# A STUDY OF THE ADOPTION OF THE USE OF SMARTPHONES AMONG STUDENTS OF KADUNA POLYTECHNIC AND NUHU BAMALLI POLYTECHNIC

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**AUGUST, 2018**

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**BY**

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## Declaration

I, Shu'aibu Mohammed Arab, declare that the work in this dissertation titled "A Study of the Adoption of the Use of Smartphones among Students of Kaduna Polytechnic and Nuhu Bamalli Polytechnic" has been carried out by me in the Department of Mass Communication. The information derived from the literature has been duly acknowledged in the text and a list of references provided. No part of this dissertation was previously presented for another degree or diploma at this or any other Institution.

| ……. | …… | ….....…… |
|---|---|---|
| Name of Student | Signature | Date |

**Certification**

This dissertation titled "A STUDY OF THE ADOPTION OF THE USE OF SMARTPHONES AMONG STUDENTS OF KADUNA POLYTECHNIC AND NUHU BAMALLI POLYTECHNIC" by Shu'aibu MOHAMMED ARAB meets the regulations governing the award of the degree of Masters of Science in Mass Communication of the Ahmadu Bello University, and is approved for its contribution to knowledge and literary presentation.

| | | |
|---|---|---|
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## Dedication

This dissertation is dedicated to my parents: Muhammad Arab Usman and Hajiya Zulai Abubakar and to my lovely brothers and sisters for their prayers, encouragement, and patient. May ALLAH bless them all.

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## Abstract

The study investigated the adoption of the use of smartphones among students of Kaduna Polytechnic and Nuhu Bamalli Polytechnic. Most research on smartphones use has often been concentrated on its use for academic purposes. However, this study specifically deals with adoption and use of smartphones among students in the polytechnics. Survey research method was employed with semi-structured questionnaire as the instrument which was administered to 325 Higher National Diploma (HND) students of Kaduna Polytechnic and Nuhu Bamalli Polytechnic. Simple random sampling and purposive sampling technique was adopted to draw samples for the study. The study adopted Uses and Gratification Theory (UGT) as the framework for analysis. The findings show that majority of respondents own and fully utilize smartphones for different purposes. The study revealed that students devoted significant time using smartphones for academic activities. The findings also revealed that majority of the students used academic related applications like dictionary, visiting website pages, reading academic related document such as PDF files, word, et cetera. It was further discovered that accessing internet, availability of accessing many different information, portability of smartphone and others were identified as the factors that motivate usage of smartphone among students. The study concluded that Polytechnic students in Kaduna State adopted the use of smartphones for different purposes and devoted significant time using it for academics. The study recommends that students should be guided and counseled on the use of smartphone at the point of entry for their counseling unit, where they will be told how, when and why to use it. This approach will enhance their knowledge and understanding of smartphone use for academic purposes in a tertiary institution such as the polytechnic.

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**Abbreviations:**

| | |
|---|---|
| **KADPOLY** | Kaduna Polytechnic, Kaduna |
| **NUBAPOLY** | Nuhu Bamalli Polytechnic, Zaria |
| **UGT** | Uses and Gratification Theory |
| **HND** | Higher National Diploma |
| **SPSS** | Statistical Package for Social Sciences |
| **BBM** | Blackberry Messenger |
| **GSM** | Global System of Mobile Communication |
| **CDMA** | Code Division Multiple Access |
| **PC** | Personal Computer |
| **PDA** | Personal Digital Assistant |
| **WMD** | Wireless Mobile Device |
| **GPS** | Global Positioning System |
| **ICT** | Information and Communication Technology |
| **PU** | Perceived Usefulness |
| **PEU** | Perceived Ease of Use |
| **EOU** | Ease of Use |
| **BI** | Behavioral Intention |
| **PDF** | Portable Document Format |
| **OS** | Operating System |
| **APIs** | Application Performance Interfaces |

# CHAPTER ONE

# INTRODUCTION

## 1.1 Background to the Study

The use of smartphones by all and students depend on the choice or interest. The choice or usage is often necessitated by the satisfaction the users want to achieve. But most importantly, the features on any particular phone determining what the users may use it for. Digital technology has recorded advances resulting in integration of hitherto separate media, called convergence. As a result of the advancements in digital technology, cell phones have also become multifunctional and are more sophisticated offering users with several opportunities of access various media forms. Social networks have emerged to make the use of cell phones popular among young people, particularly students in institutions of higher learning. The youth rely on the versatility of smartphones to use social media spaces and other applications for their purposes.

Technology has made contributions to human existence and has enhanced socio-economic relations globally. Wireless communication has emerged as one of the fastest diffusing media on the planet, fuelling an emergent "mobile youth culture" (Castells, Fernandez, Qui and Sey, 2007). Thus increased popularity of cell and smartphone in recent years has attracted research attention. Cell phones are seen as a mixed blessing. Youth say phones make their lives safer and more convenient. Yet they also cite new tensions connected to cell phone use (Pew Research Center, 2010).

As cell phones have become more available, they are increasingly owned and used by young people. Again, as handsets become more versatile with capabilities ranging from video recording and sharing, to music playing and internet access, young adults have an increase of usage.

Indeed, we are moving into an era when mobile devices are not just for talking and texting, but can also access the internet and all it has to offer (Pew Research Center, 2010). The cell phone is one of the most rapidly growing new technologies in the world (Rebello, 2010). In 2001, cell phone users were less than a billion worldwide with the majority of the users in the developed countries. By the end of 2010, however, cell phone subscriptions had reached five billion worldwide with subscriptions from developing countries outnumbering that of the developed countries (Kelly, 2009; Rebello 2010). Obviously, this increase includes a sharp increase in the number of cell phones used by young people.

Smartphones are the new generation of mobile phones that emerged over the last few years and already have become popular. Smartphones with their mini keyboards are not just phones, but have computer functions such as email, calendar and address book, and office programs for reading and editing. The multimedia phone features such as camera, video, sound recordings. Smartphones can be customized with new software, and the variety of software programs is increasing. The social media communication platforms like Facebook, Twitter, Instagram, WhatsApp and games are especially popular (Kibona and Mgaya, 2015).

The use of smartphones can be addictive. This is because the smartphone has become a very useful tool in the hands of users. Since it affords one ease of access to e-mail, social media network, websites, text and video, it has become a constant companion. However, there are concerns about the use of cell phones. In some cases smartphones are used for positive purposes like learning, maintaining social contacts and storing information, it can also be for negative purposes while also having negative effects on its users. The use of phone is only a tool, but with effects on users. Young people use smartphones a lot and are very much a part of their life. The outcome of a study by the University of Navarra affirms that young people admit being addicted

to their cell phones (Naval, Sadaba and Brigue, 2004). Also, British scientists noted that more and more people are getting addicted to their cell phones, causing stress and irritability (BBC, 2006).

Smartphone abuse to addiction is becoming more problematic nowadays in Nigeria because most students whether higher learning students or low level students are more addicted to applications found on Smartphone so that they download and run numerous applications with Smartphone even without Internet connection. Just because of not knowing the implication of it for their learning and how to better use it to enhance their academic endeavour (Kibona and Mgaya, 2015). Smartphones are mobile phones which incorporate advanced capabilities. They are an advanced form of a Wireless Mobile Device (WMD) that can function like a computer by offering features such as personal digital assistant (PDA), internet access, email, and Global Positioning System (GPS). They typically also have other features such as a camera, video, MP3 players, as well as mobile phone functions. Examples of smartphones are Apple's iPhone, Treo Pro Palm, and Samsun Galaxy amongst many others (Backer, 2010).

The smartphones, being a very new invention of humanity, became an inherent part of human's life. The smartphone combines different sophisticated features. Merriam-Webster dictionary defines the smartphone as "a cell phone that includes additional software functions (as e-mail or an Internet browser)". According to Miakotko (2017), a smartphone allows users to keep pictures, memories, personal info, correspondence, health and financial data in one place. Smartphones also became an integral part of modern telecommunications facilities. The phones allow people to maintain continuous communication without interruption of their movements and distances. Smartphones and handheld devices (HHD) combine advanced computing

capability, such as internet communication, information retrieval, video, e-commerce and other features that make the device as one of the necessities for many people.

A technology that has truly changed the way the world operates is the smartphone. It is not just a communication device; it is a handheld personal computer that has become an extension of peoples' lives. It is more than just a device to communicate with others; it is integrated into daily life as a communication tool and as a multimedia device (Oksman, 2010; Westlund, 2010). Smartphones allow users to be connected all the time to whomever they want, wherever they are (Baron, 2010). The uses and gratifications that are experienced by people using Smartphones are exponential in nature. It is a continually growing entity due to the ever changing capabilities and communications options that smartphones provide.

People use mobile phones for many purposes: for private communication, keeping connected with friends and family, entertainment, sharing photos, videos, news, daily status updates, seeking information, knowledge and a variety of other needs (Matanhelia, 2010; Oksman, 2010; Scarpino & Alshif, 2013). This is a worldwide phenomenon that crosses socioeconomic boundaries and is used for instantaneous communication and Internet access (Yelton, 2012). Students can and do take advantage of this new technology. While living at school they are able to stay connected with their families, friends. With the constant ability to stay informed and bond with family and friends regardless of the distance, uses and gratifications of smartphones are addressed (Nurullah, 2009).

During the 1970s, when cellular phones were emerging in the market, the first mobile phone was the size of a small briefcase. In the 1980s and today cellular phones are products which are even smaller than a pack of cigarettes. They are offered in different colours for their attraction to customers, and some are designed for men and some for women. They have a number of features

to choose from, like ring tones, mobile music, push-to-talk, television clip playing, streaming video, wireless cameras, browsers and entrance exam preparation reviews.

There are two types of mobile phone; the low-end and the high-end. Low-end mobile phones are referred to as feature phones. The high-end mobile phones, with more advances in computing abilities are referred to as smartphones. The first smartphone was designed by IBM; it was called Simon. Smartphones allow the user to install much more advanced applications based on a specific platform. Mobile phones use rechargeable batteries to keep the power to upload applications. The Nokia communicator lines were the first of Nokia smart phones, starting with Nokia 9000 released in 1996. They run complex operating system software providing a basis for applications developers. The Global System for Mobile Communications (GSM) requires a small microchip to function which is called the Subscriber Identity Module, or SIM card. The SIM card is used to identify the subscriber on mobile telephony devices such as mobile phones. It is approximately the size of a small postage stamp. It is placed underneath the battery in the rear of the unit (Heeks, 2008).

It is apparent that smartphones will continue to develop because developers are increasingly using the newest technology, becoming smaller and more lightweight (Yang, 2010) and also because of their Perceived Usefulness (PU) and the Perceived Ease of Use (PEU) (Park & Chen, 2007). In addition to new media, traditional media such as newspapers, radio and television are available on smartphones through the Internet (Oksman, 2010). It is this emergent technology that allows the continued use of traditional and new forms of media anywhere and anytime.

Prior to the invention of the Internet and mobile phones, the telephone was the main medium used to share news on interpersonal level. People used the telephone for social needs and keeping up with their local community of friends and family (Wei & Lo, 2006). The telephone is still

considered an interpersonal communication device and could be categorized as a mass medium that has gratification factors as motives for telephone use, "including sociability, entertainment, acquisition, and time management" (Lee, 2006; Leung & Wei, 2000). With the invention of mobile phones and eventually Smartphones there has been an explosive growth in the potential uses and gratifications for smartphone users. The use of smartphones makes it easier and effortless to get summaries of newspapers, watch TV news broadcasts and to listen to radio news programs (Oksman, 2010). It appears smartphones have emerged as an important contemporary source for news delivery (Yang, 2010) especially because of the worldwide popular use of smartphones. There are approximately one and half billion smartphone users in the world; Android smartphones have 798 million users, Apple smartphones 294 million users, and Windows smartphones 45 million users (ABIresarech, 2013).

Students in the tertiary institutions are among the users of smartphones. Among the reasons they use smartphones as already presented earlier. However, students need smartphones because it appears it will help them in their academic studies – access to research materials, discussion group, chat room etc. This study examined the adoption of the use of smartphones by Polytechnics students in Kaduna State, Nigeria.

**1.2 Statement of the Research Problem**

Smartphone usage among students is growing exponentially (Woodcock, 2012). The use of Smartphone has brought many changes in students' academic activities (Cheung 2008). Students in the future can exert more power in a way that they could not have imagined before using Smartphone (Cairncross, 2008). Students prefer smartphones while purchasing new phones However, the evolution of these technologies can lead to increased stress. Also, there is high tendency or temptation of the students to interact with their smartphones in the class in the

course of lectures, either to respond to received messages, or to browse the internet. These, no doubt, take heavy toll on the level of concentration devoted to the lectures.

Interestingly, this is obviously imperative as Geser, (2009) and Junco, Merson and Salter (2010) had observed that students have consistently displayed higher level of attachment to their smartphones which could serve as distraction from their academic activities. Naval, Sadaba and Brigue (2004) say that the use of phones is not intended for negative purpose and influence; however, the attitude and time spent on these devices have obsessed the student.

Nigeria is a developing country, the social status of student vary as some are from humble background and may not afford smartphones and those who could afford smartphones may not use them for academic purposes, but may own them as status symbols. The need for status may make students to explore avenues to own a smartphone, which in characteristic of Nigerian students; many would have found avenues of having a smartphone. This inspired the need to conduct a deeper investigation on the uses and gratifications of smartphones among students and to test the effectiveness of uses and gratifications theory on adoption of the use of smartphones.

Since there is widespread penetration of smartphones, it is expected that students will own smartphones. A cursory observation on campuses shows some level of smartphone use among students. However, having smartphone does not say much about the uses that students make of them. There is need to inquire students use of smartphones to understand their explanations of what they use them for. Another aspect to examine is the factors that motivate students in adopting the use of smartphone and the numerous applications that are found on it. It is against this background that this study seeks to examine the adoption of the use of smartphones among Polytechnic students in Kaduna State.

### 1.4 Aim and Objectives of the Study

The aim of this study is to examine the adoption of the use of smartphones among students of Kaduna and Nuhu Bamalli Polytechnics. To guide the research the following objectives were set:

1 To examine the uses that Kaduna and Nuhu Bamalli Polytechnics students make their smartphones

2. To identify the smartphone applications used mostly by the Kaduna and Nuhu Bamalli Polytechnics students
3. To examine the motivations for using smartphones among Polytechnic students in Kaduna and Nuhu Bamalli Polytechnics

### 1.5 Research Questions of the study

1. What uses do students in Kaduna and Nuhu Bamalli Polytechnics make of their smartphones?
2. What are the smartphone applications that are used by the students of Kaduna and Nuhu Bamalli Polytechnics?
3. What are the motivations for using smartphones among Polytechnic students in Kaduna and Nuhu Bamalli Polytechnics?

### 1.6 Significance of the Study

The data generated for this study will help us to understand the uses that students in tertiary institutions make of their smartphones. It will help us to understand students' use of smartphones. It will also help us to understand what applications are used by students, and the motivations for using smartphone. It will help in designing relevant content for students and will also help to design appropriate ways of making students to use their phones for academic

purposes. The findings will also help to understand the motivations in term of uses and gratifications. This will help Polytechnics authority to understand how best to sustain the students attention in using smartphones. Also this work will be of immense benefit to the field of library and information sciences as it will be addition to existing literature. It shall also add to the available academic literature on smartphones. Also the findings could be used by academic advisers and counselors to proffer professional advice to the Polytechnic authorities on how to regulate the smartphone usage among Polytechnic students.

**1.7 Scope of the Study**

The essence of this research work is to primarily study the adoption of the use of smartphones among Polytechnics students in Kaduna State. The research focused on the Higher National Diploma students of Kaduna Polytechnic and Nuhu Bamalli Polytechnic Zaria. The period for the study is six months that is from October 2015 to March 2016. The schools were selected because most of the researches related to smartphones were conducted on the students of universities while students of colleges of education and Polytechnics were left uncovered that is why the researcher selected Polytechnic students to go and see how they adopt the use of their smartphones.

# CHAPTER TWO

# LITERATURE REVIEW AND THEORETICAL FRAMEWORK

## 2.1 Introduction

This chapter reviews research literatures that are relevant to the study. The review covers the conceptual review, evolution of media, traditional media, computer and the internet, the mobile phone, the mobile phone and culture, mobile devices: the smartphone, uses of mobile phone by students, habit forming and smartphones use, using smartphone for mobile learning, smartphone in higher education, empirical review and theoretical framework.

## 2.2 Conceptual Review

### 2.2.1 The Mobile Phone

The focus of this study is on the adoption of the use of smartphones among students in academic environment. It is apparent that smartphone developers continue using the newest technology to make them smaller and more lightweight (Yang, 2010), and consumers continue to perceive smartphones as useful and easy to use (Park & Chen, 2007). In addition to new media, the traditional media such as newspapers, radio and television are available on the smartphone through the Internet (Oksman, 2010). The following is a brief history of the development of the phone, mobile phone and smartphone. Before the mobile phone, people used telephones to communicate. The telephone was considered an interpersonal mediated communication and could be categorized as a mass medium that delivers entertainment services (Lee, 2006; Leung & Wei, 2000). There are "a mix of interpersonal and mass media gratification factors as motives for telephone use, including sociability, entertainment, acquisition, and time management" (Wei & Lo, 2006). People use the telephone for social needs and to keep up with their local community

of friends and family (Wei & Lo, 2006). Prior to the invention of the Internet, the telephone was the main medium used to share news on an interpersonal level.

With the invention of the mobile phone, interpersonal communication became easier. In the past, people had to stop by a public phone to make a call, while today people carry their mobile phones on their persons, in their cars, on public transportation, in restaurants and even at their homes (Feaster, et al., 2008). The growth of mobile phone users is unprecedented (Bakke, 2010); it has become a part of everyday life (Peters & ben Allouch, 2005). It is a revolution in the communication field (Wirth, Von Pape, & Karnowski, 2008).

The race to create mobile phone technology began in Europe, United States and Japan after World War II (Dunnewijk & Hultén, 2007). The first generation (1G) started in the experimental stage in the 1950s, but the first mobile phone was launched in 1973 by Motorola then expanded by many companies (Baron, 2010; Yang, 2010). The first generations of mobile phones were larger and heavier (Zhen, et al., 2012). At first they only provided voice calls then advanced to text messaging (Kim & Jin, 2005). The second generation (2G) or GSM technology was used widely in 1991 with increased capacity, higher transmission speeds, and richer content of messages; these technologies increased with the launch of the third generation (3G) technologies in 2001 (Dunnewijk & Hultén, 2007). The 3G blended the capabilities of the mobile phone and a personal computer by combining the features of the phone with those of laptops (Zhen, et al., 2012). In the mass communication field, the mobile phone is categorized as personal, social, and mass media since it provides for personal, "peer-to-peer," and mass communication needs (Oksman, 2010).

The 3G technology was the real revolution in the mobile phone functionality (Zhen, et al., 2012). The availability of the Internet on mobile phones allowed users to send emails (Peters & ben

Allouch, 2005), browse the web, and watch television (Oksman, 2010). The traditional media became combined in mobile phones giving more opportunities for the interaction between traditional media and the audience. The Internet promoted communication and online discussions but the mobile phone added immediate and direct interaction with the news (Oksman, 2010).

### 2.2.2 The Mobile Phone and Culture

Every new technology has a potential impact on people and their social lives (Oksman, 2010). The mobile phone is considered a social phenomenon, playing an important role in social integration in the current era (Oksman, 2010; Westlund, 2009). Individuals adhere to specific rules and sociocultural surroundings that influence their lives; the use of mobile phones is dictated by these factors (Matanhelia, 2010). With the widespread emergence and acceptance of mobile phones, it was questionable how the mobile phone would affect communication between people (Oksman, 2010). It is expected that with the adaption and use of mobile phones a new or different media behavior will emerge (Oksman, 2010). With the use of mobile phones, people have vast freedom to communicate anytime anywhere (Baron, 2010), although, for some people freedom could mean being unreachable by any phone at any time (Nurullah, 2009; Oksman, 2010). For example, in contrast with a landline, the mobile phone adds privacy because it only belongs to one person; a person can control with whom they speak and limit their interactions with others (Oksman, 2010). Mobile phones can be an agent of social change, as they combine individual and social lifestyles; it is a device of fashion, identity, and prestige for individuals (Nurullah, 2009). The use of mobile phones in social contexts is more than a communication tool; it has multiple functions such as watching videos, listening to music, playing games, and staying connected with family and friends through different social networking sites (Nurullah, 2009; Wei & Lo, 2006). Nevertheless, it is proposed that mobile phones endorse social ties more

than old-fashioned media (Oksman, 2010; Wei & Lo, 2006). The adoption of mobile phones and their impact on society varies in different cultures and countries (Westlund, 2009). The social impact of using mobile phones in different cultures, changes as the technology of the device itself evolves (Albarran & Hutton, 2009).

### 2.2.3 Mobile Devices: The Smartphone

Mobile devices are available in a wide variety of types, including laptops, tablets, PDAs and smartphones. These devices differ in screen sizes, usage, and other characteristics, which leads to differences in use and usage experience (Ghose, Goldfarb & Han, 2010). In this research, only the use of a smartphone will be considered under the definition of mobile device. Because the smartphone is a most popular mobile device, most students own a Smartphone. There are a large number of applications available and it is more affordable than a tablet. In addition, due to its small size and functions, this device is carried around most. Smartphones are carried everywhere: in bed, in the classroom, at work, at restaurants, at schools, etc. Therefore, smartphone devices are different from other mobile or technical devices as they are extensions of the human being (Mcluhan, 1964).

As usage per device is different, it is important to choose one device. Smartphones have unique factors, such as size, screen size, applications, ubiquity, and flexibility in both time and space (Nielsen &Fjuk, 2010). Therefore, users of smartphone can access online activities for consumption, sharing or exploiting media content any time any place (Okazaki & Hirose, 2009). The smartphone is an extension of many people's lives; due to its size and features it is carried around all the time by its owners. Different applications promote usage of smartphones round the clock (Okazaki & Hirose, 2009). Applications are suitable in different contexts, like mobile internet, camera, telephone connection, agenda, among many more downloadable applications.

Life without a smartphone is for many people unthinkable; thus, students are getting in some way dependent on their Smartphone (Haverlag, 2013). Thus, the use of smartphones is intense because it is always accessible. This intense usage could lead to addictive behavior (Young, 1999).

In the early inception of mobile technology development, mobile phones were elite devices primarily used by middle and upper class people (Lacohee, Wakeford, & Pearson, 2003). Compared to old-fashion landline phones, mobile phones of today are free from the constraints of location specificity, apart from the basic capability of communication (Lacohee, Wakeford & Pearson, 2003). As mobile phones evolve, more and more features have been added, such as full color screen, texting function, mp3 function and embedded camera. According to the research done by Caverly, Ward and Caverly (2009), mobile phones have replaced computers as the primary wireless Internet access portal for 68% of Hispanic Americans and 65% of African Americans, far beyond 33% of Whites who prefer to use laptops. It was projected by Anderson and Rainie that by 2020 mobile phones would become primary means for the Internet access (Caverly, Ward & Caverly, 2009).

The trend of existing mobile phone's development is that they are getting smarter (hence the nickname - smartphone) and more user-friendly. In *Defining the Smartphone*, Litchfield (2010) examined the top five most accepted definitions of smartphone, and concluded that there was no single accepted definition. Due to the constantly evolving nature of mobile phone technology, the line between "smart" and "dumb" phones is unclear. Actually, even "dumb" phones can have some "smart" phones' features, such as a touch screen and a proper operating system. At the conclusion of his research, Litchfield offered the definition of smartphone in 2010 as a phone

that “runs an open operating system and is permanently connected to the Internet” (Litchfield, 2010).

However, it is important to know the “smart features” on smartphones nowadays. Today’s smartphones, just like PCs, also incorporate operating systems which allow the add-on applications (or software) to run on top. The hundreds and thousands of applications, which operate as software in PCs and allow users to do what they want, are the core sources of facilitation and convenience for people’s lives. Customized to its owner, every smartphone has different interface and applications to adapt to its owner’s needs. They also have constantly evolving computing power and capabilities as opposed to old feature phone. Also, today’s smartphone has constant internet connectivity allowing users to stay informed and to have unlimited services available at their fingertips. The QWERTY keyboard, either physically or virtually available on smartphones, also makes typing as easy as on a PC. Finally, all smartphones in the market have touch screen now. Needless to say, smartphone has basic functions as feature phone has, such as phone call, text messaging, and camera. All these current features are allowing smartphones to have the same capabilities as computers but with the added bonus of mobility.

Smartphones are mobile phones which incorporate advanced capabilities. They are an advanced form of a Wireless Mobile Device (WMD) that can function like a computer by offering features such as personal digital assistant (PDA), internet access, email, and Global Positioning System (GPS). They typically also have other features such as a camera, video, MP3 players, as well as mobile phone functions. Examples of smartphones are Apple’s iPhone, Treo Pro Palm, and Nokia N95 / N97, amongst many others (Backer, 2010).

The smartphone is a mobile phone with a mobile operating system (OS) that is combined with a personal digital assistant (PDA) functions. The term "Smartphone" did not appear until 1997, when Ericsson described its GS 88 "Penelope" concept as a "smartphone" (Sager, 2012). The distinction between smartphones and feature phones can be unclear, and there is no official definition for what constitutes the difference between them. One of the most significant differences is that the advanced application programming interfaces (APIs) on smartphones for running third-party applications can allow those applications to have better integration with the phone's OS and hardware than is typical with feature phones. With such revolutionary efforts in mobile technology and more accessibility, this began to provide more affordable options of communications that could reach rural and urban schools, public and private schools, and the "haves" and "have-nots". This is another method of bridging the "digital divide".

Smartphones, such as the iPhone, emerged as hybrids of PDAs (Personal Digital Assistants) and mobile phones in the 1990s, bringing together connectivity and a diverse collection of hardware and software-based functionality. Smartphones have developed considerably since then, becoming increasingly commonplace following the release of Apple's iPhone in 2007. The mobile operating systems found on smartphones allow users to run software, commonly known as "apps" that deliver highly usable and tightly focused functionality enabling myriad applications. In some cases apps come pre-installed on smartphones, though many others are freely and cheaply available: over 425,000 different apps are available for the iPhone alone (Apple, 2011). This means devices become highly customized personalized platforms for communication, organization, information production and content management.

Whilst smartphones are only pocket size, they incorporate computing power and memory capable of running complex software and storing huge amounts of data. Functionality including

full qwerty keyboards, cameras, audio recorders, gesture-based input, and high resolution displays, is complemented by a wide range of apps which include support for office productivity, location-based interactivity, media production, web browsing, social media, communication and entertainment. Smartphones can conveniently and directly connect to the Internet through protocols including Wi-Fi and 3G and indirectly through Bluetooth. This connectivity allows data to be accessed from anywhere in a timely way, whilst it also allows the user to distribute content in various media to others. A smartphone, therefore, offers a rich set of mobile computing functions with connectivity; this combination frees the user from desk-based ICT associated with traditional computing in education. Smartphones are ubiquitous and accessible devices that travel with the user, so empowering them to respond to situations, ideas and needs as they emerge. The capacity of a smartphone to access, manipulate, produce, store or share content almost as soon as it is created, wherever it is created, provides the rationale for why education needs to explore the technology. This versatility promises to change the nature of educational content and communication and therefore the nature of learning itself.

**2.2.4 Uses of mobile phone by students**

Adenya & Oyeyinka-Oyelaran (2002) noted that educational institutions have witnessed an astronomical increase in the use of mobile phones by students in recent times. This scenario has been extended to primary and secondary institutions as well. However, in highlighting the constraints to effective learning, Park (2005) listed inattentiveness, disruption and distraction. Closely associated to these, is the use of mobile phones which causes noise and distraction during lecture hours. A study carried out at Ball State's Hanley Institute for mobile media research on students' use of mobile phones, revealed that students not only use a mobile phone for voice calls, but they also use it to e-mail, send text, download and listen to music and access

social media sites. The study also found that 49% of students use mobile phones to access websites for entertainment or concert information, 52% use it for movie viewing, 61% for news, 87% for weather reports while 57% of students reported using it for searching and 51% reported making one or more calls per day (Park, 2005).

Cheung (2008) asserted that students use their mobile phones for tagging location, status update, and broadcasting where they are and what they are doing to all of their friends. Students also use it to grab pictures of what is going on other than waiting for photos to download or develop as soon as they snap their classic pictures of their friends' antics on the squad. They also share photos with a picture message or Facebook post and chatting through social networks such as WhatsApp, twitter, 2go, Skype etc. Students also add filters to their pictures to give simple digital snapshots a more interesting look using their phones to keep afloat at school juggling between classes, work, friends and family. They also use it to stay in the loop and express themselves. Cheung (2008) revealed that boys tend to use mobile phones for recreational and communicative purposes such as playing games, listening to music, sending or receiving e-mails and accessing the internet whereas girls are more likely to use the device for maintaining social contacts by using features such as text-messaging or using the phone as a phonebook.

Young (1998) studied attitudes of students towards the use of mobile phones and the perceived social pressure and likely consequence. The study revealed a high usage of mobile phones and found that some students see mobile phone usage as pleasant, helpful and easy while others said they experience feelings of anxiety level of distraction and that it sometimes takes too much of their attention that could have been allotted to other mainstream school programmes. Thus, there are challenges and implications that require to be addressed.

Ling (2004) asserts that much has been made of how rapid advances in technology have changed the way we learn and communicate. In terms of personal interaction, social networking tools such as MySpace, Facebook, Twitter, Texting, WhatsApp and YouTube have become common methods of communication for young consumers and they are gaining interest and acceptance among consumers of all ages. We are also seeing technology changing the way formal learning takes place with laptops in the classroom, iPhone applications, and online course offerings. It can no longer be argued that these technologies do not exist or that they are not widely used. However, questions that remain unanswered are, do these technologies actually enhance learning and do students believe that they are appropriate forms of communication for use in a university setting?

Miners (2009) notes that while it is quite clear that these social networks are commonly used for social contacts, it is not very clear whether they are seen as appropriate methods of communication in a professional or university setting. Rather than being seen as acceptable sources of information, these networking sites may well be shunned by the exact audience that is being targeted. For example, it has been reported that numerous companies are now looking up potential new hires on social networking sites and are eliminating some of those applicants based upon what the applicants have posted in their profiles whereas such postings were based on the misguided assumption that the posted information is private and are only being shared with friends (Miners, 2009). It would seem logical therefore to assume that very few job applicants, or students, would want potential employers or professors viewing their private postings. University professors are now exploring the in-class use of text messaging. Again, the question that arises is, are these useful learning tools or simply distractions being implemented in the name of learning? As universities rush to keep up with these technological trends, it would seem prudent

to slow down and ask if the targets of these sites (students) would wish to sign up with a university or departmental networking site and share their personal profiles in a much more public fashion or would they view this as an invasion of their privacy.

The smartphone is all the time accessible with applications that stimulate its continuous usage. These devices could lead to excessive and impulsive behavior because of problematic habitual evolvement (Oulasvirta, Rattenbury, Ma, & Raita, 2011).

According to Ayorinde (2014) the usefulness of smartphones is numerous and this includes keeping contact with friends, members of the family, conducting business and others. Many people possess more than one smartphone for different purposes, which could be for business purpose or personal purpose. A number of people are also taking the advantage of multiple SIM cards for benefit of different calling plans since a calling plan might provide cheaper local calls, long-distance calls, international calls, or roaming. The following are other benefits;

**Distributing content**: Mobile phone is also used in this regard. In 1998, an example of distributing and selling media content through the mobile phone was the sale of ringtones by Radio linja. Later, other media content emerged which includes news, video games, jokes, horoscopes, TV content and advertising. In 2006, the total value of mobile-phone-paid media content exceeded Internet-paid media content and was worth 31 billion dollars. The value of music on phones was worth 9.3 billion dollars in 2007 and gaming was worth over 5 billion dollars in 2007.

**Mobile banking and payment:** the advantage of mobile phones is taken in many countries to provide mobile banking services, such as ability to transfer cash payments through safe SMS text message. This service also allows customers to hold cash balances recorded on the SIM cards, deposits or withdraws cash. Some countries also use mobile phone banking for loan

disbursement and repayment (Microfinance.com, 2010). A couple of smartphone can operate mobile payments through direct mobile billing schemes (feig, 2007). This requires the co-operation of manufacturers, network operators and retail merchants to enable contactless payments (Poulter, 2011).

**Tracking and privacy:** smartphones are also often used to gather location data. As long as the phone is switched on, the geographical location of a smartphone can be determined easily, with the help of a technique known as multilateration to calculate the differences in time for a signal to move from the smartphone to each of several cell towers near the owner of the phone (Tunde, 2010). The movements of a mobile phone user can be tracked by their service provider and, if desired, by law enforcement agencies and their government. Both the SIM card and the handset can be tracked (Olayinka, 2009).

### 2.2.5 Habit Forming and Smartphones use

Online mobile applications on smartphones can cause habits (Oulasvirta, Rattenbury, Ma & Raita, 2011). How do habits develop and become addictive? Habits are formed through repeated acts in certain circumstances (Oulasvirta et al., 2011). In cognitive research, habits are defined as "an automatic behavior triggered by situational cues, such as places, people, and preceding actions" (pg.2) (Oulasvirta et al., 2011). Habits are behavioral acts without self-instruction or conscious thinking (La Rose & Eastin, 2004).

Habits can have both positive and negative effects (Wood & Neal, 2007). Positive effects of habits line in that, due to the fast automatic behavior aspect, they enable multitasking and accomplishment of complex tasks. Habits give control over behavior in novel situations, where fast anticipation is needed (Wood & Neal, 2007). Habits have also a positive social feature, because they identify a person, and habit characterizes a person and predicts that person's actions

(Oulasvirta, et al., 2011; Wood & Neal, 2007). On the other hand, habits can have a negative influence on someone's behavior. They can cause unintended behavior activated by internal or external cues interfering other acts. This is also called maladaptive habits, as people create excessive urges, for example, unintended smartphone checking. It could interfere with daily life; however, due to regulations or social norms, people are able to limit these negative influences (Rush, 2011).

Oulasvirta, Rattenbury, Ma and Raita, (2011) concluded that smartphones cause negative checking habits. Checking habits are automatic actions whereby the Smartphone is unlocked to check the start screen for new messages, notifications, alerts, and application icons; these habits can be triggered by external (ringtone) and internal cues (emotional state, urge). Those habits can be maladaptive and interfere with people's life. Checking for information can be rewarding, if someone has a new message or notification, the so-called new information rewards can enforce repeated actions (Everitt & Robbins, 2005).

How persistent a habit is depends on the habit strength (La Rose, Lin, Eastin, 2003). Habit strength is the degree of automaticity of a habit. The strength of the habit is formed through operant conditioning (Rush, 2011). Operant conditioning is the development of habits and addictions. When previous actions had desirable outcomes, those actions will likely reoccur. The frequency of these actions and the salience of the reward determine the strength of the habit (and can form the basis of an addiction) (Rush, 2011). A habit that is often repeated has a stronger degree than the one that is less automatic and repeated.

Strong habits are repeated more often and are easier provoked by cues (La Rose, Lin, Eastin, 2003). This can reach the level where they become annoying, such as inappropriate use of a smartphone at schools, restaurants, concerts, and/or family gatherings.

Companies are aware of the value that habitual behavior creates for them. Social media, application, and game publishers create compulsion loops so that users spend more time and repeat their actions on their mobile applications or social platforms. To summarize, Smartphone usage could form habits through different cues, repetitions and stimulation of application publishers.

### 2.2.6 Using Smartphone for Mobile learning

Smartphones used to support learning need to be considered in the context of the literature on mobile learning. Every day, more and more people are buying gadgets to connect to the digital world. Gadgets are everywhere: smartphones, music players, tablet computers, laptops, net books, etc. If one of them is used for educational purposes and productivity, that's mobile learning. Learning does not only happen inside the four walls of the classroom, it can happen anywhere: on a bus, in a museum, at the zoo, in the living room. Portability is important for a gadget, but a gadget is most praised for its ability to connect to academic resources with just a swipe of a finger.

What can a learner do with a smartphone? A user can now take notes and transfer them to a laptop or share them online with a study group. Teachers can create presentations or flashcards. A learner has instant access to numerous websites for questions needing answers. For video assignments, students can record their films using a smartphone and send them to a computer for editing. There are really a lot of ways to learn using a smartphone. Mobile learning is a gateway to tools and resources. It makes learning more personalized and creates bridges over the gaps between teacher and student. The great thing is that it gives users access to tons of content anywhere, anytime. Mobile learning opens up the opportunity to learn all the time. Mobile learning is not the same as e-learning. E-learning focuses on disseminating educational

knowledge through the Internet. Therefore, if there is no Internet connection, e-learning is impossible. Mobile learning is only a part of it. E-learning incorporates mobile learning through conducting learning activities on the Internet.

Mobile learning research has considered a broad range of technologies, especially those that have emerged for the general consumer: mobile phones, PDAs, and cameras, for example. However, it has been difficult to define mobile learning. Early definitions concentrated on the mobility of the technology (Sharples *et al.*, 2009) and generally overlooked the significance of the personal, portable and ubiquitous nature of the devices, the new locations and communities that became available to the learner due to connectivity, the impact technology can have on engagement in environments as diverse as labs, the work place and lecture theatres, and how this can affect approaches to teaching and learning, learner engagement and control, formality and situatedness. For some, therefore, the term mobile learning emphasizes learning on the move; for others it is the personal, ever-present, and immediate nature of the devices (Kukulska-Hulme and Traxler, 2005). Both views emphasize mobile learning as a process characterized by the gaining of knowledge through exploration and conversation across a variety of environments. El-Hussein and Cronje (2010) offer taxonomy to comprehensively understand mobile learning: mobility of technology, mobility of learners and mobility of learning. Others have described mobile learning as learning that happens anywhere, with anyone, and anyhow (JISC, 2005; Stoyanov*et al.*, 2010). All of these views, and others, point to the changing possibilities for learner engagement. Vavoula (2004) proposed that mobile learning has the potential to transform learning from being highly intentional, structured and directed to an experience that is able to value informal and open learner-centred activity more.

The prevalence of smartphone devices, and latterly tablets like the iPad, because of their widespread consumer acceptance demonstrated in their exponential growth in sales (Gartner, 2010), demand that higher education explores the potential for enhancing learner engagement and prepares itself to address student expectations for a more mobile learning experience.

There are also some advantages that smartphone has over other forms of learning materials which makes learning easier and affordable to many people. Among such are:

1. Portability: Smartphones are small and lightweight when compared to laptops and tablet computers. They can easily be carried by anyone, anytime and anywhere. Mobile learning is now convenient and flexible because of the Smartphone's portability
2. Low Cost: Because fewer materials are used for smartphones, they are less expensive than desktop computers
3. Energy-Saver: Smartphones run on smaller amounts of power than desktop and laptop computers
4. Connection: Along with their portability, smartphones also have Bluetooth and/or Internet connectivity. Internet connectivity enhances student because they have easy and fast access to information, making smartphones supportive tools
5. Personal Feel: Smartphones are the closest gadgets that anyone can have. They are more personal. Teachers or students might share a laptop or desktop computer with their whole family and with their friends, but they will find it hard to share their phone
6. Engagement: A lot of people find smartphones delightful, because of their touchscreen. They're very engaging, so learning can last for a long time. Moreover, students have different ways of learning. With hundreds of educational apps available in the app libraries, students can personalize their smartphones and will be encouraged to study

7. Good Use of Time: Most students do not know what to do during "dead time" like when travelling or just waiting for a bus. With smartphones, they can now learn even when they are just sitting on a bus waiting for the next stop

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

A. Cost: Although smartphones are cheaper than desktops, laptops and tablet computers, they still cost a lot. Besides, technology changes very fast so a user has to upgrade smartphones frequently. Moreover, mobile providers charge monthly data use depending on the size of the files downloaded, so large files may cause the cost to skyrocket
B. Size of Device: Despite the fact that small smartphones are good for portability, their size adds to the possibility of getting stolen or lost. Moreover, their screen is so small; some users might find texts hard to read
C. Battery Life: Most smartphones can last only about two to four hours. Once the power runs out, it has to be recharged, making it immobile
D. Usability: The keypad is too small on some smartphones making it hard for some users to type. Yes, detachable keyboards are available, but that will just add to the cost

### 2.2.7 Uses of Mobile Phones in Educational Context

Mobile phones have a wide range of educational attributes, such as spontaneity, informality, portability, personalization, ubiquity, pervasiveness and the functions such as voice, text, video, radio, and the internet (Kukulska-Hulme, Evans & Traxler, 2005). These days, school administrators, educators and teachers of higher institutions of learning have come to terms with the reality that students use a variety of mobile technology for various academic purposes. Students in Nigeria use the mobile phone to communicate with their lecturers in delivering a

coursework, gather data and get access to Online Public Access Catalogue for information sharing (Utulu, 2012). Schedules for tutorials or meeting research supervisors are known by students in advance through the use of mobile phone in Makerere University (Kajumbula, 2006). In South Africa, some m-learning programmes have become successful due to easy access to mobile phone especially in terms of teaching Biology (UNESCO, 2012). Most mobile phones have flashlights that are used, more especially in the absence of electricity to study. The availability and use of the mobile phone technology in Africa, Middle East and Asia will enhance learning in the form of learner-teacher or learner-learner collaborative learning (UNESCO, 2012). An application called Short Messaging Service (SMS) is employed to assist students to learn foreign language and teachers use SMS to communicate with their students as observed by Cui and Wang (2008). SMS is used to pop quizzes to students, information sharing on timetable and reminder of examination dates in higher schools in the UK (Ferry, 2009). Browsers applications such as Opera Mini, Mozilla, Firefox, Internet Explorer, and Google Chrome enable students to watch a lecture conveniently using either the mobile phone or television (TV) in the classroom (Kafyulilo, 2012). And by this, students can manage their learning schedule synchronously or asynchronously for a better benefit. Mobile phones with digital camera facility are used to take educational photos when on field trip; exchange the photos by sending them as e-mail attachments.

According to Commonwealth of Learning (2008), digital camera as a feature of the mobile phone makes it possible for the learner to document instructional visual resources and scientific facts which can be retrieved when needed. It therefore appears that students with appropriate mobile phones can have their interest aroused at any time to interactively engage in learning anywhere anytime. Internet-enabled mobile phones have enormous software resources put at the

disposal of the learner to support all kinds of academic activities through mobile learning (m-learning) as buttressed by Guy (2009). According to Ferry (2009), a mobile phone can be used as a technological tool to access internet content, remix it to create other goods and services for the classroom teacher and other global consumers. Mobile phones can increase access in those situations where cost represents a significant barrier to learning (Bradley, Weiss & Davies, 2010). Developing interactive mobile-learning programmes at all levels of education can help address or reduce to the barest minimum some of the learning problems caused by distance (Huang, Y-M., Hwang W – Y. & K – E, 2010). Bradley and Cook (2010) arguably claim that mobile phone technology can motivate students to learn actively in a teaching-learning setting and suitable activities can be designed to arouse the interest of other students to partake in the learning for a sustainable duration of time. According to (Huang et al., 2010), mobile learning applications can engage students not only to learn content conveniently but also give them access to remote educational content. The learning process even becomes improved when the mobile platform is empowered by internet browser to allow learners exchange e-mails, attachments, chats, web-based conference inter alia (Tinio, 2003). This provides a conducive atmosphere for access and collaboration in learning that offers variety of assessment methods for reinforcement (Wijekumar, 2005). As claimed by Cui and Wang (2008), some institutions of higher learning in United Kingdom (UK) have been able to harness the use of mobile phone for the storage and retrieval of e-books, lecture notes and examination results so as to facilitate the learning process. It is also observed that the mobile phone can provide information on timelines for submission of assignments, timetable and changes in lecture rooms in some tertiary institutions (Liaw, 2009). Students in China use the mobile phone to access English learning material as well as online evaluation tests Cui and Wang (2008).

### 2.2.8 Use of Smartphones in Higher Education

There is evidence of growing interest in the use of smartphones in higher education leading to new pedagogical practices. Cochrane and Bateman (2010), reflecting on three years of action research into the pedagogical affordances of smartphones, correlate the user-centred and social value of Web 2.0 technologies to education with the Smartphone's capacity to facilitate student-centered social constructivist pedagogies, which McLoughlin and Lee (2008) refer to as "Pedagogy 2.0".

Herrington (2009) discusses how smartphones were used to collect video, image and audio data for creating digital narratives or stories for use as curriculum resources. Nortcliffe *et al.* (2011) discusses the tutor use of Smartphone audio apps for giving intrinsic and extrinsic feedback and found that students appreciated feedback given this way. For the tutor, the connectivity in her smartphone audio app was liberating at times of high pressure associated with marking and feeding back on assignments; it reduced her dependence on her PC's tethered Internet connection.

Walsh (2010) and Ramsden & Jordan (2009) have both reported on the use of smartphones in supporting innovation with QR Codes: two dimensional coded patterns that, when scanned by a camera application, are capable of conveying and connecting to situated information. Ramsden and Jordan found that in 2009 the majority of students were able to access information on their personal devices, but were largely unaware of the technology and how it could be used, with only one in 50 ever having used a QR Code.

Smartphones are increasingly being used as tools by researchers (Murphy, 2010) and can assist with the learning experience due to the range of features they offer in a handheld device. Smartphones are the fastest growing handheld device (ABIResearch, 2008). WMDs have been

shown to be advantageous in assisting students' motivation, helping independent and collaborative learning and encouraging a sense of responsibility (Uden, 2007). More advanced devices, such as smartphones are able to achieve similar objectives and in a higher education assessment piece have been shown to be highly successful with student learning (Cochrane, 2008a, 2008b, 2009).

**2.3 Review of Empirical Literature**

Many empirical studies or researches have been conducted in this country or elsewhere in the world which are either directly or indirectly related to this study. Such studies have been proved by the researchers that smartphone usage has significant contributions on the way students function or act in an academic environment.

Soyemi, Oloruntoba and Okafor (2015) in their research work focused on the phone usage and identified the effects internet enabled mobile phones have on the academic performance of students at the tertiary institutions using the Federal Polytechnic students of Ilaro, Ogun State in Nigeria as area of study. Their findings indicated that 56% of students are influenced negatively to a great extent by the mobile phone because attention is focused on chatting, music and others while their academic activities are neglected and left to suffer. Also, the study discovered that the use of mobile phone is uncontrollable among students which are the leading cause of poor academic performance among students. They concluded that if the use of mobile phone is managed and properly harnessed, it would definitely improve the academic performance of students.

Mojaye (2015) conducted a study on mobile phone usage among Nigerian University students with the aim to establish the relationship between the mobile phone usage and teaching and learning. The researcher in his findings identified the positive effects which includes easy access

to information, instructional usage and personal convenience; while the adverse effects include distraction in the classroom, reduced cognitive ability, cheating during examinations, cyber bullying, poor writing skills and addiction. It concluded that though mobile phones have positive effects on the educational and socio-economic development of Nigerian students, the negative effects have strong damage on the student's performance.

In a research conducted by Jesse (2015) on the relationship between smartphone usage and the effect it has on students' social life, educational life and physical activity, the finding shows some smartphone disadvantage in increased usage which includes hindering classroom performance because college students are consistently on their smartphone. It could possibly causes students to develop more problems on their education resulting to dropping out of college and reducing the number of college graduates. And it causes students to experience anxiety because they have the constant need to have their phone on them at all times. Finally, further disadvantages to a student using their phone in class include a distraction and annoyance to the other students and teacher because it shows lack of paying attention. Even though, the findings revealed some advantages of smartphone to students such as easy access to internet, mobility, used as teaching and learning tools but the disadvantages overshadowed it and unregulated usage. He concluded that students use their smartphones with high frequency and this could cause problems in education.

Similarly, Amali, Onche, Bello and Hassan (2012) conducted a study on the use of mobile phone in lecture rooms and its implications in education for Nigeria development. Three hundred and seventy eight respondents were randomly selected from the University of Ilorin using both sexes. The study found that students are in the habit of using mobile phone for various purposes during lecture hours, which have a negative influence on student's commitment to their academic work.

It also revealed another educational implication of mobile phone on students which is generally believed to be a source of distraction. The study shows 64% of students commit their times and energies to various applications in the mobile phone instead of academic activities. High concentration of students on mobile phone application would result to poor performance of students in their courses. They concluded that mobile phone usage disorientate lecture room behavior and student attitudes towards learning when even those that are not using it were prone by the distraction of those who use them.

Kuznekoff and Titsworth (2013) conducted a study on the impact of mobile phone usage on student learning in Nigeria. The study revealed that students who use their mobile phones during class lectures tend to write down less information, recall less information, and perform worse on a multiple-choice test than those students who abstain from using their mobile phones during class. Also, a survey conducted by North, Johnston, and Ophoff (2014) also in their research on the use of mobile phones by South African University students showed some signs of addiction to respondent's mobile phones. Differences in mobile phone use by gender were found, with female students showing increased mobile phone use for safety and socializing, interest in brand and trends, as well as signs of addiction.

In his research Ogunyemi (2010) focused on the consumption and appropriate use of mobile phone among teenage Africans in the UK. The researcher found that African teenagers' mobile phone usage was greatly affected by their parents in other ways too; an increased bill from excessive use would lead to scrutiny by their parents therefore forcing the students to use their phones less than they intended. In addition to this, Sarwar and Soomro (2013) stated that smartphone provides access to modern society as massive amount of educational and learning

resources. In developing countries, smartphones can easily compensate the limited access of internet and data access, which in turn help their infrastructure and education development.

Kuznekoff and Titsworth (2013), in a study examined the impact of mobile phone usage on student learning, the study found that participants in three different study groups (control, low-distraction, and high-distraction) watched a video lecture, took notes on that lecture, and took two learning assessments after watching the lecture. Students who were not using their mobile phones wrote down 62% more information in their notes, took more detailed notes, were able to recall more detailed information from the lecture, and scored a full letter grade and a half higher on a multiple choice test than those students who were actively using their mobile phones.

According to Stollak, Vandenberg, Burklund and Weiss (2011) who examined the impact of social networking usage on grades among college students, the findings revealed that students who have smartphones were more likely to both access social media tools and spend time engaging with others. From an educational standpoint, this means there may very well be a "digital divide" between those who are making connections with others, and those who might be left behind. Similarly, professors may have to be wary of assigning projects involving social media to students as some may have an advantage in completing the work than others.

As it is demonstrated by survey done by Economides and Grousopoulou (2008) on use of mobile phones by male and female Greek students, the study revealed that gender differences exist, but they are not big. Females appear to make more phone calls than male. Moreover, they take more photos and record more sounds than their male peers. In addition, they listen more hours to the radio than men and they tend to send and receive more messages from friends. On the other hand, males tend to use more of the computers and Internet, but they do not access the Internet via their mobile devices. Furthermore, both groups find reasons in order to reduce the usage of

their mobiles, but men mention more reasons than women do. They believe that loss of time and addiction are reasons of decreasing the use of the devices (Ling 2000, Selwyn 2007).

Jubien (2013) in her qualitative study on shape shifting smartphones: Riding the waves in education, her finding can be understood as a statement that students can have a classroom at home or wherever by making use of communication and educational applications offered by smartphones. In addition, she mentions another finding about how smartphones are influencing and changing educational activities. For example, changes in the way to gather information, to receive instructions from teachers, to do homework, to collaborate with classmates, among others. She concludes that graduate students combine their personal lives with their student lives influenced by the use of smartphones

In his study Sykes (2014) focused on the new methods of mobile computing from smartphones to smart education and the study found that with a mixed method design that students using a smartphone application enjoyed and performed very well in a course, so they exceeded their performance of a comparison group (traditional course) with statistically significant differences. In addition to this, Tosta concluded that smartphones are a phenomenon that has changed daily life and learning styles of students, has forced changes in teaching strategies for teachers, and has changed the rules and policies of educational institutions. Since these technological devices have all in one have become popular among the educational community of almost every country around the world.

In an observational study of smartphone usage on the Stanford campus, Ames (2013) showed that the availability of always-on connectivity meant that the students had to exhibit the techno-social practices of balancing their extended networks with the immediate surroundings and to limit the negative impacts of smartphone usage (e.g., social pressure, and multi-tasking). Also

Cui and Roto (2008) stressed that the use of mobile devices may lead to the development of a checking habit that involves brief and frequent content consumption (e.g., checking emails and Facebook updates).

Anjugu (2013) revealed that since the advent of social media sites in the 1990s, it is assumed in some quarters that the academic performance of students is facing a lot of neglect and challenges. There is a deviation, distraction and divided attention between social networking activities and their academic work. The aim of his study was to analyze the impact of social media on the student's academic performance. Research findings showed that a great number of students in University of Abuja, had access to the internet. Due to a great number of times spent on social networking activities, the academic performance of students suffer setbacks which could lead to a poor performance in the student's academics and therefore, fail to create a balance between the social media and academic activities.

Nwazor and Godwin-Maduike (2015) in their research findings showed that the students of business education in south-east Nigeria use Facebook more than any other social networking site. The students' use it mostly to keep in touch with themselves. Therefore, the researcher recommended that Facebook sites should be expanded and new pages created to enhance academic activities and avoid setbacks in the students' academic performance.

Christopher (2010) stated that with the price of smartphones falling and their quality/capabilities increasing, the consumption of smartphones is on the rise. Smartphones have become a pocket computer and a necessity. People want to have access to the internet at all times and smartphones provide this. Moreover, smartphones offer students with a new way of learning referred to as mobile learning. The research looked at how students are using their smartphones socially and for their education which is an unexplored topic. The researcher found some very interesting

findings which provide a new insight into how students are benefiting from using their smartphones for educational purposes. The research results also show that 68% of the respondents are addicted to using their smartphone and that many students are now beginning to replace laptops with their smartphones for many functions.

Kyoshaba and Martha (2009) investigated the factors affecting academic performance of undergraduate students of Uganda Christian University (UCU). The research revealed the existence of a significant relationship between students' A' level and diploma admission points and academic performance, but there was no relationship between mature age points and academic performance. The findings also revealed that there was a significant relationship between parents' social economic status and academic performance and a significant relationship between former school background and academic performance. On the basis of the findings, the researcher made the following conclusions; A' level and diploma admission points are the most objective way to select just a few students from a multitude of applicants for the 12 limited spaces available at universities in Uganda. Parents' social economic status is important because parents provide high levels of psychological support for their children through environments that encourage the development of skills necessary for success at school. That location, ownership and academic and financial status of schools do count in making a school what it is and in turn influencing the academic performance of its students because they set the parameters of a students' learning experience.

Most of the studies reviewed above show the effect of smartphone usage on academic activities of students in schools of higher learning (Polytechnics and Universities). Some researchers agreed that smartphone as a tool can help students to achieve or perform well in his/her studies but others have argued that smartphones is a tool which hinders students in getting deserved

score in their studies (GPA). For example, one scholar stressed that students use smartphones for cheating in examinations by taking snapshots and share them in a group of let say WhatsApp group. Those who own smartphones at Campus are very busy and attentive to message notifications of WhatsApp, twitter, Instagram, Facebook and other social networks making them vulnerable to time management as they use most of the time chatting with each other rather than discussing about academic subjects.

**2.4 Theoretical Framework**

This study is guided by the uses and gratification theory (UGT) which place the power of choice in the hands of the audience. Unlike early theories which credited the media with considerable power to shape opinion and belief through the media message, uses and gratification theory suggests that media audience are not passive and that they select media messages to gratify their needs. The study situates smartphone and communication pattern of students of higher learning within the general framework of the assumption of the uses and gratification theory which states that the focus of effect has shifted from media production and transmission functions to the media consumption function and that rather than ask "what kinds of effect occur under what conditions?" the question has become: "who uses which contents from which media under which conditions and for what reasons?" This view is in tandem with the assertion of Biocca and as cited by Littlejohn (2006) that media audience is characterized by selectivity, utilitarianism, intentionality, involvement and imperious. By this Littlejohn (2006) meant that media audience deliberately choose the media message to attend to, use the media to meet particular needs and goals, purposeful use of media content, actively attend to, think about media message and cannot be easily persuaded by the media message. The underlining factor therefore, is that when youth of higher learning use their Smartphone in vary capacity or to find a specific piece of information

that will gratify their needs, they are in fact exercising their power of selectivity as well as establishing that media audience are active.

The Uses and Gratifications Theory show how a new medium, such as smartphone, functions when it is widely used in a society (Lee, 2004). The proponents of the theory - Katz, Blumler, and Gurevitch (1973) - stated that "interest in the gratifications that media provide their audiences go back to the beginning of empirical mass communication research" (Katz et al., 1973: 509). The foundation of Uses and Gratification theory was integrated within several disciplines such as media studies, sociology and social psychology (Feaster et al., 2008).

Usually, emerging technologies increase the source selections and channels of information, providing different uses and gratifications to the users (Ruggiero, 2000). Therefore, the Uses and Gratification theory is always an appropriate approach to assess the use of a new medium or technology and to comprehend the users' motivations, actions, and feelings towards their uses (Albarran & Hutton, 2009). Recently, scholars have applied the Uses and Gratifications approach beyond traditional media to new media such as mobile phones, computers and the Internet (Campbell & Kwak, 2010; Lee, 2004; Park, 2010; Vishwanath & Chen, 2008). The Uses and Gratifications Theory is the suitable choice to examine smartphone usage, as it is a phenomenological new media with multiple functions.

### 2.4.1. Uses and Gratifications Theory

Katz, Blumler and Gurevitch (1973) derived the Uses and Gratification theory from the empirical mass communication research (Katz, et al., 1973). They summarized the concerns of the different studies to reach the core of their new theory as follows:

The social and psychological origins of needs, which generate expectations of the mass media or other sources, which lead to differential patterns of media exposure (or engagement in other

activities), resulting in need gratifications and other consequences, perhaps mostly unintended ones (Katz et al., 1973: 510). From these points they defined the core of the theory as "an attempt to explain something of the way in which individuals use communications, among other resources in their environment, to satisfy their needs and to achieve their goals" (Katz et al., 1973: 510).

The theory promotes the idea that audience members are active and associate their media choices with the gratifications that result from that choice (Katz et al., 1973). It is an interesting point that the proponents emphasized the role of the audience members is as critical in creating the content of the media: "many of the goals of mass media use can be derived from data supplied by individual audience members themselves" (Katz et al., 1973). This idea is now more evident in the mass appeal of creating content based upon the tastes of audience members. It also considers the competition media faces against other social life factors to fulfill need satisfaction (Katz et al., 1973). The theory lists the three main sources of audience gratifications: "media content, exposure to the media per se, and the social context that typifies the situation of exposure to different media" (Katz et al., 1973).

The founders of the theory paid attention to "the social and environmental circumstances that lead people to turn to the mass media for the satisfaction of certain needs" (Katz et al., 1973).

Uses and gratifications theory provides a framework for understanding when and how individual media consumers become more or less active and the consequences of that increased or decreased involvement. According to West and Tunner (2010) there are five basic assumptions of Uses Gratifications Theory as articulated by the founders of the theory which are:

1. The audience is active and its media use is goal oriented

2. The initiative in linking need gratification to a specific medium choice rests with the audience member
3. The media compete with other sources for need satisfaction
4. People have enough self-awareness of their media use, interest, and motives to be able to provide a researcher with an accurate picture of that use
5. Value judgments of media content can only be assessed by the audience

The theory tries to explain the uses of any media and gratifications that could be attained considering the audience's interest in the content (or interactivity with it) combined with the social context. Therefore, it fits the focus of this study exploring the different uses of the smartphone, in particular how active the polytechnic students are using their smartphones in academic environment, the gratifications they attain.

**2.4.2. Evaluation of the Uses and Gratifications Theory**

The Uses and Gratifications theory refuted the Hypodermic Needle Theory and the passive audience perspective. In reverse, media users are perceived as active and aware of their needs and desired gratifications which will ultimately determine the media's influence (Lometti, Reeves & Bybee, 1977). Blumler (1979) stated that the theory was widely acknowledged in the late 1950s and early 1960s at the time of disappointment of the short-term effects of the media:

"it reflected a desire to understand audience involvement in mass communications in terms more faithful to the individual user's own experience and perspective than the effects tradition could attain" (Blumler, 1979: 10). This theory has changed the question the researchers were asking for many years, from "what do the media do to the people?" to "what people do to the media?" (Swanson, 1979). He also acknowledged these attributes in saying that "introducing personal interpretations or perceptions into the mass communication process was a major departure from

the effects tradition, for which we should applaud the uses and gratifications approach" (Swanson, 1979b).

Blumler (1979), who is one of the founders of the uses and gratification theory, has raised some concerns regarding the social and environmental circumstances. He wondered how the derivation of media needs from, say, restricted work experience, geographical mobility, high education, social isolation, and sexual status could all be brought under one theoretical roof (Blumler, 1979: 22). He also believes that other factors rather than sex, age and social class should be considered with focusing on a possible combination of multiple and interacting circumstances (Blumler, 1979). He also criticized the focus on an association between certain social position variables and certain gratification tendencies with considering the possible impact of the process in between them.

Swanson (1979) has raised some conceptual concerns based on his perception of the uses and gratification approach. He was skeptical "whether the uses and gratifications approach is, in fact, an attempt to apply functional analysis to the study of mass communication." He also mentioned that there is confusion regarding how to define the major concepts in the theory: uses, gratification, motive, and need. He stated that it is difficult to investigate the gratification of media consumption without being able to specify what a gratification is, what the relation is between a gratification and a use whether a use is a motive, the result of a need, the statement of a function, or all three of these, or none of these. It is not yet clear what the necessary components are of a uses and gratifications explanation, how those components serve to provide a satisfactory account or explanation, or how a uses and gratifications explanation differs from other accounts we might offer to explain the same behavior (Swanson, 1979b).

Ruggiero (2000) stated that some mass communications scholars have countered that the Uses and Gratifications theory is not a strong social science theory. He "argued just the opposite" and any attempt to speculate on the future direction of mass communication theory must seriously include the uses and gratifications approach. He also said that after being out of favor for decades, the advent of new technologies, such as computer-mediated communication, has invigorated the significance of the Uses and Gratification approach from dormancy. He asserted that "Uses and Gratifications has always provided a cutting-edge theoretical approach in the initial stages of each new mass communications medium: newspapers, radio and television, and now the Internet" (Ruggiero, 2000). He also believes it will continue to be a highly serviceable theory for the twenty-first century with more focus on the evolving psychological, sociological and cultural context of new media.

### 2.4.3 The application of the Uses and Gratifications Theory in the Media Studies

A general Google search of Uses and Gratifications theory produced approximately 163,000 results. Google Scholar produced 43,900 academic results. It is widely used in the field of social sciences. Over the past four decades the theory has been used innumerable times. Most recently it has been used with the advent of new technologies. The following studies are some examples of researches that were done using the theory of uses and gratification, specifically, the different uses of mobile phone, and the potential attained gratifications.

Leung and Wei (2000) examined the uses and gratifications of the cellular phone in one of the earliest studies of mobile phone usage. The study showed that "mobility, immediacy, and instrumentality founded as strong gratifications". The use of mobile phones anywhere and everywhere is strongly linked to mobility and immediate access gratifications. Instrumental gratifications are attained by the different instrumental uses such as scheduling appointments,

shopping, and seeking information. Other strong gratifications founded in the study are intrinsic factors such as affection and sociability. These gratifications can be gained by different uses such as; personal communications, gossip, keeping up with family, and feeling safe (Leung & Wei, 2000).

Peters and Ben Allouch (2005) suggested in a longitudinal field study of mobile communications that users' motivations are primarily influenced by the task-oriented uses. They also found that initial gratifications like permanent and social interaction become more latent due to the quick habituation of mobile communication devices. Fashion/status and entertainment gratifications grow to be more dominant. Wei and Lo (2006) focused on connectivity of the mobile phone use. They believe that college students, especially freshmen, are in need of building new social relationships and have a strong need to be close to family. The results revealed that usage of mobile phones promotes ties and strong bonds with family while being used for building social relationships. They found a significant gender difference in the use of mobile phones. Women use mobile phones more in connection with family while men use it more for information-seeking. Both genders use the mobile phone to meet the need for social relationship maintenance. Albarran and Hutton (2009) studied how young Latinos use mobile phones in a cross-cultural study in the United States and five Latin American countries. They found that the data illustrates that even though many of the countries represented in this study share a common language as a base, culturally every country is unique in terms of how young people are using their mobile phones and the gratifications derived from its use.

The results indicated that the most important gratifications are sociality -"keeping in touch" and instrumentality -"helping to plan your day." Accessing news and information and reading email are the lowest gratifications (Albarran & Hutton, 2009).

Nurullah (2009) explains the transformation of the nature of social contacts which created new "technosocial situations" as the result of the expansion of the Internet in smartphones. He found that "there are many gratifications involved in using the cell phone, as it creates a sense of belonging, bonding with friends and family, constant availability, and keeping in touch with long distance relations. It also shapes the identity and prestige of adolescents across cultures".

In Hostut's 2010 study of Uses and Gratifications of Mobile Phone Use among Students in Turkey, the researcher found that the sociability, reassurance and relaxation are the most prominent gratifications predicting mobile phone usage. The appearances of status, fashion and innovation gratifications are strong motivations. The results indicated that the level of usage could be determined by the user's age, previous experience and mobile phone brand. Zhen, Honglei, and Sen (2012) found that the main gratifications obtained from using mobile phones are enhancing connectivity, maintaining immediate accessibility/availability, and the convenience of usage. This study examines the adoption of the use of the smartphones among students of Kaduna Polytechnic and Nuhu Bamalli Polytechnic in Nigeria. To achieve the objectives, it examines the most common uses and gratifications of mobile phone use in the previous.

# CHAPTER THREE

# RESEARCH METHODOLOGY

## 3.1 Introduction

This chapter discussed the various methods that were used in eliciting the desirable data for the analysis in the study. The key components were research method, population of the study, sampling technique, sample size, instrument for data collection, methods of data analysis, and validity and reliability of research instruments.

## 3.2 Research Method

The research adopted the descriptive survey research method in conducting this study. The method involved gathering data from respondents in Kaduna and Nuhu Bamalli Polytechnics. According to Wimmer and Dominick (2011), survey is commonplace in all aspects of life. In survey, the researcher is only interested in observing what is happening without any attempt to manipulate or control them (Asika, 1991). Bello and Ajayi (2000) noted that survey is a useful concept adopted when handling a large population, especially on issues that involves systemic collection of data with the use of questionnaire. Tuckman (2001) states that through questionnaire, survey research makes it possible to measure what a person knows (knowledge or information), what a person likes and dislikes (values and preferences) and what a person thinks (attitude and beliefs).

Survey method can be either descriptive or analytical. It is descriptive when it attempts to describe or document current conditions or attitude that exists at a moment, while, if it attempts to know why certain situations exist, it is said to be analytical (Wimmer & Dominick, 2006). Baxter and Babbie (2001) argue that in a quantitative oriented communication research,

researchers often operationalize variables by asking structured questions. Therefore, the study adopted the survey method in conducting this research.

### 3.3 Population of the Study

According to Kerlinger (1981) population is defined as "all members of any well-defined class of people, events or subjects which can be living on non-living things". Population means all cases or individuals that fit a certain specification. Based on the information obtained from head of ICT departments of the two Polytechnics, Nuhu Bamalli Polytechnic, Zaria, with a population of 3630 HND students and Kaduna Polytechnic with 7566 HND students, the population of the study of the entire HND Polytechnic students in Kaduna State as at 2015/2016 academic session is 11,196 (NUBAPOLY ICT Dept, 2016 and KADPOLY ICT Unit, 2016).

### 3.3 Sampling Technique

A sampling technique is a plan specifying how elements will be drawn from the population. Sampling techniques are of two categories namely the probability and non probability sampling technique. The study adopted both the probability and non probability sampling techniques. Asemah, Gujbawu, Ekhareafo and Okpanachi (2012) stated that probability sampling is a method that gives every item or unit in the population an equal chance of being picked or selected. Under probability sampling, simple random sampling was adopted to select the schools and the departments for the study. As noted by Cohen, Manion and Morrison (2007) in simple random sampling, each member of the population under study has an equal chance of being selected and the probability of a member of the population being selected is unaffected by the selection of other members of the population. Then, in selecting respondents for the study a purposive sampling technique under non-probability sampling method was adopted. The study focused on

the HND students that have a certain characteristic that is, having access to smartphone. According to Cohen, Manion and Morrison (2007) in purposive sampling, the researcher handpicks the cases to be included in the sample on the basis of his judgment of their typicality or possession of the particular characteristics being sought…..the sample has been chosen for a specific purpose.

### 3.4 Sample Size

The simple random sampling method was adopted to select the population for the study using lottery method. As noted by Asemah, Gujbawu, Ekhareafo and Okpanachi (2012) lottery method entails writing all the names or the numbers of the subjects or units on cards and shuffling the cards and taking the top card each time the cards are shuffled continuously, until the required sample size is met. Four schools or sections as they are called were picked from each Polytechnic. The School of Science and Technical Education, School of Technology, School of Management and School of Social Sciences were selected from Kaduna Polytechnic. While School of Engineering, School of Environmental Design, School of Geodesy and Land Administration, and School of Management Studies were selected from the Nuhu Bamalli Polytechnic Zaria. One department was randomly selected from each school, which totaling eight Departments.

The departments sampled were as follows: Computer Science, 296; Hospitality Management, 217; Office Technology and Management, 272; Library and Information Science, 267; Computer Engineering, 210; Quantity Surveying, 182; Estate Management, 302 and; Business Admin and Management, 320. To determine the sample size, the researcher used the online survey calculator (Survey Monkey) by inputting the population size 2066 at the 95% confidence level and 5%

margin of error. Therefore, Survey Monkey calculates 325 as the sample size. The researcher purposively distributed the determined sample size to the eight selected departments as follows:

Computer Science, 47; Hospitality Management, 34; Office Technology and Management, 43; Library and Information Science, 42; Computer Engineering, 33; Quantity Surveying, 29; Estate Management, 47 and; Business Admin and Management, 50. According to Asemah, Gujbawu, Ekhareafo and Okpanachi (2012) the researcher may decide to choose his or her sample based on what he considers typical cases, which are most likely to provide him with the data he wants.

### 3.5 Instrument for Data Collection

This study adopted the use of structured questionnaire as an instrument of data collection. The questionnaire was use to elicit response for a descriptive survey. Bhattacherjee (2012) explained that a questionnaire is a research instrument consisting of a set of questions (items) intended to capture responses from respondents in a standardized manner. The questionnaire contained a total of twenty two (22) questions. The questions were divided into two sections. The first segment raised questions about the respondent's demographic data such as gender, age, marital status, department and level of study while the second segment of the questionnaire ask questions about the three objectives of the study which is the adoption of the use of smartphones, the smartphone applications mostly used by students and the motivations for using smartphone. Open ended and close ended questions were used to elicit response from the respondents to answer objective one and two. Therefore, from questions 16 to 22 of the questionnaire are likert scale questions which were used to answer objective three of the study. Asemah, Gujbawu, Ekhareafo and Okpanachi (2012) stated that when responding to a Likert questionnaire item,

respondents specify their level of agreement or disagreements on a symmetric agree-disagree scale for a series of statements, which will capture the intensity of their feelings.

This instrument of data collection is chosen to ensure a striking balance between the two different sexes, so that the desirable feedback would be elicited.

### 3.6 Method of Data Analysis

The statistical package for social sciences (SPSS) version 20.0 was used to analyze the questionnaire. Tables were also used in presenting the findings of the study. The copies of questionnaires were analyzed using percentage and frequency to interpret the data collected in the field. Cohen, Manion and Morrison (2007) noted that frequencies and percentages are form of analysis which is responsive to the data being presented, and is most closely concerned with seeing what the data themselves suggest, akin to a detective following a line of evidence.

### 3.7 Validity and Reliability of Research instrument

Validity of the questionnaire was obtained by presenting it to professionals, including the researcher's supervisors because content and construct validity is determined by expert judgment. As Bhattacherjee (2012) stated that content validity is an assessment of how well a set of scale items matches with the relevant content domain of the construct that it is trying to measure and also an expert panel of judges is employed to examine content validity of constructs. Reliability of the instrument was obtained by using the test- retest reliability. Rubin and Babbie (2005) argue that for most educational research, stability of scores over a period of two weeks is usually viewed as sufficient evidence of test-retest reliability. Therefore the researcher retests the instruments on a small number of students in an interval of two weeks. Therefore, the pilot study was done in Ahmadu Bello University, Zaria where students were

administered the same questions. The pilot study confirmed the appropriateness of the questions in answering the raised research questions. It also gave a clarification as to whether or not the respondents understood the questions.

# CHAPTER FOUR

# DATA ANALYSIS AND PRESENTATION

## 4.1 Introduction

This chapter deals with the presentation and analysis of data collected from the field. They were subjected to descriptive statistical analysis which includes frequency and percentage. They are presented according to the questionnaire. Statistical Package for Social Sciences (SPSS) version 20.0 was used in presentation and analysis of the data gathered from the respondents. A total of 325 Questionnaire were administered to students in eight Departments of Kaduna Polytechnic and Nuhu Bamalli Polytechnic Zaria. However, only 313 copies were retrieved and analyzed.

## 4.2 Data Presentation

This part of the work presents the data gathered from the study using descriptive and inferential statistics. The findings are presented in tables. There are two segments in this section. The first part presents the results and analysis of respondent's demographic data such as gender, age, marital status, Department and level of study while the second part is on the adoption of the use of smartphones, smartphone applications mostly used by students and the motivation for using them.

**Table 1: Demographic Characteristics of the Respondents**

| Category | Polytechnic | | Frequency | Percentage |
|---|---|---|---|---|
| **Gender** | **KADPOLY** | Male | 107 | 34.2 |
| | | Female | 70 | 22.4 |
| | **NUBAPOLY** | Male | 77 | 24.6 |
| | | Female | 59 | 18.8 |
| | | **Total** | **313** | **100%** |
| **Age** | **KADPOLY** | 18 – 23 | 49 | 15.7 |
| | | 24 – 29 | 94 | 30.0 |
| | | 30 – 35 | 22 | 7.1 |
| | | 36 – 41 | 11 | 3.5 |
| | | 41 Above | 1 | .3 |
| | **NUBAPOLY** | 18 – 23 | 36 | 11.5 |
| | | 24 – 29 | 64 | 20.4 |
| | | 30 – 35 | 19 | 6.1 |
| | | 36 – 41 | 15 | 4.8 |
| | | 41 Above | 2 | .6 |
| | | **Total** | **313** | **100.0** |
| **Marital Status** | **KADPOLY** | Married | 30 | 9.6 |
| | | Single | 140 | 44.7 |
| | | Divorced | 7 | 2.2 |
| | **NUBAPOLY** | Married | 29 | 9.3 |
| | | Single | 103 | 32.9 |
| | | Divorced | 4 | 1.3 |
| | | **Total** | **313** | **100.0** |
| **Department** | **KADPOLY** | Computer Science | 48 | 15.3 |
| | | Hospitality Management | 38 | 12.1 |
| | | Office Technology and Management | 46 | 14.7 |
| | | Library and Information Science | 45 | 14.4 |
| | **NUBAPOLY** | Computer Engineering | 28 | 8.9 |

| | | | | |
|---|---|---|---|---|
| | | Quantity Surveying | 27 | 8.6 |
| | | Estate Management | 39 | 12.6 |
| | | Business Admin and Management | 42 | 13.4 |
| | | **Total** | **313** | **100.0** |
| **Level of Study** | **KADPOLY** | HND I | 97 | 31.0 |
| | | HND II | 80 | 25.6 |
| | **NUBAPOLY** | HND I | 52 | 16.6 |
| | | HND II | 84 | 26.8 |
| | | **Total** | **313** | **100%** |

The data in Table 1 above indicates that majority of the respondents 34.2% in Kaduna Polytechnic HND students were male and 22.4% were female while in case of Nuhu Bamalli Polytechnic 24.6% of the respondents were male and only 18.8% were female. Findings reveal that majority of the respondents (HND students) in the two the Polytechnics were male then clearly showing that the male gender of HND students are higher in number in both institutions.

According to the data in Table 1, majority of the respondents 30% are between the age group of 24-29 and respondents of the age group of 18-23 years are 15.7%. Respondents between 30-35 years constitute 7.1%; students who fall between the age group of 36-40 are 3.5%, only .3% of the total responses are above 41 years of age among the respondents in Kaduna Polytechnic. However, in Nuhu Bamalli Polytechnic 20.4% of the respondents were between the age category of 24-29, 11.5% respondents fall between the age group of 18-23. Those respondents between 30-35 age group constitute 6.1% of the responses, 4.8% respondents are between 36-40 years, and only .6% respondents are above 41 years among the respondents. The findings show about 75% of the total population in both schools was less than thirty (30) years. This signifies that smartphone users in HND programs are predominantly young people.

From the demographic data in Table 1, above majority of the respondents with 44.7% are single, 9.6% of the respondents are married and only 2.2% respondents said they were divorced among the respondents in Kaduna Polytechnic. While in the case of Nuhu Bamalli Polytechnic 32.9% of the respondents are also not married, 9.3% of the respondents said they are married and only 1.3% of the population said that they are divorced. The findings reveal that majority of the respondents who are HND students in the two Polytechnics are single. This shows that the uses of smartphones among Polytechnic students is mainly done by young people that are not married which constitute 75% of the population under study.

The demographic data showed that eight Departments participated in this study out of which 15.3% of the respondents were from the Department of Computer Science. Respondents from the Office Technology and Management Department constituted 14.7%. Those from the Department of Library and Information Science are 14.4%. The respondents from the Hospitality Management Department are 12.1% in Kaduna Polytechnic. However, 13.4% of the respondents are students of Business Admin and Management Department, 12.5% of respondents are from Estate Management Department while 8.9% respondents are from the Department of Computer Engineering only 8.6% respondents are students of the Department of Quantity Surveying in the Nuhu Bamalli Polytechnic. The findings reveal that HND student of the Department of Computer Science use their smartphones more than any other Department among Polytechnic students in Kaduna State.

According to Table 1, majority of the respondents with 31% from Kaduna Polytechnic are HND I students. The data reveal that HND II students constitute 25.6% of the total responses. In the Nuhu Bamalli Polytechnic, HND II students had a higher frequency of responses with 26.8%, and only 16.6% of the respondents are from HND I. The finding shows that HND I students in

Kaduna Polytechnic use smartphone in academic environment more than HND II students. The result differed in Nuhu Bamalli Polytechnic where HND II uses smartphones more than HND I students.

**Table 2: Access to Smartphone**

| Polytechnic | Smartphone Access | Frequency | Percentage |
|---|---|---|---|
| **KADPOLY** | Personal | 154 | 49.2 |
| | Parents | 16 | 5.1 |
| | Friends | 7 | 2.2 |
| **NUBAPOLY** | Personal | 127 | 40.6 |
| | Parents | 4 | 1.3 |
| | Friends | 5 | 1.6 |
| | **Total** | **313** | **100%** |

The data in Table 2 above, reveals that majority of the respondents 49.2% in Kaduna Polytechnic said that they access their smartphone personally which suggest that they own their own smartphone; 5.1% said that they access smartphone through their parent's phones and only 2.2% said they use their friend's smartphones. In Nuhu Bamalli, 40.6% of the respondents said that they access their smartphone personally; 1.6% access smartphone through their friends and only 1.3% reveal that they access smartphone through their parents. The findings show that about 89% of the population uses their own personal smartphones in both polytechnics. The students that access the use of smartphone through their parents and friends are very negligible when compared to those that personally own a smartphone. It therefore follows that majority of the students owns their smartphone

**Table 3: Purpose of Smartphone Use**

| Polytechnic | Purpose of Use | Frequency | Percentage |
|---|---|---|---|
| **KADPOLY** | Academic purpose | 51 | 16.3 |
| | Social purpose | 28 | 8.9 |
| | All of the above | 98 | 31.3 |
| **NUBAPOLY** | Academic purpose | 47 | 15 |
| | Social purpose | 18 | 5.8 |
| | All of the above | 71 | 22.7 |
| | **Total** | **313** | **100%** |

The respondents were asked a question on the purpose for which they use their smartphone for. Table 3 above reveals that in Kaduna Polytechnic majority (31.3%) use their smartphones for both academic and social purposes. A total of 16.3% said that they use smartphones solely for academic purposes, and only 8.9% of them reported that their smartphone was used only for social purposes. In Nuhu Bamalli Polytechnic 22.7% of the respondents said they use their smartphones for academic and social purposes; 15% use them for academic purposes only and 5.8% use it for social purposes only. The findings showed that about 53% of the respondents use their smartphones for both academic and social purposes.

**Table 4: Uses of Smartphone by Students**

| Polytechnic | Uses of Smartphone | Frequency | Percentage |
|---|---|---|---|
| **KADPOLY** | Phone Call | 53 | 16.9 |
| | Text messaging applications (WhatsApp, BBM, 2go & similar apps) | 31 | 9.9 |
| | The internet (browsing) | 30 | 9.7 |
| | Online Shopping | 7 | 2.2 |
| | Entertainment (Music, Video games, Movies) | 18 | 5.8 |
| | Social networking sites (Facebook, twitter, YouTube & others) | 17 | 5.4 |
| | All of the above | 21 | 6.7 |
| **NUBAPOLY** | Phone Call | 22 | 7.0 |
| | Text messaging applications (WhatsApp, BBM, 2go & similar apps) | 20 | 6.4 |
| | The internet (browsing) | 27 | 8.6 |
| | Online Shopping | 4 | 1.3 |
| | Entertainment (Music, Video games, Movies) | 11 | 3.5 |
| | Social networking sites (Facebook, twitter, YouTube & others) | 14 | 4.5 |
| | All of the above | 38 | 12.1 |
| | **Total:** | **313** | **100.0** |

According to the Table 4 above, majority of the respondents 16.9% in Kaduna Polytechnic said that they used their smartphone to receive and make calls in school mostly, followed by 9.9% who used their smartphones for text messaging applications such as WhatsApp, BBM, 2go and

the likes; 9.7% said that they used smartphone for internet browsing; 6.7% said that they use smartphone for all of the above options which are phone call, text messaging applications, the internet (browsing), online shopping, entertainment (Music, Video games, Movies), social networking sites (Facebook, twitter, YouTube & others). The respondents who use their smartphone for entertainment such as playing music, video games and watching movies in school constitute 5.8%. A total of 5.4% respondents used it for social networking sites like Facebook, Twitter, YouTube and other similar social platform. Only 2.2% respondents responded that they use smartphone for online shopping. In Nuhu Bamalli Polytechnic 12.1% of the respondents said that they use smartphones for phone calls, text messaging applications, the internet (browsing), online shopping, entertainment (Music, Video games, Movies), social networking sites (Facebook, twitter, YouTube & others). This is followed by 8.6% who use it for internet browsing; 7% said they used it to make phone calls in the campus; 6.4% use smartphone for text messaging like WhatsApp, BBM, 2go and other similar application; 4.5% use it for social networking sites such as Facebook, Twitter, YouTube and other similar social platform; 3.5% use it for entertainment like playing music, video games and watching movies only and 1.3% used their smartphone for online shopping in school. The findings show that students use their smartphones to receive and make calls, text messaging applications like WhatsApp, Twitter and other similar applications and the internet browsing in Kaduna Polytechnic. The result differ in Nuhu Bamalli Polytechnic where students frequently use their smartphones for phone calls, text messaging applications, the internet (browsing), online shopping, entertainment (Music, Video games, Movies), social networking sites (Facebook, twitter, YouTube & others).

**Table 5: Average Hours Spent Using Smartphone Daily**

| Polytechnic | Hours Spend | Frequency | Percentage |
|---|---|---|---|
| **KADPOLY** | 1 – 5 | 69 | 22.0 |
| | 6 – 10 | 88 | 28.1 |
| | 11 – 15 | 4 | 1.3 |
| | 16 – 20 | 5 | 1.6 |
| | 24hours | 11 | 3.5 |
| **NUBAPOLY** | 1 – 5 | 63 | 20.1 |
| | 6 – 10 | 46 | 14.7 |
| | 11 – 15 | 8 | 2.6 |
| | 16 – 20 | 3 | 1.0 |
| | 24hours | 16 | 5.1 |
| | **Total:** | **313** | **100%** |

The Table 5 above, reveal that in Kaduna Polytechnic majority of the respondents (28.1%) spend between 6-10 hours daily using smartphones, 22% spend between 1-5 hours daily using their smartphone. This is followed by 3.5% who spend 24 hours using their smartphone. Another 1.6% spends 16-20 hours a day using smartphone and only 1.3% spend 11-15 hours daily using their smartphone. In the case of Nuhu Bamalli Polytechnic, 20% respondents spend between 1-5 hours using smartphones daily, 14.7% spend 6-10 hours a day. Those who spend 24 hours using smartphones constitute 5.1%, respondents with 2.6% spending between 11-15 hours daily and only 1% of them spend 16-20 hours daily using their smartphone. The findings shows the number of students who spend between one to ten hours daily using smartphone have greater percentage in both Polytechnics. This clearly showed that high level of time devoted to smartphone have effects on the level of concentration on academic activities of students in schoo

**Table 6: Period of Using Smartphone**

| Polytechnic | Period | Frequency | Percentage |
|---|---|---|---|
| **KADPOLY** | After Lectures | 111 | 35.5 |
| | During Lectures | 31 | 9.9 |
| | All of the above | 28 | 8.9 |
| | Others | 7 | 2.2 |
| **NUBAPOLY** | After Lectures | 28 | 8.9 |
| | During Lectures | 21 | 6.7 |
| | All of the above | 83 | 26.6 |
| | Others | 4 | 1.3 |
| | **Total** | **313** | **100%** |

According to the Table 6 above, majority of the respondents (35.5%) in Kaduna Polytechnic use their smartphones after lectures, 9.9% used it during lectures, and 8.9% respondents use smartphone for both during and after lecture hours and only 2.2% used it before lecture time. However, the results reveal that in Nuhu Bamalli Polytechnic, 26.6% used smartphones during and after lectures, 8.9% used it after lecture hours, 6.7% used it during lectures, only 1.3% use it in other periods such as before lecture hours. The findings revealed that majority of HND students in KADPOLY used their smartphones after the lecture hours; while a significant number of students in NUBAPOLY responded that they used their smartphone for both during and after lectures.

**Table 7: Category of Smartphone Applications Mostly Used by Students**

| Polytechnic | Applications | Frequency | Percentage |
|---|---|---|---|
| **KADPOLY** | Academic Applications | 91 | 29.1 |
| | SN/Entertainment Apps | 86 | 27.5 |
| **NUBAPOLY** | Academic Applications | 79 | 25.2 |
| | SN/Entertainment Apps | 57 | 18.2 |
| | **Total** | **313** | **100%** |

The Table 7 above shows the category of smartphone applications mostly used by the students in Kaduna Polytechnic. Majority (29.1%) use academic applications mostly; this is followed by 27.5% who mostly use SN/Entertainment applications. While in the case of Nuhu Bamalli Polytechnic 25.2% used academic applications in most time; those respondents who say they use SN/Entertainment applications represent 13.1%. The findings further reveal that the category of smartphone applications mostly used by HND students in both Polytechnic was academic applications because it constitutes about 54% of the responses by students.

**Table 8: Academic Applications Mostly Used by Students**

| Polytechnic | Academic Applications | Frequency | Percentage |
|---|---|---|---|
| **KADPOLY** | Check website pages | 16 | 9.4 |
| | Read related document in PDF, Word or others | 10 | 5.9 |
| | Browsing internet | 18 | 10.6 |
| | Download software | 11 | 6.5 |
| | Using calculator | 9 | 5.3 |
| | Dictionary | 8 | 4.7 |
| | Google chrome | 7 | 4.1 |
| | Others: Email | 12 | 7.1 |
| **NUBAPOLY** | Check website pages | 19 | 11.1 |
| | Read related document in PDF, Word or others | 11 | 6.5 |
| | Browsing internet | 16 | 9.4 |
| | Download software | 9 | 5.3 |
| | Using calculator | 9 | 5.3 |
| | Dictionary | 7 | 4.1 |
| | Google chrome | 8 | 4.7 |
| | **Total** | **170** | **100.0** |

The Table 8 above shows the smartphone academic applications mostly used by the students. An analysis of the table suggests that 10.6% of the students in Kaduna Polytechnic use their smartphone academic application for browsing the internet. This is followed by 9.4% respondents who say they use their smartphone to check website pages. Those who say they use their smartphone for email application constitute 7.1%, respondents with 6.5% said that they used their smartphones to download academic software, 5.9% of the students use their smartphone to read academic related documents in PDF, Word and other similar applications. A total of 5.3% of the students used their smartphone for calculator, 4.7% of respondents used dictionary application with their phones. Only 4.1% of students used Google chrome application with their smartphones. In the case of Nuhu Bamalli Polytechnic, students who use their smartphone to check website pages constitute 11.1% of the responses, 9.4% use it to browse the internet. The data also shows 6.5% of students use their smartphones to read academic related document in PDF, Word and other similar applications. 5.3% use it to download academic software and also 5.3% used it for calculator. Those who say they use their smartphone for Google chrome application constitute 4.7%. Only 4.1% respondents say they use their smartphones for dictionary. The findings revealed that HND students in both Polytechnic can afford to make a subscription of data which allowed them to access internet services to browse and check website pages, download software and to be able to read academic related documents by using PDF, Word, Adobe Reader and other similar academic applications.

**Table 9: Frequency of Use of Smartphone Academic Application**

| Polytechnic | Freq. of Use | Frequency | Percentage |
|---|---|---|---|
| **KADPOLY** | Always | 59 | 34.7 |
| | Sometimes | 32 | 18.8 |
| | Never | 0 | 0 |
| **NUBAPOLY** | Always | 43 | 25.3 |
| | Sometimes | 36 | 21.2 |
| | Never | 0 | 0 |
| | **Total** | **170** | **100%** |

A cursory look at table 9 shows that majority of the students (34.7%) in Kaduna Polytechnic said they always use their smartphone academic applications. This category of users is followed by 18.8% of those who say they sometimes use their smartphones academic applications. In Nuhu Bamalli Polytechnic was examined, 25.3% of the respondents said they always use their smartphones academic application. Only 21.2% said they sometimes use their smartphone academic application. When we compare the responses from Kaduna Polytechnic with the responses from Nuhu Bamalli Polytechnic we found that the pattern of responses is similar. Findings also revealed that majority of HND students use their smartphones academic applications to browse and read academic related documents as shown in (Table 8 above). About 60% of the students always use smartphones academic application in both Polytechnics.

**Table 10: Social Networking Site and Entertainment Apps Mostly Visited By Students**

| Polytechnic | SN/Entertainment | Frequency | Percentage |
|---|---|---|---|
| **KADPOLY** | Facebook | 15 | 10.5 |
| | Twitter | 6 | 4.2 |
| | WhatsApp | 12 | 8.3 |
| | YouTube | 7 | 4.9 |
| | BBM | 4 | 2.8 |
| | Instagram | 8 | 5.6 |
| | Imo | 3 | 2.1 |
| | Skype | 1 | 0.7 |
| | BBC Media Player | 10 | 7 |
| | Punjabi Movies | 9 | 6.3 |
| | Boom Player | 11 | 7.6 |
| **NUBAPOLY** | Facebook | 10 | 7 |
| | Twitter | 6 | 4.2 |
| | WhatsApp | 7 | 4.9 |
| | YouTube | 7 | 4.9 |
| | BBM | 5 | 3.5 |
| | Instagram | 3 | 2.1 |
| | Imo | 2 | 1.4 |
| | Skype | 2 | 1.4 |
| | BBC Media Player | 6 | 4.2 |
| | Punjabi Movies | 4 | 2.8 |
| | Boom Player | 5 | 3.5 |
| | **Total** | **143** | **100.0%** |

The data in Table 10 above shows the social networking sites and Entertainment applications most visited by students with their smartphones. In Kaduna Polytechnic Facebook became the highest visited application with 10.5% of the responses. This is followed by WhatsApp with

8.4% respondents which is the second most visited social network site, respondents with 7.6% said they mostly use their Smartphones to entertain themselves with Boom Player application, 7% of them reported that they mostly visit BBC Media player application, 6.3% of the respondents said that Punjabi Movies is the most used entertainment application by them. However, those that said they visit Instagram application in most of their times are only 5.6%. Those that visit YouTube application most times constitute 4.9%. Respondents that used Blackberry Messenger (BBM) application in most of their times constitutes 2.8%, only 2.1% of the students visited Imo application mostly. Only 0.7% of the students visited Skype application mostly. In Nuhu Bamalli Polytechnic, 7% of the respondents reported that they use Facebook application mostly, 4.9% visit WhatsApp application most of the times, 4.9% used YouTube application, only 4.2% of them reported that they visited Twitter most at times; 4.2% used BBC Media Player application most of the times, 3.5% said they mostly visit Blackberry Messenger (BBM) application, and 3.5% of them used Boom Player application, 2.8% used Punjabi Movies application most of the times. Those who said they visited Instagram application with their Smartphones constitute only 2.1% of the responses. Imo and Skype applications secured the same responses with 1.4% respectively. The findings reveal that the most visited or used social networking sites and entertainment applications by HND students were Facebook and WhatsApp applications in both Polytechnics.

**Table 11: Frequency of Smartphone Usage for Social Networking Sites and Entertainment Applications**

| Polytechnic | Freq. of Use | Frequency | Percentage |
|---|---|---|---|
| **KADPOLY** | Always | 50 | 35 |
| | Sometimes | 31 | 21.7 |
| | Never | 5 | 3.5 |
| **NUBAPOLY** | Always | 34 | 23.8 |
| | Sometimes | 21 | 14.6 |
| | Never | 2 | 1.4 |
| | **Total** | **143** | **100%** |

The Table 11 above, reveals that majority of the respondents (35%) in Kaduna Polytechnic said they always use or visit social networking sites/Entertainment applications with their smartphones, however, 21.7% of them reported that they use social networking sites/Entertainment applications sometimes, and only 3.5% respondents reported never ever used any of the social networking sites/Entertainment applications. In Nuhu Bamalli Polytechnic, 23.8% visit social networking sites/Entertainment applications always, 14.6% visit it sometimes and only 1.4% never used or visited any of social platforms. The findings further show that about 58% of HND students visited social networking sites/Entertainment applications always with their smartphone more especially Facebook and WhatsApp applications as revealed in the (Table 9) which clearly shows it frequent visitation from the students in both Polytechnics.

**Table 12: Accessing Internet as Motivation for Smartphone Use**

| Polytechnic | Variable | Frequency | Percentage |
|---|---|---|---|
| **KADPOLY** | Strongly Agree | 71 | 22.7 |
| | Agree | 64 | 20.4 |
| | Neutral | 9 | 2.9 |
| | Disagree | 27 | 8.7 |
| | Strongly Disagree | 6 | 1.9 |
| **NUBAPOLY** | Strongly Agree | 48 | 15.3 |
| | Agree | 51 | 16.3 |
| | Neutral | 1 | .3 |
| | Disagree | 23 | 7.3 |
| | Strongly Disagree | 13 | 4.2 |
| | **Total** | **313** | **100%** |

Table 12 above shows that majority of the respondents (22.7%) in Kaduna Polytechnic strongly agree that accessing the internet is one of the factors that motivated students to use smartphone in the academic environment. Moreover, 20.4% of respondents also agreed with the view, and 8.7% of the respondents said they did not agree with the statement. Out of these, 2.9% of them maintain a neutral position with the statement. Only 1.9% of them are strongly disagreeing with the statement. While in the case of the respondents of Nuhu Bamalli Polytechnic, 16.3% of students say they agreed with the statement, 15.3% of respondents strongly agreed with it. Those respondents who say they disagreed with the statement constitute 7.3%, and 4.2% of them said they strongly disagree with it. Only .3% of students maintained a neutral position. The findings revealed that HND students have been motivated to use smartphone by accessing internet with it. The internet access attracts attention of majority of students to use smartphone in the academic environment.

**Table 13: Accessing Different Information Motivate Smartphone Usage**

| Polytechnic | Variable | Frequency | Percentage |
|---|---|---|---|
| **KADPOLY** | Strongly Agree | 32 | 10.2 |
| | Agree | 69 | 22.0 |
| | Neutral | 13 | 4.2 |
| | Disagree | 41 | 13.2 |
| | Strongly Disagree | 22 | 7.0 |
| **NUBAPOLY** | Strongly Agree | 41 | 13.2 |
| | Agree | 81 | 25.9 |
| | Neutral | 1 | .3 |
| | Disagree | 8 | 2.6 |
| | Strongly Disagree | 5 | 1.6 |
| | **Total** | **313** | **100%** |

According to Table 13 above, majority of the respondents (22%) in Kaduna Polytechnic agreed with the statement that "accessing different information motivate students to use smartphones:" of these 13.2% disagreed with the statement, 10.2% strongly agreed with the view, and 7% strongly disagreed. Only 4.2% of them maintained a neutral position. In Nuhu Bamalli Polytechnic, 25.9% agreed with the opinion, 13.2% strongly agreed with the statement, 2.6% disagreed with the view and 1.6% of them strongly disagreed with it. Only .3% maintained a neutral position. The findings clearly revealed that accessing different information with smartphone motivates majority of HND students to use smartphone device. It also showed that accessing different information is one of the gratifications students gratified with using smartphone in academic environment in both Polytechnics.

**Table 14: Smartphone Portability Motivate its Usage by Students**

| Polytechnic | Variable | Frequency | Percentage |
|---|---|---|---|
| **KADPOLY** | Strongly Agree | 54 | 17.3 |
| | Agree | 76 | 24.3 |
| | Neutral | 14 | 4.5 |
| | Disagree | 27 | 8.6 |
| | Strongly Disagree | 6 | 1.9 |
| **NUBAPOLY** | Strongly Agree | 17 | 5.4 |
| | Agree | 83 | 26.6 |
| | Neutral | 12 | 3.8 |
| | Disagree | 22 | 7.0 |
| | Strongly Disagree | 2 | .6 |
| | **Total** | **313** | **100%** |

The Table 14 above indicates that majority of the respondents (24.3%) in Kaduna Polytechnic agreed that portability of smartphone motivates students to use it. of these, 17.3% of them strongly agreed with the statement, 8.6% disagreed with the opinion and 4.5% maintained a neutral position. Only 1.9% of them strongly disagreed. However, in the case of Nuhu Bamalli Polytechnic students, the data revealed that majority of the respondents (26.6%) agreed with the statement; 7% of them disagreed with it; 5.4% strongly agreed with the view; 3.8% of them were neutral and only .6% of them said they strongly disagreed with it. The findings showed that the factor that motivated majority of students to use smartphone in academic environment is the portability of the device. About 72% of the total respondents of both Polytechnics agreed that they used smartphone device in academic environment because of its portability.

**Table 15: Maintaining Contact with Friends, Relatives and Business Partners as Motivation for Using Smartphone**

| Polytechnic | Variable | Frequency | Percentage |
|---|---|---|---|
| **KADPOLY** | Strongly Agree | 102 | 32.6 |
| | Agree | 55 | 17.6 |
| | Neutral | 10 | 3.2 |
| | Disagree | 9 | 2.9 |
| | Strongly Disagree | 1 | .3 |
| **NUBAPOLY** | Strongly Agree | 94 | 30.1 |
| | Agree | 37 | 11.8 |
| | Neutral | 2 | .6 |
| | Disagree | 2 | .6 |
| | Strongly Disagree | 1 | .3 |
| | **Total** | **313** | **100%** |

From the Table 15 above, in Kaduna Polytechnic the data indicate that majority of the respondents (32.6%) strongly agreed with the statement that "maintaining contact with friends, relatives and business partners motivate students to use smartphone" in academic environment. Also, 17.6% of students agreed with the statement; 3.2% of them were neutral; only 2.9% disagreed with the view and .3% of them strongly disagreed with the statement. In Nuhu Bamalli Polytechnic the data show that 30.1% of respondents strongly agreed with the statement; then 11.8% agreed with it and only .6% of them were neutral; .6% disagreed with the statement and .3% totally strongly disagreed with the statement. The findings indicate that HND students are those motivated to use the smartphone based on its capability of maintaining contact with friends, relatives and business partners.

**Table 16: Quick Responses of Social Network Motivate Smartphone Use**

| Polytechnic | Variable | Frequency | Percentage |
|---|---|---|---|
| **KADPOLY** | Strongly Agree | 18 | 5.8 |
| | Agree | 84 | 26.8 |
| | Neutral | 21 | 6.7 |
| | Disagree | 40 | 12.8 |
| | Strongly Disagree | 14 | 4.5 |
| **NUBAPOLY** | Strongly Agree | 8 | 2.6 |
| | Agree | 61 | 19.4 |
| | Neutral | 6 | 1.9 |
| | Disagree | 44 | 14.1 |
| | Strongly Disagree | 17 | 5.4 |
| | **Total** | **313** | **100%** |

From the data in Table 16 above, majority of the respondents (26.8%) in Kaduna Polytechnic agreed with the statement that quick responses of social networking sites motivate students to use smartphones in academic environment. Conversely, 12.8% of students disagreed with the statement, and 6.7% of them were neutral. Also 5.8% of them said they strongly agreed with the statement and 4.5% strongly disagreed with the opinion. However, in Nuhu Bamalli Polytechnic, 19.4% agreed with the statement, while 14.1% of them disagreed with the statement, 5.4% of students said they strongly disagreed with the view. Thus, 2.6% of respondents say they strongly agreed with the statement, only 1.9% of them were a neutral. The findings simply revealed that higher proportion of HND students agreed that quick response of social networking sites like Facebook, WhatsApp, Instagram and twitter were the motivating factor that facilitates their regular usage of smartphone in Polytechnics of Kaduna State.

**Table 17: Accessing Banking Service & Other Financial Transactions as Motivation for Using Smartphone**

| Polytechnic | Variable | Frequency | Percentage |
|---|---|---|---|
| **KADPOLY** | Strongly Agree | 17 | 5.4 |
| | Agree | 66 | 21.1 |
| | Neutral | 21 | 6.7 |
| | Disagree | 49 | 15.6 |
| | Strongly Disagree | 24 | 7.7 |
| **NUBAPOLY** | Strongly Agree | 9 | 2.9 |
| | Agree | 72 | 23.0 |
| | Neutral | 16 | 5.1 |
| | Disagree | 24 | 7.7 |
| | Strongly Disagree | 15 | 4.8 |
| | **Total** | **313** | **100%** |

Table 17 above shows the level of agreement and disagreement by HND students to the statement that "accessing banking service and other financial transactions motivate the usage of smartphone." The data reveals that in Kaduna Polytechnic, 21.1% of the respondents agreed with the statement, while 15.6% disagreed with the statement and 7.7% strongly disagreed with the view, 6.7% respondents remain neutral with the statement, only 5.4% of them strongly agreed with the statement. However, in Nuhu Bamalli Polytechnic, 23% of the respondents agreed with the statement, while 7.7% of them disagreed with it, and 5.1% were neutral. Also, 4.8% said that they strongly disagreed with the opinion, and only 2.9% of them said that they strongly agreed with the statement. The findings showed that easy access to banking services and other financial transactions serve as a major factor that motivate HND students to use smartphones in the academic environment of both Polytechnics.

**Table 18: Affordability of Cheaper Brand of Smartphone as Motivation of its Usage**

| Polytechnic | Variable | Frequency | Percentage |
|---|---|---|---|
| **KADPOLY** | Strongly Agree | 18 | 5.8 |
| | Agree | 30 | 9.6 |
| | Neutral | 16 | 5.1 |
| | Disagree | 90 | 28.8 |
| | Strongly Disagree | 21 | 6.7 |
| **NUBAPOLY** | Strongly Agree | 21 | 6.7 |
| | Agree | 28 | 8.9 |
| | Neutral | 11 | 3.5 |
| | Disagree | 60 | 19.1 |
| | Strongly Disagree | 18 | 5.8 |
| | **Total** | **313** | **100%** |

According to Table 18 above, in Kaduna Polytechnic majority of the respondents (28.8%) disagreed that affordability of cheaper brand of smartphones serve as a motivation factor for smartphone usage. Conversely, 9.6% of the respondents agreed with the statement. Moreover, 6.7% strongly disagreed with the statement; 5.8% of them strongly agreed with it and 5.1% were neutral. In Nuhu Bamalli Polytechnic, 19.1% of the respondents disagreed that affordable cheaper brand of smartphones motivated their use of smartphone; 8.9% of them agreed with the view, and 6.7% also said they strongly agreed with the statement, and 5.8% strongly disagreed with the statement, only 3.5% of them stand a neutral position with the statement. The findings indicated that the opinion of respondents on this statement of both schools disagreed that affordable cheaper brand of smartphone does not serve as a motivator to use smartphone for the majority of the HND students.

### 4.3. Discussion of findings

The discussion of findings of the study was guided by three main research questions and substantiated by the literature reviewed and theoretical framework. The increased number of smartphone owners, combined with the availability of new ways to use the device in academic setting/environment, students utilized it for different purposes, such as academic, social and others. This confirms the astronomical increase in ownership and use of smartphone among students. As it is said by Griffith (2000), smartphone is no more a luxury item among students. This study researched the adoption of the use of smartphones among students of Kaduna Polytechnic and Nuhu Bamalli Polytechnic. The study is guided by The Uses and Gratification Theory.

In the higher national diploma programs, male students were found to be more predominant as indicated by the findings of the study. Therefore, male students constituted about 58.4% of the respondents in both Polytechnics. A larger proportion of the respondents are between the ages of 24 to 30 years which are the active group in the economic distribution of the population. It was shown that about 75% of the total populations in the tertiary institutions under study were below thirty years. It can be deduced that this category of smartphone users were in the majority of more than any other age group. The average age group results appear to be similar to those in previous studies (Alhassan, 2012; Emperor and Francis, 2013), which indicated that the majority of higher national diploma students are younger than 30 years old. For marital status, the data showed that a large proportion of the respondents are single, those that indicated that they were married are not many and only 3.5% of the respondents said that they were divorced in both Polytechnics.

Still from the demographic data, Computer Science and Business Admin/Management students have higher participation with 15.7% and 13.4% of the responses among eight sampled departments. It can be deduced that students of these two departments use smartphones more than any other students.

**Research Question One:** What uses do students in Kaduna and Nuhu Bamalli Polytechnic make of their smartphones?

To address this research objective several questions were asked in the survey questionnaire in order to have sufficient data from the respondents for making analysis. There are different ways student's access new technological devices like smartphones. Therefore, respondents were asked how they access smartphones. Based on their answers, the researcher found that majority of them access smartphones personally, that means they own a smartphone for their own personal usage. From the responses got, it is quite clear that those that access the use of smartphones through parents and friends are few with less than 11% when compared to those that personally own smartphone with about 89% of the respondents. Ali (2014) stated that smartphones have become the norm of mobile phones.

There are variety of reasons why people around the world use smartphone, not just for calling and text messaging only (Matanhelia, 2010; Oksman, 2010; Scarpino & Alshif, 2013). Respondents were asked for what purpose they utilize their smartphone. A total of 313 respondents answered this question (see table 3). The data showed that respondents are truly using their smartphones for different purposes in their lives. Very few students (14.7%) said they are using smartphone for social purposes only in both Polytechnics. While 31.3% of the respondents reported that they use smartphones solely for academic reasons. A larger number of the respondents representing 54% said that they use smartphones for both social and academic purposes. According to the findings, higher national diploma students of two Polytechnics in

Kaduna State use their smartphones for two main reasons which are academic and social purposes.

Participants were asked to select more than one option from the different uses of smartphone listed. Not surprisingly, the findings in Kaduna Polytechnic showed that most respondents (16.9%) use their smartphones for interpersonal communication such as receiving and making phone calls. Text messaging applications such as WhatsApp, BBM, Facebook messenger and similar applications still ranked quite high and the second highest usage among the students with 9.9%. Internet browsing for seeking information is the third prominent usage with 9.6% respondents, while students reported that they use smartphones for all the above possible uses listed in the questionnaire (see Table 4). This finding is consistent with the findings of a study conducted at Ball State's Hanley Institute in which it was found that students not only use a mobile phone for voice calls, but they also use it to e-mail, send text, download and listen to music and access social media sites. However, this study found out that respondents used their Smartphone to access websites for internet browsing and academic reasons mostly which differs with some part of the study by Hanley found that 49% of students use mobile phones to access websites for entertainment or concert information, 52% use it for movie viewing, 61% for news, 87% for weather reports while 57% of students reported using it for searching and 51% reported making one or more calls per day (Park, 2005). Therefore, this study revealed that only 5.6% respondents from Kaduna Polytechnic and 3.5% respondents from Nuhu Bamalli Polytechnic use smartphone for entertainments such as playing music, video games and movies. This result is contrary with Herrington (2009) who found that students of higher education mostly utilize their smartphone for entertainments and social platforms which negatively affect their concentration on their lectures. Similarly, Nurullah, (2009) stated that Smartphones are commonly used for

maintaining social relationships. Social networking sites in particular allow people to communicate regularly with family members, friends, and their various communities (Scarpino & Alshif, 2013). The current study found that 5.4% respondents use smartphones to access social networking sites like Facebook, Twitter, YouTube and other similar social platform which are very small compared to 9.6% that are using smartphone for academic related internet browsing. The result indicates that very few students are using smartphones for online shopping. In fact, national higher diploma students in the Polytechnics rarely do online shopping because the gratification they attained in shopping online is very minor. This show their activeness in making choice and is also confirm the Uses and gratifications theory in promoting the idea that audience members are active and associate their media choices with the gratifications that result from that choice (Katz et al., 1973).

The majority of respondents 84% reported that they are spending one to ten hours using smartphones for academic purposes which is really in line with the teaching and learning business, the level of time devoted to smartphone usage in one way or the other enhance the academic activities of students. Thus, contradicting the study by Soyemi, Oloruntoba, and Okafor (2015) whose findings indicates that 56% of students are influenced negatively to a great extent by the mobile phone (smartphone) because attention is focused on chatting, music and others which are non academic activities while their academic activities are neglected and left to suffer. As also indicated by the study of Grosseck *et* al (2011 and 2013), majority of students spend significant time on Facebook more for social uses (to stay in touch with friends and family, to share/tag photos, to engage in social activism, volunteering etc.) and less for academic purposes, even if they take part in discussions about their assignments, lectures, study notes or share information about research resources etc. The current study's results show a significant

gender difference; males access smartphones more than the females. This result is consistent with Wie and Lo (2006) who also found a significant difference between genders. In addition, there is significant evidence that there is a correlation between age and how often respondents use smartphones. This agrees with the findings of Yang (2010) who found a correlation between age and use of smartphones. Opposing Yang (2010) and Ancu and Cosma (2009), the results did not show any correlation between education level and accessing smartphones. Gender has an impact but unlike other studies age does not.

Majority of respondents in Kaduna Polytechnic revealed that they use their smartphone after the lecture hours while in Nuhu Bamalli Polytechnic large number of respondents reported to have been using the smartphones during and after lecture period. This shows that the student's devotion of much time on the usage of smartphone will depend on the availability of internet connectivity and easy access to all kinds of information that one may need to have, this also proven the assumptions of the theory of uses and gratifications in which students choose to spent much time using smartphone just for the gratification they attained in it. This result agrees with the study by Stollak, Vandenberg, Burklund and Weiss (2011) whose findings revealed that students who have smartphones were more likely to both access social media tools and spend time engaging with others because of the availability of internet services.

**Research Question Two:** What are the Smartphone Applications that are used by the Polytechnic students?

There are different categories of smartphone applications that were used by students of higher learning such as academic applications and social networking/entertainment applications. To answer this research question, two types of application categories was listed as an option and split with related applications. The results of the study revealed that academic applications have

higher percentage with 54.3% of the total population, followed by 45.7% of social networking/entertainment applications.

The findings of the study suggested that majority of Higher National Diploma students in both Polytechnics can afford to make a data subscription which allow them to access internet service to browse and check website pages, download software and to be able to read academic related documents by using PDF, Words, Adobe Reader and other similar academic applications, these are also in line with the assumptions of the uses and gratification theory stated by West and Tuner (2011) which says the initiative in linking need gratification to a specific medium choice rests with the audience members. it was also noted that applications that do not require internet connectivity such using calculator and accessing dictionary became the most second used applications among students. The results showed that Google chrome and email applications were not utilized mostly by many students. These findings are consistent with the study of Alfawareh and Jusoh (2014) whose results showed that smartphones have been used as a regular mobile phone for making a phone call and sending text messaging, as a traditional computer for applications which requires Internet connection such as checking website pages, browsing internet and downloading software. Smartphone also has been used as digital cameras as 75.2% and 63.4% of participants have used smartphones for taking pictures and videos. In addition Christopher (2010) stated that with the price of smartphones falling and their quality/capabilities increasing, the consumption of smartphones is on the rise. Smartphones have become a pocket computer and a must have necessity for many people. People want to have access to the internet at all times and smartphones provide this. Moreover, smartphones offer students with a new way of learning referred to as mobile learning. The current study revealed that about 65% of the

respondents always used academic applications with their smartphone in academic environment of both Polytechnics.

Social media, specifically social networking sites/entertainment apps, have become the number one way for people to gain access to information shared by their users (Ma et al., 2012). Yang (2011) found that SNS/entertainment apps are popular with smartphone news consumers. People use social networking sites to get connected with people who share similar interest, thus encouraging users to share more news and information (Ma et al., 2012). The use of smartphones makes it easier for people around the world to communicate by sharing news and information instantaneously (Bakke, 2010).

In Nigeria 70% of smartphone users access SNS/entertainment apps via their smartphones (Google, 2013). Nwazor, and Godwin-Maduike (2015) stated that the students of business education in south-east Nigeria use Facebook more than any other social networking site. In this current study the results revealed an agreement with the Nwazor and Godwin-Maduike (2015) study, indicating Facebook as the most popular social networking site with at least 23.64% of respondents accessing it through their smartphones. WhatsApp 22.68% and Instagram 12.46% ranked as the second most popular social networking sites among the students. Followed by Blackberry Messenger 13.1%, Twitter 11.82%, Imo 2.88% and Skype 2.88 the findings revealed that Imo and Skype applications are the least utilized social networking sites among the higher national diploma students of Polytechnics in Kaduna State.

The result also indicated that 58.8% of the respondents always used smartphone for SNS/entertainment apps just to keep in touch with their friends and family members. This is in line with the theory of uses and gratification which anchored the study. The results indicated that the most important gratifications are sociality -"keeping in touch" and instrumentality -"helping

to plan your day." Accessing news and information and reading email are the lowest gratifications (Albarran & Hutton, 2009).

The findings revealed that majority of the respondents of Polytechnics in Kaduna State used SNS/entertainment applications most of the time which include Punjabi Movies, Boom Player and BBC Media Player. The results of the study indicated that some students devote much time using smartphone on social sites to entertain themselves with watching films, listening to music and/or playing different kind of games in academic environment instead of concentrating on academic activities, which is against the teaching and learning policy. Supporting the study of Park (2005) and Etukudo (2002) lamented the gross damage the mobile phone has done to the lives of various categories of students most especially those in tertiary institution who play away their times on games, music, pornography and Facebook. Also Amali, Bello Muhinat and Hassan (2012) stated that smartphone has become a source of distraction since students who are expected to commit their time to academic activities, instead commit their time and energies to the various applications in the smartphone.

**Research Question Three:** what are the motivations for using smartphones among Polytechnic students of Kaduna and Nuhu Bamalli Polytechnics?

Usually, emerging technologies increase the source, selections and channels of information, providing different uses and gratifications to the users (Ruggiero, 2000). Therefore, the Uses and Gratification theory is always an appropriate approach to assess the use of a new medium or technology and to comprehend the users' motivations, actions, and feelings towards their uses (Albarran & Hutton, 2009). The use of smartphones by students is related to many obtained motivations or gratifications. Some of these gratifications are: the ease of use (Park & Chen, 2007), the availability of different news resources (Oksman, 2010), the immediate accessibility (Zhen et al, 2012) interactivity and quick responses (Oksman, 2010). The results of this current

study show a high agreement with these gratifications. Majority of respondents (74.7%) stated that accessing internet is one of the factors that motivate them to use smartphone. A high percentage of the respondents (71.2%) indicated that availability of accessing many different information and news sources attracts or motivates them to use smartphones. Portability of smartphone attracts 73.5% of the respondents to use the smartphone device. Also, 92% of respondents were motivated because they can maintain contact with friends, relatives and business partners with backup in either email or Google drive using smartphone. The result also revealed that a large proportion of respondents (54.7%) agrees to be attracted to use smartphone because of quick responses of social network for instance when chatting with their friends and relatives on social or academic issues they used to get quick responses from their partners. This is also proven the assumption of Uses and Gratifications Theory as stated by West and Tuner (2011) that the audience (student) is active and its media (smartphone) use is goal oriented. Accessing banking services and other financial transactions is one of the factors that many of the respondents (52.4%) agree to be attracted or motivated for their smartphone usage. Conversely, 57.2% of the respondents indicated that affordability of cheaper brand of smartphone was not a factor that motivated them to use smartphone. The findings of this study are contrary with the findings of Ayorinde (2014) who stated that the usefulness of smartphones is numerous and this includes keeping contact with friends, members of the family, conducting business and others. Many people possess more than one smartphone for different purposes, which could be for business purpose or personal purpose.

# CHAPTER FIVE

# SUMMARY, CONCLUSION AND RECOMMENDATIONS

## 5.1: Introduction

The main aim of this study was to examine "the adoption of the use of smartphone among students of Kaduna Polytechnic and Nuhu Bamalli Polytechnic." Survey research method was adopted using quantitative approach with questionnaire for data collection. Following the analysis of data and discussion of findings, this chapter presents a summary of the major findings, conclusion of the study and makes some recommendations based on the findings. Some suggestions for further studies were also highlighted.

## 5.2: Summary of the major findings

The major findings of the research are: It was discovered that male students below thirty years of age use smartphones more than their female counterparts. The study discovered that majority of respondents used smartphones for academic and social purposes. The attention of students is focused more on the academic applications than the social applications because of some gratifications attached to academic applications. The findings of the study revealed that majority of Polytechnic students in Kaduna State use smartphones as interpersonal communication such as receiving and making phone calls, and text messaging applications such as WhatsApp, Blackberry Messenger, 2go and other similar applications. Also, they spend much time using it for internet browsing for different information. The research indicates that students devote more time utilizing their smartphones on academic issues even during and after lecture hours.

In the case of which applications is most used by the majority of these two Polytechnics students in Kaduna State, the study found two categories of applications that is; academic and social/entertainment applications. As regards to the academic applications the findings showed

that applications that are mostly utilized by the students were those that require internet connectivity which provide access to internet services to browse and check website pages, download software and to be able to read academic related documents by using PDF, Words, Adobe Reader and other similar academic applications. It was also discovered that applications that do not require internet connectivity such as using calculator and accessing dictionary became the second most visited or used applications among students. The results of social/entertainment mostly visit by higher national diploma students of Polytechnics in Kaduna State revealed that majority of them spend significant time on Facebook, WhatsApp and Instagram just to keep in touch with their friends and family members and they also use Punjabi movies, boom player for playing music and watching films always with their smartphones.

The use of smartphones by students is related to many obtained motivations or gratifications. Some of these gratifications are the ease of use (Park & Chen, 2007), the availability of different news resources (Oksman, 2010), the immediate accessibility (Zhen et al, 2012) and interactivity and quick responses (Oksman, 2010). The results of this current study show a high agreement with these gratifications. A high percentage of respondents (74.7%) stated that accessing internet is one of the factors that motivate them to use smartphone. The majority of the respondents (71.2%) indicated that the availability of accessing many different information and news sources attracts or motivates them to use smartphones. Portability of smartphone attracts 73.5% of the respondents to be using smartphone device. Also, 92% of respondents are attracted or motivated because they can maintain contact with friends, relatives and business partners with backup in either email or Google drive by using smartphone. The result also revealed that a large proportion of respondents (54.7%) agree that they are attracted or motivated to use smartphones because of quick responses of social network for instance, when chatting with their friends and

relatives on social or academic issues they used to get quick responses from their partners. Accessing banking services and other financial transactions is one of the factors that majority of the respondents (52.4%) agree that they are attracted or motivated in the use of smartphone. Conversely, 57.2% of the respondents indicated that affordability of cheaper brand of smartphone is not a motivating factor that attracts them to use smartphones.

**5.3: Conclusion**

In conclusion, the findings of this research suggest that nearly every student of higher national diploma personally owns a smartphone. It suggests that students fully utilize smartphones for different purposes such as interpersonal communication like receiving and making calls, text messaging applications (WhatsApp, BBM, 2go and similar application) and internet browsing for seeking information. The study also discovered that students devoted significant time using smartphones for academics to enhance their education even if they take part in chatting, music, watching movies and playing games with their Smartphones.

The findings also revealed that smartphone applications used by majority of students under academic related applications were internet browsing, checking website pages, PDF, Words, Adobe Reader, dictionary and using calculator, in the part of social networking sites and entertainment applications mostly used are Facebook, WhatsApp, Instagram, Punjabi movies and Boom player among Polytechnic students in Kaduna State.

It was further discovered that accessing internet, availability of accessing many different information, Portability of smartphone, maintaining contact with friends, relatives and business partners, quick responses of social network, accessing banking services and other financial transactions were identified as the factors that motivate usage of smartphone among students.

## 5.4: Contribution to Knowledge

In chapter one of the study, the researcher pointed out the existing gap as whether the Polytechnic students use of Smartphone is tilted toward the positive or negative usage of the device and/or there is motivation factors that facilitate the use of smartphone among the student This research fills the existing gap by directly investigating the adoption of the use of smartphones among Polytechnic students in Kaduna State and its various applications. Therefore, the findings of this research show that students' usage of smartphones was tilted toward positive usage because the results revealed that students use their smartphones more for academic purposes not like in previous researches where majority of students use it for social purposes, which in one way or the other affect their academic performance. It was also discovered that the usage of smartphones is being motivated by some factors among students such as accessing internet, availability of accessing many different information, Portability of smartphone, maintaining contact with friends, relatives and business partners, quick responses of social network, accessing banking services and other financial transactions.

Another contribution to knowledge from this study is that Polytechnic students in Kaduna State utilized academic applications more than social networking and entertainment applications. The findings of the study also revealed that higher national diploma students of Polytechnics in Kaduna State devote their significant time using smartphones for academic related issues.

## 5.5: Recommendations

Based on the findings drawn from this study, the researcher has made the following recommendations:

1. Students should be guided and counseled on the use of smartphone at the point of entry for their counseling unit, where they will be told how, when and why to use it. This is because they should know the advantages and disadvantages of appropriate time for using Smartphone
2. Students should be encouraged on spending significant time using smartphone on academic issues. This is because they should be exposed to several academic materials that would likely enhance their knowledge in the field of their studies
3. Ministry of education should come up with a new policy on the adoption of smartphone as a tool of teaching and learning in tertiary institutions in order to catch up with the develop countries

**5.6 Suggestion for further studies**

The study was limiting insomuch as it only investigated higher national diploma students of Polytechnics in Kaduna State. Future research may want to include multiple institutions and examine the knowledge and utilization of smartphone among students. Additional research could also be done to include national diploma students and students of certificate programmes to investigate their pattern of smartphone usage on campus.

Also, in the future, research must be done to find out the impact of smartphones on brain or human head, in the sense that do they cause any biological effects on human head or brain leading to the addiction students are having on them? Whether they cause any harm biologically on human skin or fingers?

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## Appendix 1

Department of Mass Communication,
Faculty of Social Sciences, ABU Zaria,
Kaduna State, Nigeria.
17 October, 2016.

Dear Sir/Madam

I am a masters student of the above named Department and institution, conducting a research titled "A Study of the Adoption of the Use of Smartphones among Students of Kaduna Polytechnic and Nuhu Bamalli Polytechnic". I humbly request your assistance in filling the questions below. All information gathered would be used purely for research purpose and shall be treated with confidentiality.

Thank you.

Yours faithfully,

Shu'aibu Mohammed Arab,
(P13SSMM8055).

**Appendix 2**

# QUESTIONNAIRE

**Please tick (√) and write where necessary**

1. What is your gender
   a. Male ( )
   b. Female ( )
2. What is your age group
   a. 18 – 23 ( )
   b. 24 – 39 ( )
   c. 30 – 35 ( )
   d. 36 – 41 ( )
   e. 41 Above ( )
3. Marital Status
   a. Married ( )
   b. Single ( )
   c. Divorced ( )
4. Which Department are you?
   ……..
5. What is your Level of Study
   a. HND I ( )
   b. HND II ( )
6. How do you access your smartphone?
   a. Personal ( )
   b. Parents ( )
   c. Friends ( )
7. For what purpose do you use your smartphone
   a. Academic purpose ( )
   b. Social purpose ( )
   c. All of the above ( )
   d. Others please specify…….
8. What do you use smartphone for? (*You can choose more than one option for this question*)
   a. The internet (browsing) ( )
   b. Phone call ( )
   c. Text messaging applications (WhatsApp, BB messenger, Tango & similar apps)( )
   d. Online shopping ( )
   e. Entertainment (Music, Video games, Movies) ( )
   f. Social networking sites (Facebook, twitter, YouTube, social networking sites) ( )

g. All of the above ( )
h. Others please specify……

9. How many hours do you spend using your smartphone daily?
   a. 1 – 5h ( )
   b. 6 – 10h ( )
   c. 11 – 15h ( )
   d. 16 – 20h ( )
   e. 24hours ( )
10. When do you use your smartphone?
   a. After lectures ( )
   b. During lectures ( )
   c. All of the above ( )
   d. Others please specify……..……
11. Which category of smartphone applications do you use mostly?
   a. Academic applications ( )
   b. Social networking/Entertainment applications ( )
   Others specify…….
12. Which academic features (applications) of smartphone do you use most? (*you can select more than one option for this question*)
   a. Check website pages ( )
   b. Read related documents in PDF, Word or others ( )
   c. Browsing Internet ( )
   d. Download software ( )
   e. Using Calculator ( )
   f. Dictionary ( )
   g. Google chrome ( )
   h. Others please specify……
13. To what extent do you use your smartphone for academic applications
   a. Always ( )
   b. Sometimes ( )
   c. Never ( )
14. What social network sites/Entertainment apps do you visit most with your smartphone? (*you can select more than one option for this question*)
   a. Facebook ( )
   b. Twitter ( )
   c. WhatsApp ( )
   d. YouTube ( )
   e. BBM ( )
   f. Instagram ( )
   g. BBC Media player ( )

h. Boom player ( )
i. Punjabi movies ( )
j. Others please specify……..

15. To what extent do you use your smartphone for social network/Entertainment applications
    d. Always ( )
    e. Sometimes ( )
    f. Never ( )
16. Accessing internet service motivates me to be using smartphone.
    a. Strongly Agree ( )
    b. Agree ( )
    c. Neutral ( )
    d. Disagree ( )
    e. Strongly Disagree ( )
17. Easy access to different information motivates me to be using smartphone.
    a. Strongly Agree ( )
    b. Agree ( )
    c. Neutral ( )
    d. Disagree ( )
    e. Strongly Disagree ( )
18. Portability of smartphone motivates me to use smartphone.
    a. Strongly Agree ( )
    b. Agree ( )
    c. Neutral ( )
    d. Disagree ( )
    e. Strongly Disagree ( )
19. Maintaining contact with friends, relatives and business partners motivates me to use smartphone.
    a. Strongly Agree ( )
    b. Agree ( )
    c. Neutral ( )
    d. Disagree ( )
    e. Strongly Disagree ( )
20. Quick response to social networking issues motivates me to be using smartphone.
    a. Strongly Agree ( )
    b. Agree ( )
    c. Neutral ( )
    d. Disagree ( )
    e. Strongly Disagree ( )

21. Accessing banking services and other financial transaction motivates me to be using smartphone.
    a. Strongly Agree ( )
    b. Agree ( )
    c. Neutral ( )
    d. Disagree ( )
    e. Strongly Disagree ( )
22. Affordable cheaper brand of smartphone motivate me to be using smartphone.
    a. Strongly Agree ( )
    b. Agree ( )
    c. Neutral ( )
    d. Disagree ( )
    e. Strongly Disagree ( )