highest mean. It reads: 'I have interest in using mobile social networking for learning'.

Research Question 5: What is the level of adoption of mobile social networking for learning among the final year pre-service teachers in Federal University of Technology, Minna Nigeria?

Table 4.8: Final year pre-service teachers' response on level of adoption of social networking for learning

S/NO	ITEMS	SA	A	D	SD	MEAN	STD
1.	I share academic ideas with classmates using mobile social networking	134 37.70%	172 48.50%	26 7.30%	23 6.50%	3.17	0.83
2.	I make use of mobile social networking to download information useful to do my assignments	175 49.30%	132 37.20%	33 9.30%	15 4.20%	3.32	0.81
3.	I make use of internet facilities in my school	155 43.70%	154 43.40%	35 9.90%	11 3.10%	3.28	0.76
4.	I always make use of mobile phones to contact my friends	172 48.50%	133 37.50%	37 10.40%	13 3.70%	3.31	0.80
5.	I purchase data regularly to make use of the internet	113 31.80%	135 38.00%	81 22.80%	26 7.30%	2.94	0.92
6.	I make use of the opportunity of social media to always keep in touch with friends	145 40.80%	153 43.10%	41 11.50%	16 4.50%	3.20	0.82
7.	I make use of smart phones with many applications for my research assignments	144 40.60%	143 40.30%	48 13.50%	20 5.60%	3.16	0.86
8.	I always try to apply social networking to solve many academics problems	128 36.10%	164 46.20%	52 14.60%	11 3.10%	3.15	0.78
9.	I use mobile social networking to get more information on the lesson taught by my lecturers	144 40.60%	150 42.30%	46 13.00%	15 4.20%	3.19	0.82
10.	I make use of mobile social networking for collective learning	131 36.90%	149 42.00%	59 16.60%	16 4.50%	3.11	0.84
11.	I check my email regularly	116 32.70%	138 38.90%	77 21.70%	24 6.80%	2.9746	0.9031
12.	I download academic attached files from my email regularly	96 27.00%	135 38.00%	93 26.00%	31 8.70%	2.83	0.93
	Cumulative Mean					**3.14**	

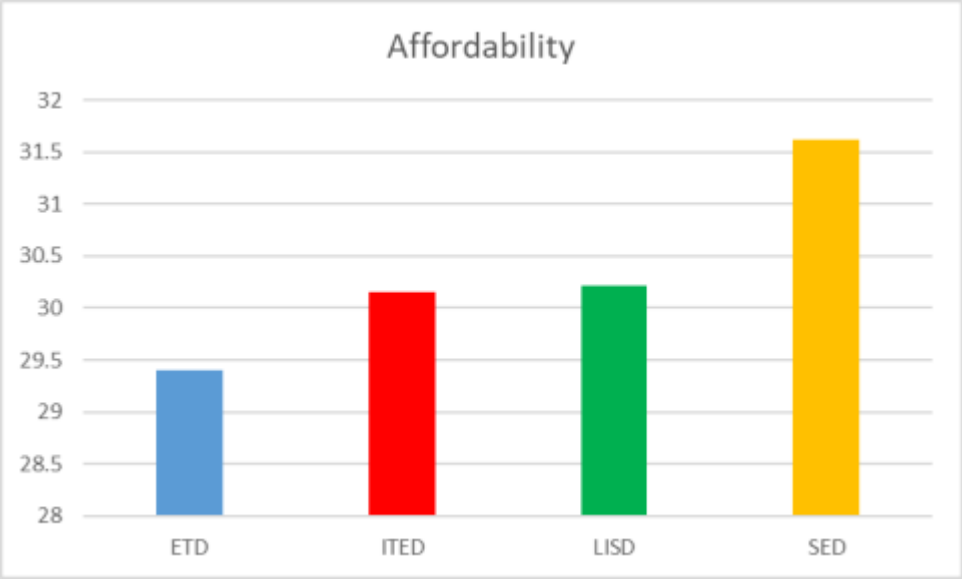
Decision Mean = 2.50

Table 4.8 above shows final year pre-service students' adoption of mobile social networking for learning. Cumulative mean of 3.14 is higher than the decision mean of 2.5. Thus, respondents are in the 'agreement zone'. In other words final year students have favorable disposition in adopting mobile social networking for learning. Item 2 has the highest mean of 3.32. Item 2 reads: 'I make use of mobile social networking to download useful information to do my assignments'. This means that many final year pre-service students are already using mobile social networking to carry out their assignments.

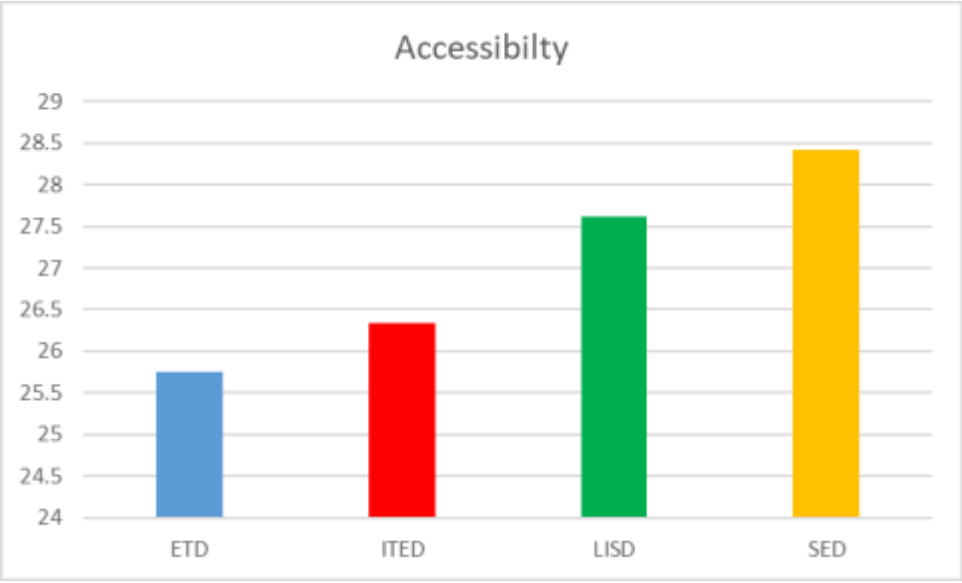
Research Question 6: What is the mean profile of final year pre-service teachers' scores in affordability, accessibility, skill acquisition, interest and adoption of mobile social networking in each area of specialization?

Table 4. 9: Mean score distribution of Affordability, Accessibility, Skill Acquisition, Interest and Adoption of Mobile Social Networking for Learning Based on Area of Specialization

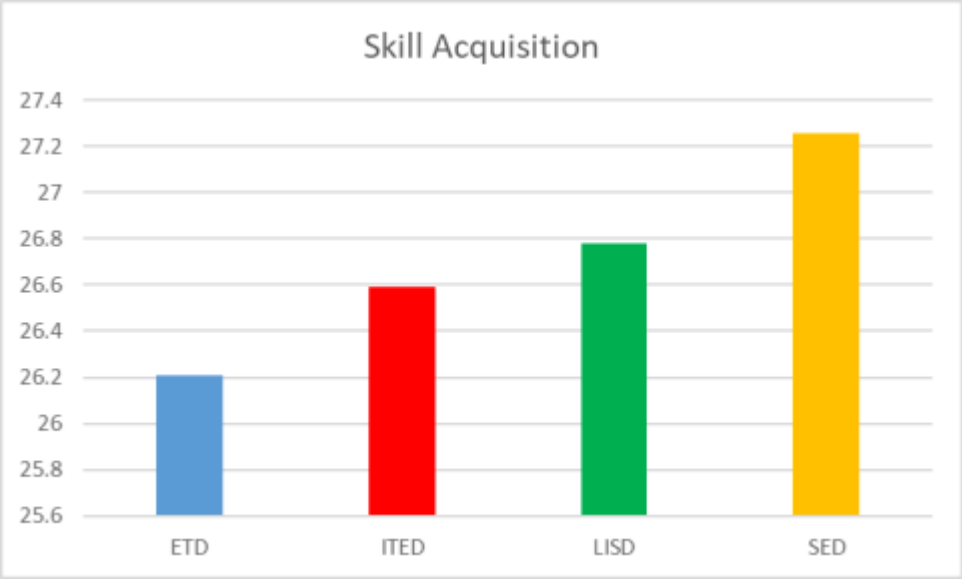
Department	**N**	**Affordability**	**Accessibility**	**Skill Acquisition**	**Interest**	**Adoption**
Educational Technology Department	85	29.40	25.75	26.21	28.53	37.21
Industrial and Technology Education Department	130	30.15	26.34	26.59	29.80	37.52
Library and Information Science Department	85	30.22	27.62	26.78	30.44	37.58
Science Education Department	55	31.62	28.42	27.26	31.71	38.03



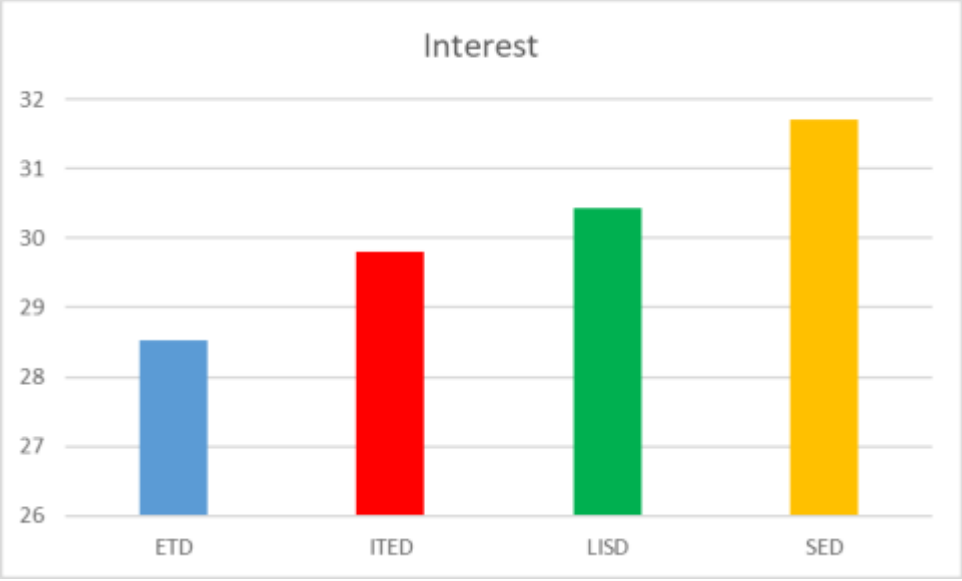
In terms of affordability, pre-service science teachers have the highest mean score in skill in social mobile networking for learning (Mean =31.62) while pre-service science teachers in the area of arts have the lowest mean score (Mean=29.4).



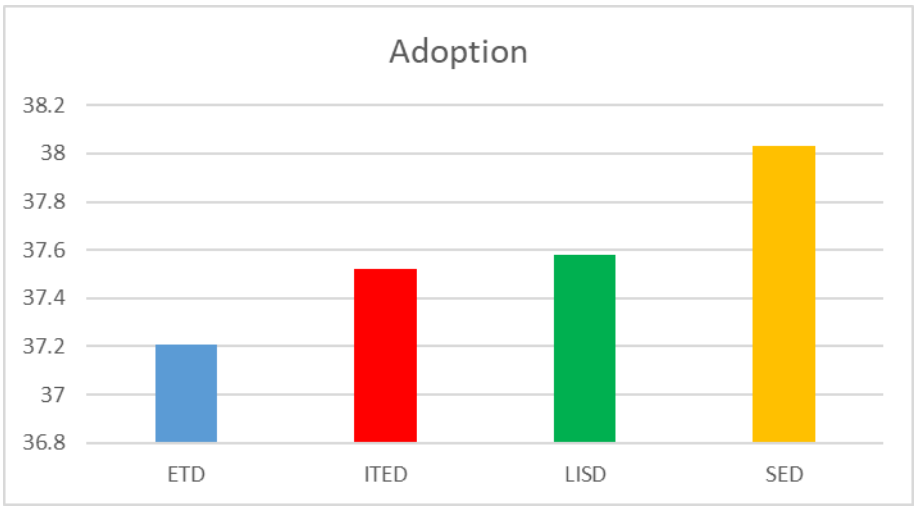
In terms of accessibility, pre-service science teachers also have the highest skill in social mobile networking for learning (Mean =28.42) while pre-service science teachers in the area of arts have the lowest mean score (Mean=25.75).



In terms of skill acquisition, pre-service science teachers again have the highest skill in social mobile networking for learning (Mean =27.259) pre-service arts teachers have the lowest mean score (Mean=26.212).



In terms of interest, pre-service science teachers have the highest level of interest in mobile social networking for learning (Mean=31.71), while pre-service arts teachers have the lowest level (Mean=28.53).



Likewise, in adoption of mobile social networking, pre-service science teachers adopt mobile social networking for learning more than others (Mean = 38.03). Pre-service arts teachers have the lowest mean score (Mean = 37.21).

4.4 Research Hypotheses

Hypothesis One: There is no significant difference between male and female final year pre-service teachers' adoption of social networking based on affordability, accessibility, skill acquisition, interest and adoption.

Table 4.19 Comparison of male and female pre-service teachers' affordability, accessibility, skill acquisition, interest and adoption of social mobile networking

Variable	Gender	N	Mean	Std Dev	Std Error	df	t	P
Affordability	Female	133	29.917	4.942	0.429	353	-1.744	0.841
	Male	222	30887	5.149	0.346			
Accessibility	Female	133	26.782	4.256	0.369	353	-1.140	0.003*
	Male	222	27.383	5.108	0.343			
Skill Acquisition	Female	133	27.068	4.469	0.388	353	1.023	0.000*
	Male	222	26.464	5.859	0.393			
Interest	Female	133	29.444	4.626	0.401	353	-2.938	0.062
	Male	222	31.059	5.231	0.351			
Adoption	Female	133	36.880	5.840	0.506	353	-2.074	0.025
	Male	222	38.099	5.057	0.339			

*Significant($p<0.05$)

In table 4.19 above only three variables namely accessibility, skill acquisition and adoption are gender sensitive. There is a significant difference between male and female pre-service teachers' accessibility, skill acquisition and adoption of social networking for learning (t=-1.140, 1.023 and -2.074 respectively, $p<0.05$).

Looking at the mean scores of male and female pre-service teachers, male have greater access to social networking, females have greater skill acquisition while males have greater adoption of mobile social networking for learning.

On the other hand, there is no significant difference between male and female pre-service teachers' affordability and interest in adopting mobile social networking for learning. The t-values for affordability and interest are 1.744 and -2.938 respectively ($p>0.05$).

Hypothesis Two: There is no significant difference in the final year pre-service teachers' affordability, accessibility, skill acquisition, interest and adoption of social networking for learning based on area of specialization

Table 4.20 Summary of ANOVA Tables of Variables Based on Areas of Specialization.

Variables	Grouping	Sum of Squares	df	Mean Square	F	Sig.	Remark
Affordability	Between Groups	277.788	3	92.596	3.659	.013	Significant ($p<0.05$)
	Within Groups	8882.759	351	25.307			
	Total	9160.546	354				
Accessibility	Between Groups	441.698	3	147.233	6.672	.000	Significant ($p<.05$)
	Within Groups	7745.469	351	22.067			
	Total	8187.166	354				
Skill Acquisition	Between Groups	48.647	3	16.216	.558	.643	Not Significant ($p>0.05$)
	Within Groups	10205.268	351	29.075			
	Total	10253.915	354				
Interest	Between Groups	444.888	3	148.296	6.021	.001	Significant ($p<0.05$)
	Within Groups	8645.096	351	24.630			
	Total	9089.983	354				
Adoption	Between Groups	36.896	3	12.299	.422	.738	Not Significant ($p>0.05$)
	Within Groups	10240.671	351	29.176			
	Total	10277.566	354				

In Table 4.20 above, there is significant difference in affordability, accessibility and interest in the use of social networking in learning based on area of specialization. However, there is no significant difference in skill acquisition and adoption based on area of specialization. In other words, area of specialization does not affect adoption and skill acquisition of mobile social networking for learning.

4.5 Summary of Major Findings

The summary of major findings is as follows:

(i) The study revealed that all these factors (affordability, accessibility, skill acquisition and interest) taken together significantly influence final year pre-service teachers' adoption of mobile social networking for learning.

(ii) This study also revealed that the most important factor in pre-service teachers' adoption of mobile social networking for learning is interest followed by skill acquisition, then affordability and lastly accessibility.

(iii) Three variables namely accessibility, skill acquisition and adoption are gender sensitive. There is a significant difference between male and female pre-service teachers' accessibility, skill acquisition and adoption of mobile social networking for learning.

(iv) There is no significant difference between male and female pre-service teachers' affordability and interest in adopting mobile networking for learning.

(v) Areas of specialization (departments) influences affordability, accessibility and interest in the use of mobile social networking in learning. However, there is no significant difference in skill acquisition and adoption based on area of specialization. In other words, area of specialization does not affect adoption of skill acquisition of mobile social networking for learning.

(vi) In terms of skill acquisition, pre-service science teachers have the highest skill in social mobile networking for learning.

(vii) In terms of interest, pre-service science teachers have the highest level of interest in mobile social networking for learning while pre-service arts teachers have the lowest level.

(viii) In adoption of mobile social networking, pre-service science teachers adopt mobile social networking for learning than others. Pre-service arts teachers have the lowest mean score.

4.6 Discussion of Findings

The pre-service teachers' response on the joint influence of predictor variables (affordability, accessibility, skill acquisition and interest) on adoption of mobile social networking for learning shows that all the four variables put together significantly influence pre-service teachers' adoption of mobile social networking for learning. This means that, adoption of mobile social networking greatly depends on all these variables.

This result agreed with the finding of Shen and Chen (2008) which found out that the adoption of mobile social networking has been positively impacted by affordability, accessibility, skill acquisition and interest. The findings above point to the fact that those variables cannot be overemphasized when campaigning for adoption of mobile social networking for learning.

On the findings on relative contribution of each predictor variables (affordability, accessibility, skill acquisition and interest) on adoption of mobile social networking for learning. It was found out that the most important factor in the adoption of mobile social networking for learning is interest followed by skill acquisition, then affordability and lastly accessibility. This means that without the interest of students in adoption of mobile social networking, there is little one can do for them to adopt it. Interest plays a vital role in adoption of mobile social networking. It also

implies that if the pre-service teachers are interested in adopting this mobile social networking for learning, they can scale through all barriers to make sure they adopt it for learning.

The above findings corroborate with the findings of Swanson (1974) who found out that, users' interest has been shown to be a key determinant of technology usage. Also, according to Shen and Chen (2011) user interest has been found to be the most prominent predictor of intention to use technology. On skill acquisition's contribution to adoption of mobile phone usage, it was also significant. The finding supports Davis, Bagozzi and Warshaw (1992) who found that technology and especially mobile social networking is rejected by learners due to lack of skill even if the technology was easy to use. Research has shown skill acquisition as a significant variable that gives users free hand to adopt and be satisfied with technology usage across the globe. According to them, the combination of skill acquisition and interest has been shown to have significant positive impact on learners' intention to use technology.

In respect on the finding on accessibility of technology for mobile social networking adoption by pre-service teachers, accessibility comes last in influencing learners' adoption of mobile social networking. This is also in support of Kim (2011) who says though accessibility is significant in adoption of mobile social networking but interest and skill acquisition come first.

Venkatesh and Davis (2000) asserted that effort expectancy is the degree of ease associated with the use of the system. In the context of mobile social networking for learning, effort expectancy is about an individual's expectation of using technology without much effort. The easier the mobile learning application can be accessed by the user, the more is the intention to adopt it.

In respect of the finding on significant difference between male and female pre-service teachers' adoption of mobile social networking based on affordability, accessibility, skill acquisition, interest and adoption, it was found out that only three variables namely accessibility, skill

acquisition and adoption are gender sensitive. There is a significant different between male and female pre-service teachers' accessibility, skill acquisition and adoption of mobile social networking for learning. The result shows that males have greater access to mobile social networking. This finding agreed with Michaud (2009) who identified gender difference in technology adoption practices. He recorded that there is a gender difference in technology adoption; female students have a lower rate of use of technology. However, contrary to above mentioned studies, Yusuf and Balogun (2011) on a study of student – teachers' positive attitude towards the use of ICT, they reported there was no significant difference between male and female students – teachers' use of ICT.

On skill acquisition between males and females, it was found out that female pre-service teachers have greater skill acquisition while males have greater adoption of mobile social networking for learning. This finding contradicts Chukwuemeka (2010) who reported that female teachers have inadequate proficiency skills in using internet for learning process. On the other hand, this study shows that there is no significant difference between male and female pre-service teachers' and affordability and interest in adopting mobile social networking for learning. A research by Ogunlade (2009) showed girls are underrepresented in school computer courses, computer clubs and in computer science-based careers, and do not spend as much time at home using computers as boys do.

In respect of the finding on significant difference in the pre-service teachers' affordability, accessibility, skill acquisition, interest and adoption of mobile social networking for learning based on areas of specialization. It was found that areas of specialization (departments) determines affordability, accessibility, skill acquisition and interest in the use of mobile social networking in learning. Akkoyunlu (2008) found that there is no relationship between a chosen

course of study and the ability to operate a computer. Contrary to this finding, Isaac (2002) reported in Kitsher (2003) that science students show more proficiency in the use of computer than commercial and arts students. Oyinlola (2012) reported that area of specialization of students did not have any influence on their perception on the use of mobile technology.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter presents the summary of the study, implications of the findings to education, conclusion and useful recommendations. It also suggests areas for further studies, generalization and limitations of the study.

5.2 Conclusion

In view of the findings, it was concluded that many of the pre-service teachers are aware of the use of social networking for learning in Federal Universities of Technology, Minna, Nigeria. This might be due to the popularity technology has gained over the years. This study found that many pre-service teachers have no access to mobile social networking for learning. This may be because their schools are not connected to internet and even if they have internet they are given limited time and total or partial restriction. It was also confirmed that lack of proficiency in the use of social media affect the utilization of social networking for learning. It was also established that pre-service teachers found the adoption of mobile social networking useful on their learning. There are a lot of challenges to the effective adoption of social networking for learning by pre-service teachers. The study showed that one of the major challenges facing pre-service teachers' adoption of mobile social networking is lack of interest.

This study found out that a significant difference existed between male and female pre-service teachers' adoption and skill acquisition. Three variables (Accessibility, skill acquisition and interest) have significant relationship with the adoption of social networking for learning. The

findings and the conclusion of this study can therefore be said to have answered all the research questions and tested all the hypotheses.

5.4 Implication of the Findings

Interest is the most important variable if pre-service teacher will adopt social networking. Therefore, there should be awareness on how important social networking is to learning. Proficiency level which is directly related to skill acquisition is also important as revealed in this study. The implication of this is that training of pre-service teacher is important. The operational use of social networking resources such as computers, e-mail, facebook, whatsapp, youtube, video conferencing and the like have made it possible to overcome barriers of time and space, and opens new opportunities for learning. The use of these social networking learning resources is increasing and it is now possible to conduct research and conduct training for more enlightenment. There is now an increasing awareness regarding the importance of social mobile networking for learning in various public and private institutions in the country. The computers mobile phones and internet facilities around complemented by the operation of cybercafé have provided students an unprecedented opportunity to join millions of their mates around the globe to surf and navigate.

However, this study has generally revealed that social networking now has far reaching implications for learning at tertiary level of education in Nigeria. This is because pre-service teachers have positive motive behind adoption of social networking for learning. It is also pertinent to mention that some pre-service teachers are still affectionate to the old method of chalk and talk, the practice which will make them lag behind in the world of ICT.

There is need for pre-service teachers to adopt and utilize the resources of social networking for learning at this technological era. This would help them to keep up with the pace of development

and use social networking worldwide. There is a need for a shift from conventional teaching to e-learning and also a review of curriculum from time-to-time that will enable students to keep in touch with mobile social networking development. Interest and skill acquisition would go a long way in making social networking resources accessible to students while adopting them in the learning process.

5.5 Recommendations

The findings of the study have made it necessary to proffer some recommendations. These are:

(i) Nigerian government should review the existing curriculum in order to include possible instructional supports that could help students to learn effectively, one of such instructional supports is mobile phone.

(ii) The government should integrate learning technology into the curriculum, starting form senior secondary schools to tertiary institutions.

(iii) Workshops and seminars should be organized specifically for the purpose of facilitating the use of mobile social networking for learning.

(iv) There should be urgent skill acquisition training for students and teachers in the area of social networking for learning by the government and other stakeholders.

(v) Emphasis should be placed on making learning to be a learner-centered affair and more effective, efficient and meaningful.

(vi) There should be encouragement on the spread of mobile social networking and increase its accessibility and affordability.

(vii) There should be functional internet and Wi-Fi that will be more than sufficient for the need of the learners.

(viii) The government should increase funding for the educational sector that will help in the increase of broadband width, organize training for both lecturers and students on mobile social networking for learning.

5.6 Suggestions for Further Studies

(i) A survey of predictors of pre-service teachers' adoption of social networking for learning in western and southern parts of Nigeria. This will give a clear picture on how social networking for learning is being utilized in other geo-political zones in the country.

(ii) There is need to replicate the study using lecturers and to see how they are adopting social networking in their teaching process.

(iii) Additional variables other than the ones used in this study should be explored.

(iv) Impact of social networking on students' Academic Achievement in Nigerian tertiary institutions

(v) In order to improve the generalization of this study's findings, future studies should increase the population of the study as well as the sample size.

5.7 Limitations of the Study

This study, like any other human endeavor, had its limitations. First it is limited to Federal University of Technology Minna with a total of 355 participants. Secondly, in order to increase the sample size as well expand the composition of the research subjects, more federal, state and private institutions need to be incorporated to give wider generalization to this study's findings. Thirdly the study was centered on mobile social networking for learning. Furthermore, new studies should try and consider the limitations of this study by expanding their scope to cover more federal universities in the country.

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