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Positively Perceived Impacts of Cellular Phones on Nigerian Society

Azuakolam Nwosu
Western Kentucky University, azunwosu@yahoo.com

POSITIVELY PERCEIVED IMPACTS OF CELLULAR PHONES ON NIGERIAN SOCIETY

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Daniel Jackson, Director of Thesis

Ahmed Khalafallah

Mark Doggett

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Dean, Graduate School Date

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Department of Architectural and Manufacturing Sciences Western Kentucky University

This study examined the positive perceived impacts of cellular phones in the Nigerian society.The purpose of the study was to analyze the impacts of this technology in Nigerian society These impacts analyses were on the perceived changes in safety and well-being amongst users, satisfactions amongst users, and perceived connectivity amongst users of this technology. The researcher used employed facilitators to distribute survey in several cities in Nigeria. One Hundred and twenty-four people participated in survey questionnaires using five scale points. Results were summarized using descriptive statistics at 95% confidence interval level. From the results, the hypothese were retained that underserved customers outnumbered overserved customers in the Nigerians cellular phone usage, cellular phone usage has had some impact on the perceived safety and well-being of its users. In addition, the hypothesis also showed cellular phone usage has increased the perceived connectivity between the user and family.

Introduction

Countries in Africa, Latin America and Asia experienced tremendous growth in Information and Communication Technologies (ICTs) from the late 1990s. This growth of ICTs led to the revolution of Global System for Mobile (GSM) resulting in 85 percent coverage of the entire world population using it (Isabona, 1997).Nigeria was among this trend experiencing a growth of 15.6% over the last 15 years, cellular phones use technology contributed to it.

Nigeria is the most populous country in Africa with an estimated number of 140 million inhabitants (Haas, 2006). The country has more than 250 ethnicities with different languages. There are three major ethnics groups in Nigeria; Ibo, Yoruba, and Hausa-Fulani. However, Nigeria is divided into two major parts; the Muslim part, predominantly in the north, and the Christian part, predominantly south. In all, Nigeria has 36 states and is a federal republic. While Abuja is the capital, Lagos is the economic center and represents the largest city in Nigeria with a population of 10 to 15 million (Haas, 2006). Other major cities include Kano, Kaduna, Port Harcourt, Ibadan etc.

With a turbulent history of dictators, ethnic conflicts, and civil war, Nigeria experienced a late development in mobile and other communication technologies. With the boost in the economy because of the discovery of oil in the late 1950s, Nigeria, along aside other African nations, slowly began a phase of telecommunications in 1960 and it had liberation in the 1980s and 1990s (Juwah, 2011).

While the improvement in the economy has led to wealthier Nigerians owning mobile phones, the poor still experienced the woes of economic hardship. Phones being very expensive, as well as requiring a high tariff rate for the service provided, have

forced people to go without this technology or discontinue use in many cases. The performance of the Nigerian Telecommunication Limited (NITEL), the only telephone provider for the country, was very poor and never encouraged private investors to participate in stimulating the economy of the country. This poor performance of the NITEL brought the tele-density of the country to 0.04 representing the lowest in the sub-Saharan Africa until 1999 (Adeleke & Aminu, 2012). In addition, this inaccessibility of information to people in the remote places of Nigeria contributed to poor health and a high mortality rate.

There was a need to improve these remote villagers' hope especially amongst the low-income earners. This involved changing their standard of living, sustaining their families' needs, providing shelter, and having a secured future. The wide gap in accessibility of information between the urban dwellers and rural dwellers needed to diminish. From the early 2000s, the Mobile-phone Mediated Communication (MMC) has enhanced efficient communication among the users through chat, send, and receive messages with face-to-face contact by the understanding of the researchers. Health care is now a priority for the people in remote places, and is being be delivered by health care professionals and institutions, in some cases, using phone technology (Isabona, 2013). GSM enabled the exchange of information throughout the Nigerian teaching hospitals. This formidable communication of information resulting from mobile phones has improved a micro-enterprise supply chain in Nigeria as well as other developing countries. It has created means to satisfy needs, especially emergency issues (Isabona, 2013). Information, delivered in part by mobile phones, has become a main contributing factor for the economic growth of many nations including Nigeria.

GSM was introduced in Nigeria shortly after President Olusegun Obasanjo came into power in 1999. In 2001, the MTN Group (MTN) formerly (M-Cell), ECONET Wireless (ECONET), NITEL and Communication Investment Limited (CIL) were licensed by the Nigerian Communication Commission (NCC) to operate as the service providers. However, CIL withdrew due to its inability to meet the required amount of funds. Currently, the GSM providers in the country include MTN, Etisalat, Globacom, Celtel, and MTel. By 2008, forty-two percent of the Nigerian population was using cellular phones (Taiwo, 2010). According to the NCC (2010), Nigeria has a telephone subscriber base range of 70 million. Of this, 62 million are GSM subscribers (Adesope & Efe-Omojevwe, 2010).

The revolution of GSM has not only contributed to the economic development of Nigeria, but to the political and social development as well. Incidentally, the monopoly enjoyed by Nigeria Telecommunication Limited (NITEL) dissolved with the introduction of GSM (Isabona, 2013). Since NITEL has ceased to exist, the market has become very liberal, with the telecommunication providers emerging as more competitive. Government deregulation and liberalization also helped substantially improve the private sector by deeply investing in the telecommunications industries. Currently, cellular phones serve as a means of communication among most people in every part of the country. The Internet, provided by GSM, has even played major roles in reshaping the government of the country. (Adesope & Efe-Omojevwe, 2010).

Given the fact that 80% of the Nigerian population lives in rural areas, when GSM emerged in Nigeria in the early 2000s, cellular phone access affected a tremendous impact on rural dwellers regarding security, access to information and knowledge.

Problem Statement

The purpose of this study is to analyze the impacts of cellular phones on Nigeria's society. In addition, this study examines the many underserved and overserved customers within the services of the providers. These service satisfaction criteria are based on how well the provider's services are meeting customers' needs (Abiodun, Omotayo, & Oyenyi, 2008). According to Kotler (1991) to satisfy customers', the providers need to be innovative. Nigerian Telecommunication companies have been in fierce competition among each other for traditional customers and targeting new customers, by increasing technological, innovative services. For satisfaction, the underserved customers need new product ideas. The service provider will integrate its knowledge and better customer service tools to increase the underserved customers' satisfaction. Conversely, the overserved customers are satisfied with the services provided for them, but they do not want to pay for technology they do not need or use. The customers' satisfaction is the basis for company success in this business. The findings of this research will suggest methods for telecommunication companies to increase its services to customers' demands and satisfaction.

Furthermore, the cell phone has become part of people's daily life; it provides response to emergencies, and health professionals use it for health issues. Recently, health professionals' access health services through the mobile phone based systems, which include monitoring the patient. Cellular phone usage has aided in delivering health care to remote places that lack qualified medical personnel and services (Isabona, 2013).

ICT has revolutionized the governmental services. The introduction of ICT has transformed the government to deliver services, promote efficiency and engage

citizens into government affairs. The ICT initiated the e-government using of wired Internet technology by the public sector. The electronic government (e-government) projected the relationship between the government-citizen, government-government, government internal effectiveness and efficiency and government-business (Sheng & Trimi, 2008).

GSM has increased the economic development in Nigeria. It enhanced effective communication to stimulate and foster trade between the country and the other countries. In addition, GSM has created employment opportunities and investments in the country. With the introduction of GSM in Nigeria, the country has observed increases in productivities and efficiencies, reduction in transaction of costs, expanded innovative services (Adeyinka, Ajiboye, Emmanuel, & Wojuade, 2007). Further, there are many Nigerians telecom professionals returning home from abroad to build up the communication sector. This boosts entrepreneurships and creates business methods that help reduce unemployment. Moreover, the cellular phone service providers and investors have invested significant amount of money into the Nigerian market as to meet the desires of customers.

Thesis Statement

The use of cellular phones in Nigeria has changed perceptions of safety and well-beings amongst users, a precieved increased in connectivity amongst users, and a general satisfaction with the technology. The overall thesis of this study maintains the Nigerian population has perceived positive impacts from the use of the cellular phone. The following hypotheses were studied in regard to this thesis.

Hypotheses

1. Underserved customers outnumber overserved customers in Nigerian cellular phone usage.

2. Cellular phone usage has had some impact on the perceived safety and well-being of its users.

3. Survey participant perceive cellular phone usage has increased the connectivity between the user and family.

Assumptions

The following assumptions will be made in the conduct of this study:

1. The information/results from the questionnaires will accurately reflect the true perception of those completing the questionnaires.

2. The sample represents the population of interest.

3. Given the rural origins of the Nigerian people, the rural perspective will be represented in this study by rural dwellers periodic migrate to economic centers.

Delimitation

The negative aspect of cellular phones to the Nigerian society will not be analyzed in this study.

Definition of Terms

3G: Third Generation of mobile telecommunication technology with least speed of 144Kbps

4G: Fourth Generation of Mobile telecommunication technology with HSPA +21/42, WIMAX and LTE

Cellular phone subscribers: Cellular phone users

CMICT: Computer-Mediated- Interactive-Communication-Technology

e-government: Electronic government

eHealth: electronic health

GDP: Gross Domestic Product

GSM: Global System for Mobile Telecommunications

HSPA +: Evolved High-Speed Packet Access with 168 megabit per second

ICTs: Information and Communication Technologies

ITU: International Telecommunication Union

LTE: Long Term Evolution (Evolution of the GSM/UMTS standard)

MMC: Mobile-phone Mediated Communication

MDGs: Millennium Development Goals

mHealth: mobile health

MMS: Multimedia Messaging Service

NCC: Nigerian Communication Commission

NITEL: Nigeria Telecommunication Limited

O' Level: High School leavers

Overserved Customers: People for whom the existing products or technologies are more than satisfied

SIM: Subscriber Identification Module (a slim card with programmed number in it)

Underserved Customers: People for whom the existing products or technologies are not satisfied enough

Tele-density: Telecommunication density

WIMAX: Worldwide Interoperability for Microwave Access (has 30 to 40 megabit per second)

UMTS: Universal Mobile Telecommunication System (has transfer rate up to 384 Kilobite per second

Review of Literature

The Global System of Mobile Communication (GSM) was introduced in Nigeria in August 2001 by Nigeria Communications Commission (NCC). NCC licensed MTEL, Econet (Airtel) and MTN and later Globacom and Etisalat joined as the cellular phone operators. GSM has become the voice communication of the Nigerian population. There were 92 million GSM subscribers in Nigeria at the end of February 2012. Nigeria has become the biggest telecom market in Africa. The GSM subscribers increased the country's tele-density to 68.68% from 0.73% in 2001. This tremendous growth of the GSM has increased fierce competition among the providers to retain their large base of customers. Although the market has more overserved customers (customers that are satisfied with the existing technology), developers have engaged innovations to suit the demands of market. The strategies developed to keep the customers are reducing of tariffs, increasing sale promotion, innovative customer service (care), advertising blitzes, and introduction of new/innovative products (Adeleke & Aminu, 2012).

The rural areas in Nigeria comprise of the higher percentage of the country population. Besides, there is an economical gap between the rural and urban dwellers. The economic difficulties lead to massive migration from the rural areas to urban areas for livelihood (Adeyinka, et al, 2007). Most of the migrants are working age especially men, the rural areas are now a demographically unbalanced population of aged people, women, and little children.

The rapid spreads of cellular phone and Internet have closed down the gap between rural and urban dwellers (Lola, Olufemi & Agboola, 2012). In addition, the relationship between the families, the urban and rural dwellers have been increased using cellular phones. Meanwhile, the increased of cellular phones users in the rural areas have

given the people knowledge of the recent prices in different markets. Indeed, the impacts of GSM are being considered as an emerging communication industries in the Nigerian rural economy.

Positive Impacts of Cellular Phones to Nigeria

The cellular phone has contributed greatly to the Nigerian economy by increasing the country's Gross Domestic Product (GDP). The introduction of GSM has increased employment opportunities, sustained livelihood, developed micro enterprises, promoted growth in the financial, agricultural and educational sectors, and improved industrial efficiency. Inasmuch, the Information and Communications Technology aided the Nigerian's GDP to grow to 1.62 percent (Ahmad, Ibrahim & Oye. 2011). From 2000, Nigeria's GDP was $110.5 million but rose immensely to $294.8 million in 2008. Moreover, ICT has reduced the unemployment rate within these years from 34.53 million people to 8.59 million people (Ahmad, Ibrahim & Oye. 2011).

Contributing to this was cellular phone usage promoting research in markets/businesses transactions. Fortunately, the cellular phone covered large geographical areas, creating increased product and materials research and promoting more business. Cellular phones increase accessibility of information for market strategies, thereby eliminating the need to employ intermediaries. Moreover, it covers a wider area as compared to other media such newspaper, etc (Aker & Mbiti, 2010). Calls are made and information is received immediately promoting faster business transactions.

Improved communication among firms led to increased productivity. Mobile phones helped managers improve the supply chain management of their companies. Thus, the managers use the cellular phones to effectively trade off some unnecessary

production processes and engage in more innovative ideas and production. In addition, cellular phones are used in the trading activities such as in checking initial identity and possibility of ordering, seeking orders, searching for and confirming presence of raw materials, confirming credit arrangements and pick up of raw materials by a representative etc. The improved communications by the managers provide the availability, cost, quality and other characteristics of information (Heeks, Jagun, & Whalley, 2008). The supply chain management increased profits and aided in the supply chain management for industries.

Effect of Cellular Phones in Other Developing Countries

Nigeria and other countries in the Sub-Saharan African are prone to epidemics, conflicts and natural disasters. This risky environment affects social and economic functions in African society. The use of the cellular phone helps speed up the information flows and allows for quick responses during these disasters. Cellular phones help spread out information within the country and its boundaries (Aker & Mbiti, 2010).

The cellular phone has become a tool for economic development for the government, private/nongovernment organizations, and companies. The trend of development with the use of the cellular phone, such as "apps," has provided opportunities such as entertainment applications, money transactions, agricultural price information and health care monitors. However, the introduction of 3G (generation of mobile technology with minimum Internet speed of 144kbps) and 4G (generation of mobile technologies include HSPA +21/42, WIMAX and LTE) in the African market has increased the impact of cellular phones applications on market decisions.

The Information and Communication Technology (ICT) development comprises the telecommunication sector that has improved the economy of developing countries. The growth of the economy has depended on the investment made in telecommunication. This investment directly boosts the country's GDP (Rohman, 2012). Moreover, the growth of telecommunication at large has reduced transaction cost and increased market efficiency and access. The International Telecommunication Union (ITU, 2010) "considers broadband a catalyst for growth and, thus the next tipping point for generating jobs, driving growth and productivity, and underpinning long-term economic competitiveness, as well as contributing to achieving the Millennium Development Goals" (Rohman, 2012, p.37).

The cellular phone has become a form of livelihood for billions of people. There was an estimated population of 3.3 billion users worldwide in 2007 (IIahiane, 2011). The majority of the cellular subscribers in the past few years are from low-income countries (Ilahiane, 2011). This tremendous growth of cell phone usage in these developing countries has impacted the lives of the people economically and socially for the better. According to ITU (2008), 4.7 percent of the African populations have accessibility to the Internet and 90 percent are telephone subscribers most of whom are cellular phone users rather than landline users.

The cellular phone usage in developing countries has been a tool to organize work, life schedules, expand productive opportunities and improve the socio-economic ties of small business. In the entrepreneurship sector of the economy, the cell phone provides connections to daily economic fluctuations for the people in countries like Jamaica, Nigeria and Tanzania. It contributes immensely to the business profits in South

Africa, Tanzania and Egypt and promotes many relationships within the markets that turn to create profit in the business. The cellular phone functions in the structure of the daily activity, conversation, family norms, security, co-ordination and schedules flexibilities especially in urban/cities of the developing countries. It is also a key for social relationships reinforcement (Ilahiane, 2011).

Employment. For the individual users in these countries, the cellular phone has created jobs that have impacted the countries' economy. The cell phone phenomenon has been incorporated into a variety of business and entrepreneurship opportunities. Especially for low income earners, it is a source of sustainable livelihood such as engaging in the selling of (Subscriber Identification Module) SIM cards and other cellular phone-related activities. All these activities provide enough money for food, shelter, maintenance and other various expenses for them and their families. It is a form of sponsorship of other business. People who cannot afford credit facilities to finance their business depend on GSM businesses to raise and save money for other business of their interest. Moreover, students engage GSM business to raise money for their tuition fees and other educational expenses (Adesope & Efe-Omojevwe, 2010)

Reduction of poverty. Cellular phones provide new ways to reduce poverty in the developing countries. Further, they have played the roles used to combat poverty and empowered the people especially the rural dwellers (Goon, Han, Lee, Muda &Nair, 2012). Cellular phones raised the standard of living of the poor and marginalized societies. For example, less privileged people in the rural areas are able to conduct their microcredit financing businesses with the use of their phones, therefore increasing businesses and promoting the standard of living. It has been used to breach the gap

between the rich and the poor in the society providing the knowledge to maximize time, resources and efforts. Efe-Omojevwe, Zelda & Adesope (2010) stated that in Nigeria, as low as Nigeria Naira 12,000 (about 79 USD) could establish a cellular phone business that provides employment, and livelihood.

The African continent is the fastest growing cellular phones market globally. The use of shared mobiles and introduction of scratch-off phone cards have facilitated the poor in its society to afford cell phones for their financial transactions, spread information, and empowerment. Fortunately, the use of cell phone has helped many farmers and fishermen to engage in the stock market. The financial services benefit enormously from cell phone usage within the continent.

It is obvious developing countries have benefitted from the use of cellular phones. The cell phones and ICT usage in the developing countries such as Malaysia have increased their countries GDP by 0.6% points (Goon, et al, 2012). In the Malaysia, as a developing country, the policy makers see the cell phone usage as the connecting factor between the rural populations to the knowledge economy.

In Bangladesh, Professor Muhammad Yunus, the founder of Grameen bank, stated that a cell phone is "almost like having a card to get out of poverty in a couple of years" (John, 2007, p.9). Bangladesh, one of the poorest countries in the world, has embraced the cellular phone for its modern communication. Grameenphone, a subsidiary of Grameen, which was launched in March 1997, now has over 15 million subscribers to their service. This has promoted the livelihood and economic growth of the country.

The use of cellular phone has increased the people's participation in the microfinance businesses and it provides easy ways to carry out their business. For

example, Bolivian's microfinance organization, PRODEM, uses smart-card to reduce its marginal cost per customer. Moreover, this smart-card provides customer's personal transaction records, personal details, account numbers and a fingerprint. All these features enable the cash dispenser to operate in remote places without permanent network connections (Hammond & Prahalad, 2002).

Cellular phone usage in the health sector. According to Mecheal (2009, p.103) "that individuals around the worlds are using mobile technologies to access health services and information and that the professionals are formally and informally integrating mobile technologies into public health and clinical activities". The mobile health (mHealth) integrates into the wireless health care delivery systems. The use of ICT for health (eHealth) has tremendously grown especially the use of cell phones. In May 2008, 21.2% of the world's population used the Internet, which constituted 5.3% in Africa, 14.0 % in Asia, 23.8 % in Latin America and 73.4 % in North America. The eHealth has influenced in the remote setting likewise to individual members of the public and the health sectors. In addition, mHealth raised the communication level in both the illiterate and literate population. Thus, it provides methods information transferred through text messaging and pre-recorded voice messaging. These methods transfer information quickly and can be used for tasks such as medication reminders of appointment dates. Meanwhile, mobile communication and health-related software applications aid decentralized health systems, give real-time feedback, and provide pre-programmed automated services (Mecheal, 2009).

Cellular phones usage have become the pivot for interactive/connectivity among people. Thus, the information technology such as mobile phone, internet, etc. has affected

the particular cultural traditions, economic resources and power structures. For instance, the modern use of the cellular phones in the Philippines has encroached on the culture. Moreover, the Philippines have absorbed texting tremendously as Filipinos produce over 200 million text messages daily. Text messaging has led to new ways that people relate to one another as compared to face-to face encounters, and has even resulted to gambling among the youth. Also, civil right organizations have used cellular phones to organize political protest. In January 2001, President Estrada of Philippines was overthrown by the civil society through political protest, which they organized with the use of media, including cell phones. In Venezuela, Computer-Mediated Interactive Communication Technology (CMICT) was used by "smart mobs" during strife in the country. It was used to organize groups for micro-coordinating activities (Pertierra, 2005).

Negative Impacts of Cell Phones

The negative impacts of the cell phones include recent abuses of this technology in the public and private areas in Nigeria. These abuses generate issues that become a menace to Nigerians. In some restricted areas such as banking halls, confidential meetings, examination halls, and correctional facilities; people intentionally/unintentionally use their phones. Further, there are increases of banned cellular phones in the correctional facilities. The effects of contraband cell phones in the facilities are obvious in criminal enterprises. They can potentially threaten, harass victims, orchestrate uprisings, and corrupt prison security by enabling the illegal activities of separated inmates. Furthermore, misuses of the cell phones are very noticeable for its diabolical and illegal purposes such as burglary, immorality/promiscuity and increases the crime rate. (Akinrinmade, Ijarotimi & Lawal, 2013).

Currently, cellular phones are a known popular feature in African life, which have contributed to less positive purposes such as crime and political violence across the continent. There have been measurable effects created by cellular phones and telephones in the cities and rural areas that have clouded the positive purposes of these technologies. Livingstone (2011, p.3) states, "African communities have lived in information-constrained environments with few opportunities to corroborate news." Misinformation and rumors were spread that fueled crises in parts of Africa from these modern technologies. These technologies promote false perceptions to the citizens as a result, generating chaotic environments in Nigeria and the rest of Africa.

Nigeria, one of the world's worst hit countries with polio cases, experienced the effects of rumors and misinformation in 2004. The World Health Organization (WHO), which aimed to eradicate polio, was declined by the Muslim Leaders in the northern Nigeria states of Zamfara, Kaduna, and Kano. The leaders misinformed their followers to boycott the WHO's activity and claimed that it was a plan from the Western world to sterilize Muslims. Again, the leaders believed that the vaccine was to transfer HIV/AIDS, and as a result, to decrease the Muslim population size (Livingstone, 2011).

Meanwhile, the rumors and misinformation from these technologies have contributed to instabilities and violence in Nigeria. For example, 2,000 people have been killed in the Plateau state of the country during communal violence since 2001 (Livingstone, 2011). Furthermore, the country was anxious in 2009 during ex-President Umaru Yar' Adua's impromptu exit from Nigeria for medical treatment. There were miscommunications about his condition among the Nigerian population. These rumors were propogated by the influx of cellular phones use.

Cell phone usage in examination malpractice in Nigeria. Olatunbosun (2009, p.103) stated, "Examination malpractice, a variety of corruption is sustained by what sustains corruption in the country". The GSM introduction in Nigeria has fostered examination malpractices in schools. Cellular phones are being used in sophisticated methods to conduct examination malpractice. Recently, academic information is stored in the cellular phone and used directly in the examination hall. Further, students transfer academic information through their phones as Short Message Service (SMS) to other students in any part of the country during examinations. The students with the digital assistance or cell phone beam call data silently in the classroom/any part off the school environment (Olatunbosun, 2009). Thus, the Nigerian society does not have authority over its environment.

Possible health risk. Mark (2010, p.1) states that a long conversation on a cellular phone increases the tendency to develop severe fatal tumors. The World Health Organization, in its research for a ten-year period, found out there are high risks for people engaging in a long conversation on cellular phones to develop a brain tumor called giloma. Moreover, there is a link that associates cellular phone with cancers. Indeed, the radiation of the radio frequency that is transmitted in the cellular phones is transferred into the body when the phones are held closer to the ear. Cellular phones are prone to health system damages for the users (Mark, 2010).

Effect of cell phone usage on political violence/crises worldwide. Cellular phone usage has increased operations of rebel and insurgent groups worldwide. It has served as a catalyst to political violence in Nigeria and elsewhere. Cellular phone usage has aided in co-coordinating endemic problems to insurgent activity (Pierskalia &

Hollenbach, 2013). Rebel leaders use the cellular phone to foster support and coordinate attacks from insurgents and civilian supporters (Hollenbach &Pierskalla, 2013). Thus, the insurgent activity is being organized by the use of the improved communication system to fuel political violence and protests. Meanwhile, many attentions are being given to the cellular phone and other modern technologies in fueling crises. However, the use of cellular phones enhances in-group organization and the implementation of insurgent activities. Indeed, it fosters the insurgent group to overpower the country where they operate.

Furthermore, the use of cellular phones has increased the activity of the Iraqi insurgents as a tool of spreading information and providing propaganda to group members and the population. The rebels use the cellular phones to close the technological gap between government troops and the rebel movement. It enhances in the insurgents' ability to fuel conflicts.

Meanwhile, Africa as the fastest growing cell phone market globally, has 732 million subscribers in 2012 and a yearly growth rate of about 20% (Pierskalia & Hollenbach, 2013). The continent has its cellular phones communication in interpersonal and direct communication over distance. Unfortunately, it has hosted a large number of political/civil conflicts. In Liberia, on the west coast of Africa, ex-president Charles Taylor utilized the cell phone technology to control and coordinate his rebel leaders/commanders during Liberia's civil conflict (Reno, 2011, 4). Again, cellular phones have played roles in propaganda especially to effect the government. In addition, it is vital for specific actions and coordination of insurgent violence. The cellular phone

usage has fostered the communication rate of the enemy movement, scouting, and other insurgents' intelligence worldwide.

The use of cellular phones communication has enhanced in coordination of protests globally. These are obvious in countries such as China, Spain, and Philippines. Falun Gong used to stage a huge protest in a secure government complex in China in 1999 and the Kiev, Ukraine, during the Orange Revolution (Pierskalia & Hollenbach, 2013). Furthermore, Protesters were able to be coordinated together through the use of text messages in Madrid, Spain in 2004. The protest was staged against the authoritarian government in Spain. Other noticeable protests that were staged with the aid of cell phone are London riot in the summer 2011 and protests against G20 summits (Pierskalia & Hollenbach, 2013, p.3).

For Nigeria, the introduction of GSM has had both negative impacts and positive impacts to the Nigerian society as typically observed in several countries similar to Nigeria's level of development. The negative impacts have rooted in the society and have been a menace to country's population. These negative impacts in recent years includes abuses of the technology in the public and private places in Nigeria, threats to the human brain associating with cancer, increase illusive examination malpractices methods and infuse misinformation, governmental propaganda, and political crisis. Again, this technology has fostered insurgent activities and political unrests/protests around the world.

The positive impacts of cellular phones have been tremendous benefit to Nigeria's population. Moreover, landmarks are made such as increased country's GDP, fostering economic development for the government, private/nongovernment organizations, and

companies, improved supply chain management of the companies, and aid to coordinate activities such as work, life schedules, and socio-economic of people. Likewise, in Nigeria, cell phones are a catalyst for development in many other developing countries such as Malaysia, Bangladesh, Philippines, Venezuela, and Bolivia. These countries have remarkable GDP in their economies, and jobs creation opportunities etc., as impacts of cellular phones.

Methodology

This study was conducted in different cities throughout Nigeria by administering a cross-sectional survey on a sample of GSM subscribers. The sample of these subscribers was determined randomly based on users from major GSM companies including Mtn, Zain, Globacom and Etisalat.The survey sample made every effort to collect data randomly without bias.The researcher employed facilitators to distribute the surveys to people in different cities in Nigeria. The employed facilitators were trained with instructions to stand/stay on busy places and distribute the questionnaires randomly to those passing by. After determining the individual was a GSM cell phone user, the individual was asked to participate in this study. Data were collected by survey from those that agreed.The employed facilitators mailed the completed surveys back to the researcher. The researcher used Excel to record and analyze the survey.

The questionnaire was based on three constructs: underserved/overserved customers, safety and well-being, and connectivity. These questionnaires contained three to five questions for each construct. These questions ranked on a 1 to 5 scale, 1 being "strongly agreed" and 5 "strongly disagreed". These scores were tallied, tabulated, and analyzed.

Descriptive statistics were used to analyze the sample and confidence intervals were used to infer toward the population. A sample size of approximately 125 was desired, as it was adequate for measures of central tendency (CT) to appear within the sample distribution and to increase the occurrence of approaching a normal distribution. One hundred and twenty four surveys were completed. The mean of every question was calculated and a grand average was calculated for each construct section. Confidence

intervals were used to determine if sample statistics could be representive of the population.

Particpant were asked 14 statements using a five point scale consisting of Strongly agree = 1, Agree= 2, Uncertain = 3, Disagree= 4, Strongly disagree = 5 and Non Applicable= -.

Although this study had face validity, it did not purport test validity. There were validity threats due perhaps to personal thoughts about the study by the participants. However, through random data collection and non-biased analysis, this threat to validity was mitigated.

Sample of the Questionnaire

The research questions were designed using the three constructs relating to each hypothesis of this study. Regarding underserved/overserved customers, questions were used to determine their perception of satisfactory level of technology used by customers. These questions included customers' perceptions of satisfactory levels of the applications from the network providers, their perception of satisfactory levels of the services from the network providers, the customers' perceptions of satisfactions with the innovations/technologies and promotions from the network providers. Customers' safety and well-being questions were be based on perceived safety issues with the cellular phone at the workplaces and perceived safety in any environment and emergency responses**.** Connectivity was determined by the users' perceptions of connectivity with family members, friends and loved ones in different locations and a feeling of connectivity with the workplace.

Each participant's consent was implied by willingness to participate in this study. This study complied with IRB guidelines. The participants' identifications and data have remained protected and non-identifiable.

Analysis

The data were collected by facilitators with the questionnaires instrument. The questionnaires had three sections and fourteen questions. These questions were ranked in five point scale: Strongly agree = 1, Agree = 2, Uncertain = 3, Disagre = 4, Strongly disagree = 5, and Not Applicable. Data were collected from one hundred and twenty-four people in various cities in Nigeria. Further, data were reported with, descriptive statistics including mean, mode, a standard deviation, and a confidence interval. A visual graph represents each sample distribution.

Section A: Underserved /Overserved Customers.

This section emphasized the customers' satisfaction of applications (software) availability, number of services available, innovations/technology, and promotional offers from the network providers.

Question A1: I am satisfied with the applications (software) available on my cell phone from the network providers.

This question was about customers' satisfaction with applications (software) available on cell phone from the network providers. The results of the completed survey were 45.08% of participants chose 2 (agree), 23.77% of the participants chose1 (strongly agree), 15.57% of the participants chose 3 (uncertain), 11.48% of the participants chose (disagree) and 4.10% of participants chose (strongly disagree). The mean was 2.27, the mode was 2, and the standard deviation was 1.08 (Table 1). Figure 1 represents the graph of the frequency over ranking for A1

Table 1.

Descriptive statistics for A1

Mean	2.270492
Standard Error	0.097411
Median	2
Mode	2
Standard Deviation	1.075934
Sample Variance	1.157634
Kurtosis	0.060882
Skewness	0.815701
Range	4
Minimum	1
Maximum	5
Sum	277
Count	122
Confidence Interval (95.0%)	0.19285

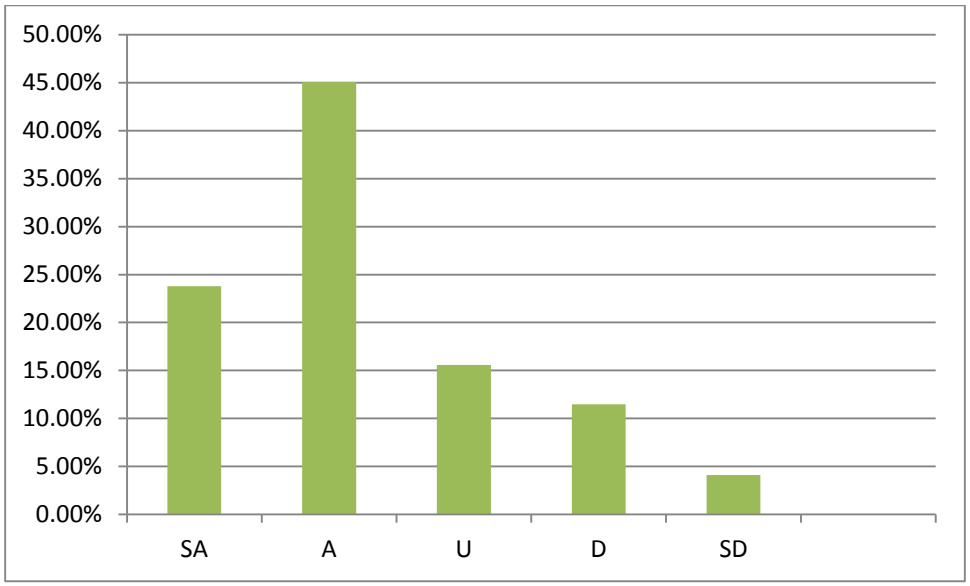

Figure 1. Graph of the frequency over ranking for A1.

Question A2: I am satisfied with the number of services available from the network providers:

This question was about the customers' satisfaction with number of services available from the network. The results of the completed survey were 38.53% of participants chose (agree), 27.87% of the participants chose 3 (uncertain), 17.21% of the participants chose (disagree), 14.75% of the participants chose (strongly agree) and 1.64% of participants chose (strongly disagree). The mean was 2.52, the mode was 2, and the standard deviation was 0.99 (Table 2). Figure 2 represents the graph of the frequency over ranking for A2.

Table 2

Descriptive statistics for A2

Mean	2.520325
Standard Error	0.089685
Median	2
Mode	2
Standard Deviation	0.994655
Sample Variance	0.989338
Kurtosis	-0.63184
Skewness	0.27319
Range	4
Minimum	1
Maximum	5
Sum	310
Count	123
Confidence Interval (95.0%)	0.17754

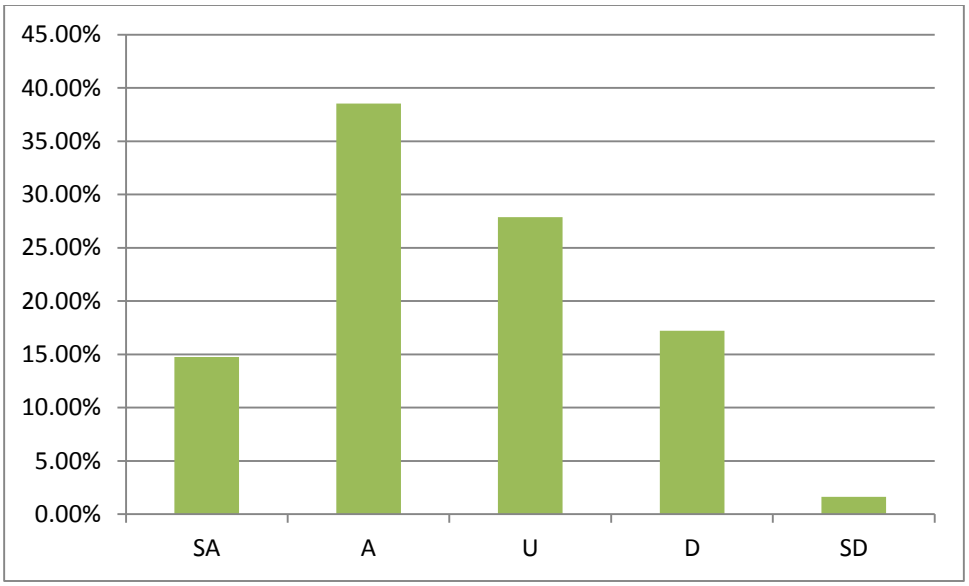

Figure 2. Graph of the frequency over ranking for A2.

Question A3: I feel satisfied with the innovations/technology (hardware) from the network providers.

This question was on the innovations/technology (hardware) from the network providers to their customers. The results of the completed survey were 38.53% of participants chose (agree), 27.87% of the participants chose (uncertain), 17.21% of the participants chose (disagree), 14.75% of the participants chose (strongly agree) and 1.64% of participants chose (strongly disagree). The mean was 2.51, the mode was 2, and the standard deviation was 1.00 (Table 3). Figure 3 represents the graph of the frequency over ranking for A3.

Table 3.

Descriptive statistics for A3

Mean	2.512195
Standard Error	0.090437
Median	2
Mode	2

Standard Deviation	1.002994
Sample Variance	1.005998
Kurtosis	-0.65886
Skewness	0.263297
Range	4
Minimum	1
Maximum	5
Sum	309
Count	123
Confidence Interval (95.0%)	0.179029

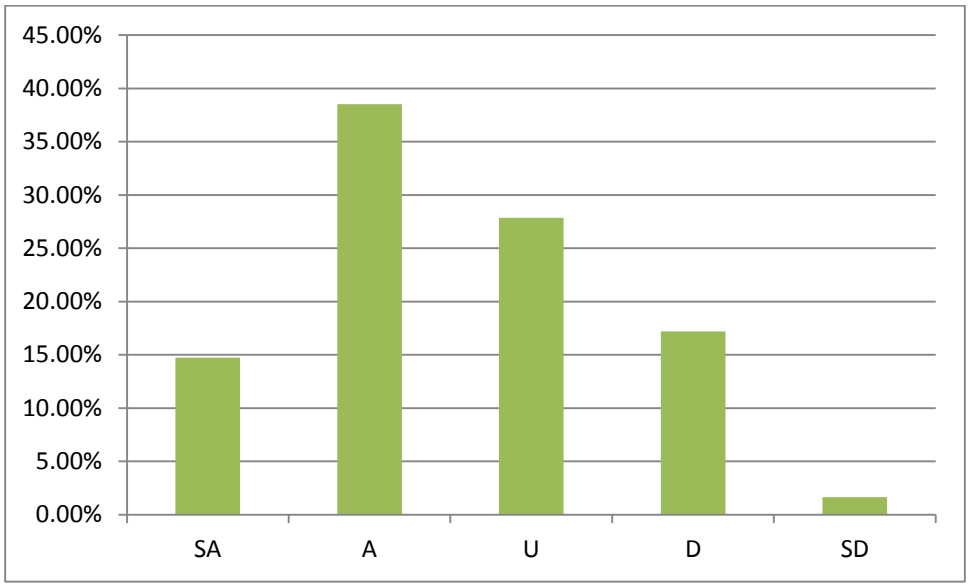

Figure 3. Graph of the frequency over ranking for A3.

*Question A4: I am satisfied with the network's promotional offers compared to their counterparts in other developing countries***.**

This question was on the satisfaction of the customers for the network's promotional offers received from the network providers in compared with other countries. The results of the completed survey were 33.36% of participants chose 2 (agree), 27.12% of the participants chose 3 (disagree), 22.03% of the participants chose 4 (uncertain), 12.71% of the participants chose (strongly agree) and 6.78% of participants

chose (strongly disagree). The mean was 2.85, the mode was 2, and the standard deviation was 1.16 (Table 4). Figure 4 represents the graph of the frequency over ranking for A4.

Table 4.

Descriptive statistics for A4

Mean	2.848739
Standard Error	0.106503
Median	3
Mode	2
Standard Deviation	1.161812
Sample Variance	1.349808
Kurtosis	1.004002
Skewness	0.069742
Range	4
Minimum	1
Maximum	5
Sum	339
Count	119
Confidence Interval (95.0%)	0.210905

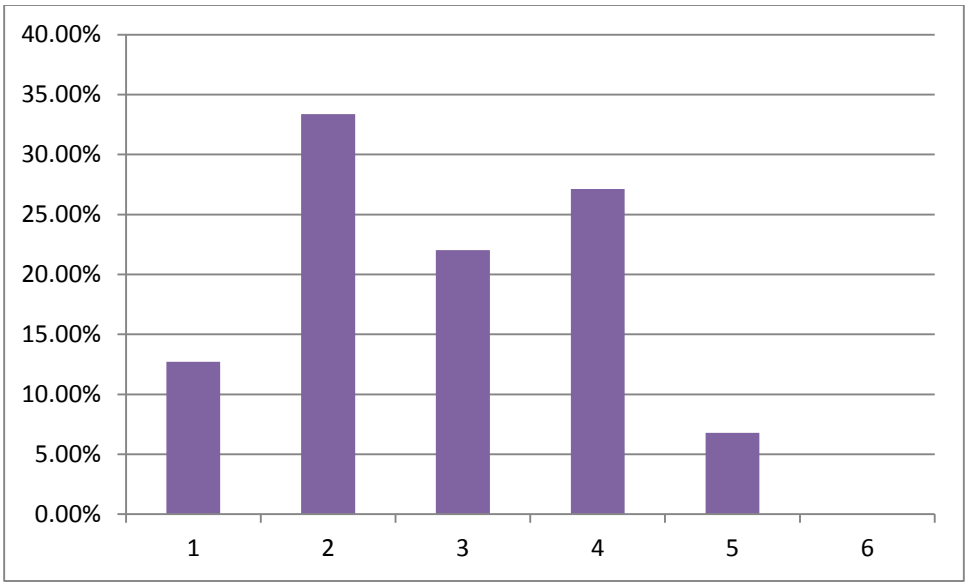

Figure 4. Graph of the frequency over ranking for A4.

Section B: Customers' Safety

This section examined customers' perception of safety emphasizing if customer felt safer, had an assurance of safety, a sense of safety, responsiveness of emergency, and a sense of well being.

Question B1: I feel safer with having a cellular phone.

This question was on customers' perceived safety. The results of the completed survey were 40.00% of participants chose 2 (agree), 7.50% of the participants chose 3 (uncertain), 4.17% of the participants chose 4 (disagree), 43.33% of the participants chose (strongly agree) and 5.00% of participants chose (strongly disagree). The mean was 1.87, the mode was 1, and the standard deviation was 1.06 (Table 5). Figure 5 represents the graph of the frequency over ranking for B1.

Table 5

Descriptive statistics for B1

Mean	1.867769
Standard Error	0.096024
Median	2
Mode	1
Standard Deviation	1.056268
Sample Variance	1.115702
Kurtosis	2.031053
Skewness	1.51992
Range	4
Minimum	1
Maximum	5
Sum	226
Count	121
Confidence Interval (95.0%)	0.190122

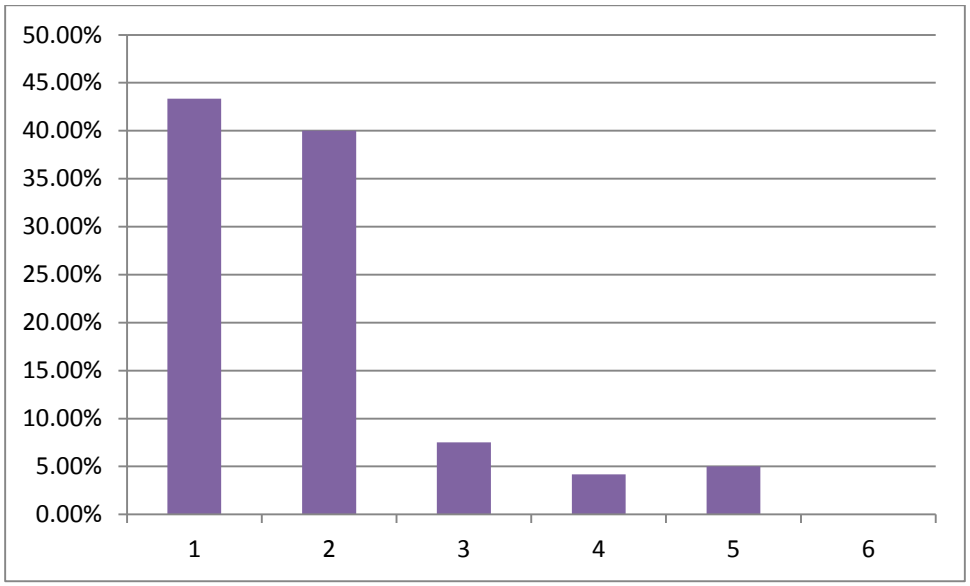

Figure 5. Graph of the frequency over ranking for B1.

Question B2: Now I have a cellular phone, I have the assurance of safety while driving a car.

This question was on the customers' assurance of safety with the use of cellular phone. The results of the completed survey were 25.00% of participants chose 2 (agree), 27.50% of the participants chose 3 (uncertain), 23.33% of the participants chose 4 (disagree), 11.67% of the participants chose (strongly agree) and 12.50% of participants chose (strongly disagree). The mean was 3, the mode was 3, and the standard deviation was 1.21 (Table 6). Figure 6 represents the graph of the frequency over ranking for B2.

Table 6

Descriptive statistics for B2

Mean	3.008264
Standard Error	0.109781
Median	3
Mode	3
Standard Deviation	1.207586
Sample Variance	1.458264
Kurtosis	-0.92256
Skewness	0.012805
Range	4
Minimum	1
Maximum	5
Sum	364
Count	121
Confidence Interval (95.0%)	0.217358

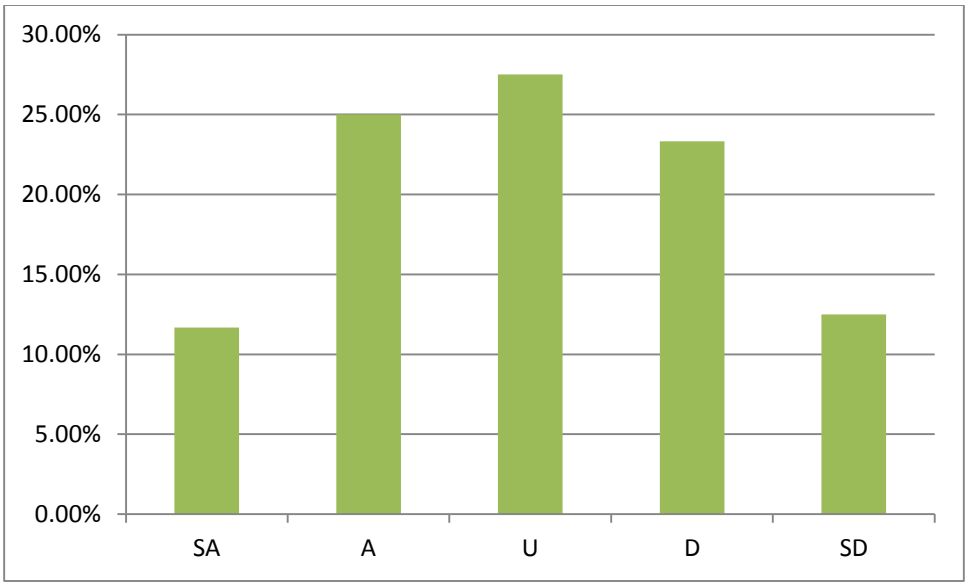

Figure 6. Graph of the frequency over ranking for B2.

*Question B3: Generally speaking, my cellular phone gives me a sense of safety***.**

This question showed sense of safety in connection with the customers' cellular phone usage. The results of the completed survey were 36.67% of participants chose 2 (agree), 28.33% of the participants chose 3 (uncertain), 13.34% of the participants chose 4 (disagree), 18.33% of the participants chose (strongly agree) and 3.33% of participants chose (strongly disagree). The mean was 3, the mode was 3, and the standard deviation was 1.21 (Table 7). Figure 7 represents the graph of the frequency over ranking for B3.

Table 7.

Descriptive statistics for B3

Mean	2.479339
Standard Error	0.095418
Median	2
Mode	2
Standard Deviation	1.049597
Sample Variance	1.101653
Kurtosis	-0.45929

Skewness	0.385238
Range	4
Minimum	1
Maximum	5
Sum	300
Count	121
Confidence Interval (95.0%)	0.188921

Figure 7. Graph of the frequency over ranking for B3.

Question B4: My cellular phone provides me with emergency responsiveness.

This question was emergency responsiveness of the customers' using their cellular phones. The results of the completed survey were 36.37% of participants chose 2 (agree), 14.05% of the participants chose 3 (uncertain), 11.57% of the participants chose 4 (disagree), 33.88% of the participants chose (strongly agree) and 4.13% of participants chose (strongly disagree). The mean was 2.15, the mode was 2, and the standard deviation was 1.14 (Table 8). Figure 8 represents the graph of the frequency over ranking for B4.

Table 8

Descriptive statistics for B4

Mean	2.151261
Standard Error	0.105157
Median	2
Mode	2
Standard Deviation	1.147131
Sample Variance	1.315909
Kurtosis	-0.1263
Skewness	0.862938
Range	4
Minimum	1
Maximum	5
Sum	256
Count	119
Confidence Interval (95.0%)	0.20824

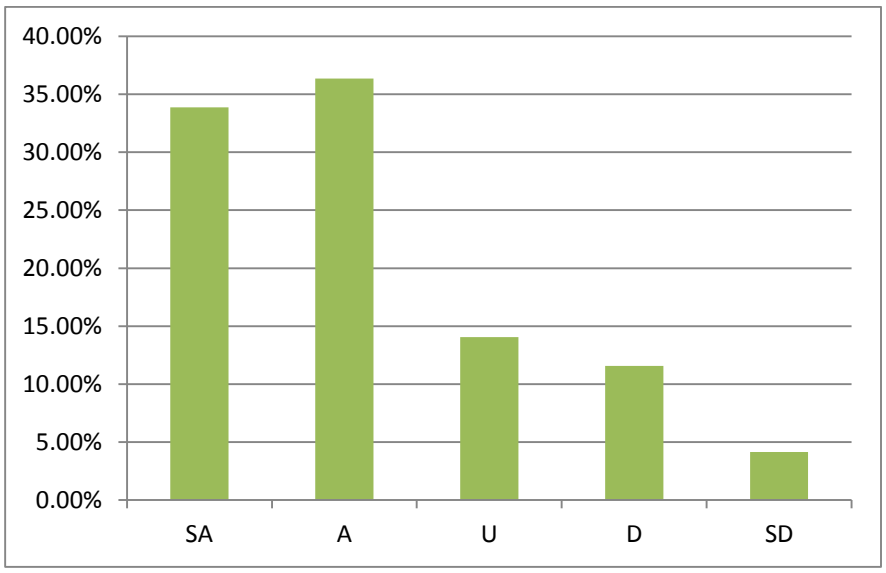

Figure 8. Graph of the frequency over ranking for B4.

Question B5: Overall, my cellular phone has given me a sense of well being

This question was on emphasized on the customers' well being for using cellular phone.

The results of the completed survey are 38.98% of participants chose 2 (agree), 18.65% of the participants chose 3 (uncertain), 9.32% of the participants chose 4 (disagree), 26.27% of the participants chose (strongly agree) and 6.78% of participants chose (strongly disagree). The mean was 2.29, the mode was 2, and the standard deviation was 1.14 (Table 9). Figure 9 represents the graph of the frequency over ranking for B5.

Table 9

Descriptive statistics for B5

Mean	2.293103
Standard Error	0.106052
Median	2
Mode	2
Standard Deviation	1.142212
Sample Variance	1.304648
Kurtosis	-0.05659
Skewness	0.790613
Range	4
Minimum	1
Maximum	5
Sum	266
Count	116
Confidence Interval (95.0%)	0.210068

Figure 9. Graph of the frequency over ranking for B5.

Section C. Connectivity.

This section examined the perceived connectivity customers gained from using a cellular phone. It was sub-sectioned into connectivity with families, friends, and loved ones, ease of communication/connectivity, connectivity with business/work, and increased connectivity with people**.**

Question C1: I feel more connected with my family now I have a cellular phone.

This question showed how the customers used cellular phone to connect his/her family members. The results of the completed survey were 25.41% of participants chose 2 (agree), 7.37% of the participants chose 3 (uncertain), 4.92% of the participants chose 4 (disagree), 59.84% of the participants chose (strongly agree) and 2.46% of participants chose (strongly disagree). The mean was 1.64, the mode was 1, and the standard deviation was 0.98 (Table 10). Figure 10 represents the graph of the frequency over ranking for C1.

Table 10

Descriptive statistics for C1

Mean	1.642276
Standard Error	0.088774
Median	1
Mode	1
Standard Deviation	0.984554
Sample Variance	0.969346
Kurtosis	2.518137
Skewness	1.715937
Range	4
Minimum	1
Maximum	5
Sum	202
Count	123
Confidence Interval (95.0%)	0.175737

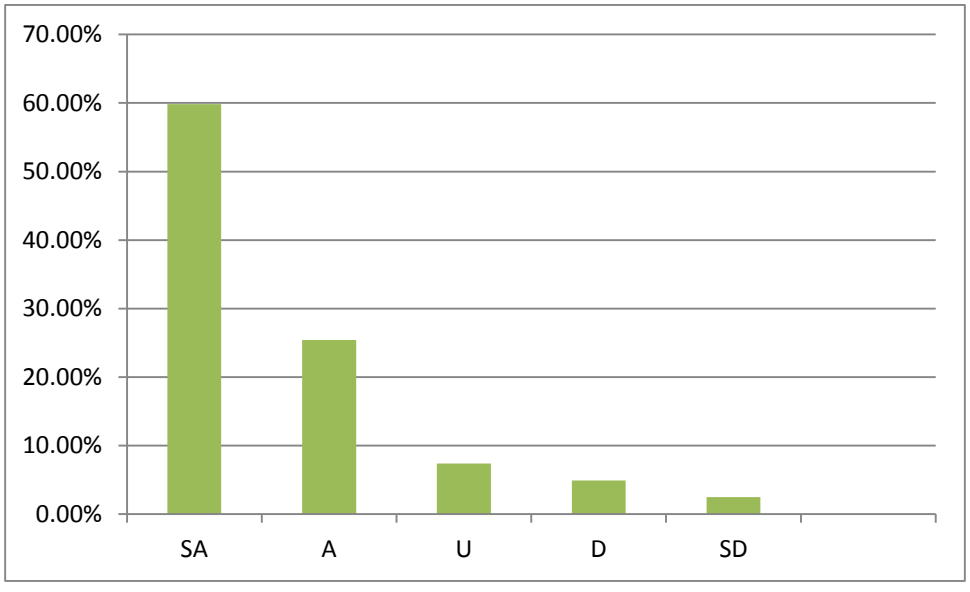

Figure 10. Graph of the frequency over ranking for C1.

Question C2: I can contact friends and loved ones while in different locations.

This question emphasized on customers' ability to connect with his/her family and loved ones in different locations. The results of the completed survey were 28.45%

of participants chose 2 (agree), 3.45% of the participants chose 3 (uncertain), 6.89% of the participants chose 4 (disagree), 58.26% of the participants chose (strongly agree) and 2.59% of participants chose (strongly disagree). The mean was 1.67, the mode was 1, and the standard deviation was 1.00 (Table 11). Figure 11 represents the graph of the frequency over ranking for C2.

Table 11

Descriptive statistics for C2

Mean	1.666667
Standard Error	0.093244
Median	1
Mode	1
Standard Deviation	1.008584
Sample Variance	1.017241
Kurtosis	2.483047
Skewness	1.738211
Range	4
Minimum	1
Maximum	5
Sum	195
Count	117
Confidence Interval (95.0%)	0.184681

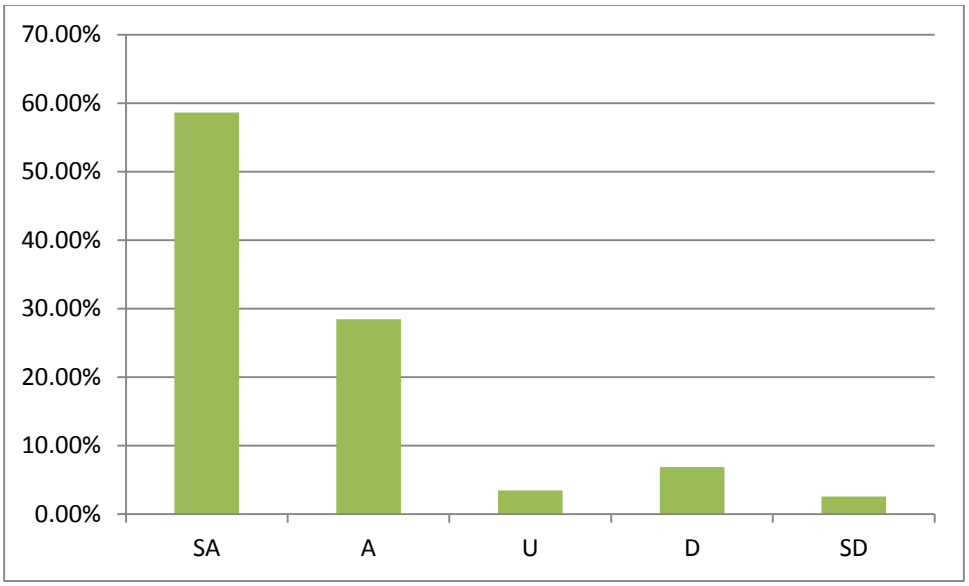

Figure 11. Graph of the frequency over ranking for C2.

Question C3. I can communicate /connect easily with people who live in rural.

This question showed the connectivity the cellular phone users with the people in the rural area. The results of the completed survey were 39.50% of participants chose 2 (agree), 12.60% of the participants chose 3 (uncertain), 10.09% of the participants chose 4 (disagree), 35.29% of the participants chose (strongly agree) and 2.52% of participants chose (strongly disagree) . The mean was 2.05, the mode was 2, and the standard deviation was 1.06 (Table 12). Figure 12 represents the graph of the frequency over ranking for C3.

Table 12

Descriptive statistics for C3

Mean	2.05042
Standard Error	0.096844
Median	2
Mode	2
Standard Deviation	1.056447

Sample Variance	1.11608
Kurtosis	0.241931
Skewness	0.950809
Range	4
Minimum	1
Maximum	5
Sum	244
Count	119
Confidence Interval (95.0%)	0.191778

Figure 12. Graph of the frequency over ranking for C3.

*Question C4: The cellular phone has increased my connectivity with my work or business***.**

This question emphasized with the customers' cellular phone connectivity with the work or business. The results of the completed survey were 42.98% of participants chose 2 (agree), 7.02% of the participants chose 3 (uncertain), 6.14% of the participants chose 4 (disagree), 41.23% of the participants chose (strongly agree) and 2.63% of participants chose (strongly disagree). The mean was 1.85, the mode was 2, and the

standard deviation was 0.98 (Table 13). Figure 13 represents the graph of the frequency over ranking for C4.

Table 13

Descriptive statistics for C4

Mean	1.852174
Standard Error	0.090968
Median	2
Mode	2
Standard Deviation	0.97552
Sample Variance	0.95164
Kurtosis	1.84805
Skewness	1.399001
Range	4
Minimum	1
Maximum	5
Sum	213
Count	115
Confidence Interval (95.0%)	0.180206

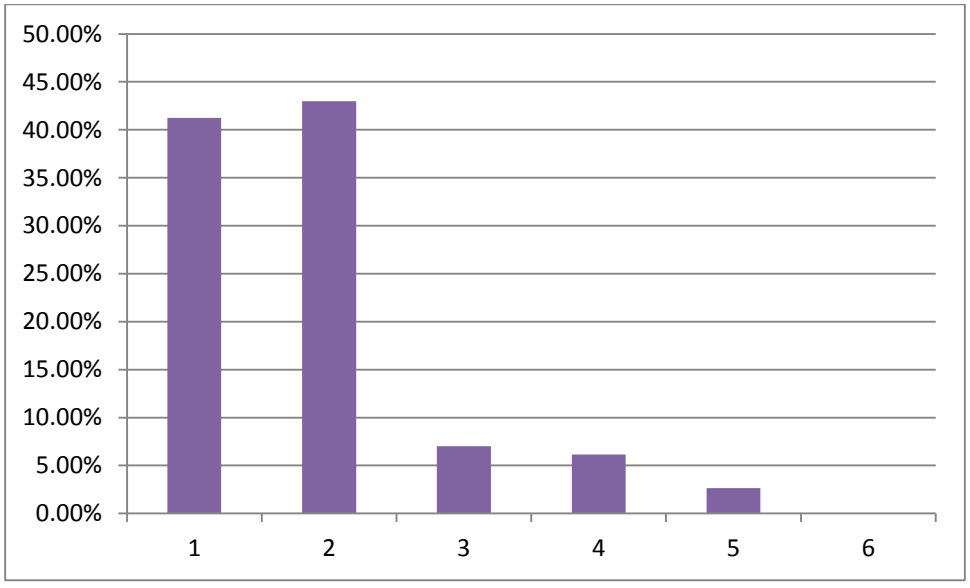

Figure 13. Graph of the frequency over ranking for C4

Question C5: In general, the cellular phone has increased my connectivity with people.

This question was about the customers' connectivity with people through the use of the cellular phone. The results of the completed survey were 45.22% of participants chose 2 (agree), 4.34% of the participants chose 3 (uncertain), 6.96% of the participants chose 4 (disagree), 45.22% of the participants chose (strongly agree), and 1.74% of participants chose (strongly disagree). The mean was 1.77, the mode was 2, and the standard deviation was 0.94 (Table 14). Figure 14 represents the graph of the frequency over ranking for C5.

Table 14

Descriptive statistic for C5

Mean	1.775862
Standard Error	0.087516
Median	2
Mode	1
Standard Deviation	0.942579
Sample Variance	0.888456
Kurtosis	2.055116
Skewness	1.479297
Range	4
Minimum	1
Maximum	5
Sum	206
Count	116
Confidence Interval (95.0%)	0.173353

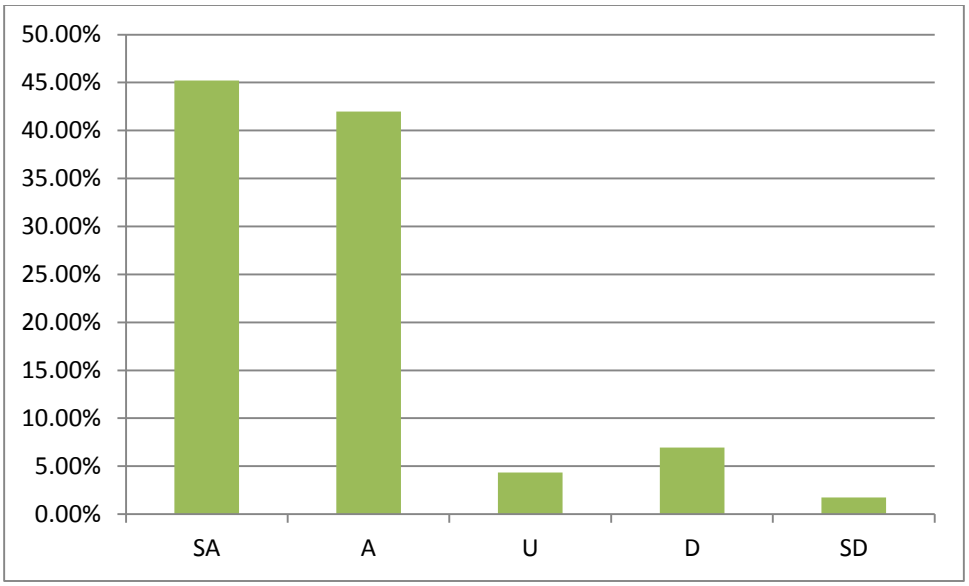

Figure 14. Graph of the frequency over ranking for C5

Confidence Level:

Confidence intervals for each question in each section remained low for a 95% confidence level. This allowed for inference toward the population using these statistics.

Conclusion

The purpose of this study was to aid in understanding the positive perceptions and impacts of cellular phones on the Nigerian society in regard to the select hypotheses. This chapter discussed and identified areas that may be important in providing potential explanation of the results. Each research question was supported with a 95% confidence level in regarding the mean. These confidence intervals were narrow allowing comfortable inference towards the population using these sample distributions**.**

Overall Hypotheses Conclusions

This study hypothesized on the precived positive impacts of cellular phone on the Nigerian society. These hypotheses are based on three different sections: underserved / overserved customers, customers' safety, and well-being, and connectivity. The resulting trends in these sections were generally interpreted as strongly agree and agree responses combining to represent positive/agree responses. Strongly disagreed and disagree responses combined to represent negative responses.

Section A

This first section was in regard to underserved /overserved customers. The conclusion was determined by the results of the four sub-questions of this section. Results showed positive responses for questions A1, A2 and A3. The percentage of agreement was 45.08% (question A1), 38.53% (question A2), and 38.53% (question A3).

Graphically, question A4, was a bimodal distribution including the percentage of agreement (33.36%) and percentage of disagree (27.12%). One possible explanation may be many Nigerians were not informed about promotional offers by network providers in

other developing countries. Hence, they were not able to answer the question definitively resulting in the bi-modal distribution.

From the results of this section, the hypothesis that underserved customer outnumbers overserved is supported indicating cellular users in Nigeria feel they need more advanced technology.

Section B

This section was regarding the impact on the perceived safety, and well-being of the cellular phone users in Nigeria. The results showed a high percentage of agreement (40.00%) in question B1, in question B3 (36.67%), question B4 (agree, 36.37% and strongly agree, 33.88%), and 38.98% in question B5. In question B2, the responses showed the percent of agree (25.00%), uncertain (27.50%), and disagree (23.33%). A possible explanation was users were not comfortable with the condition of the roads and other issues associated with driving with cellular phone in their cars.

The results indicated cellular phone usage has had some impacts on perceived safety and well-being of its users supporting the second hypothesis.

Section C

This research section was regarding participants' perceived increase in connectivity between the user and their family. This research question was addressed in five sub-questions. The results showed there was a high percentage of agreement and strongly agree in all questions. These data were: C1 (strongly agree, 59.84% and agree, 25.41%), C2 (strongly agree, 58.62% and agree 28.45%), C3 (strongly agree, 35.29%, and agree, 39.50%), C4 (strongly agree, 41.23 % and agree, 42.98%), and C5 (strongly agree, 45.22%, and agree 41.98%).

From the overall results, the hypothesis that survey participants perceived cellular phone usage has increased the connectively between the user and family is supported.The survey indicated participants have realized perceived positive impacts of cellular phone connectivity in both families and business.

With the three hypothese of this study, the overall thesis of this study was also supported in that the Nigerian population has perceived posititve impacts from the use of the cellular phone.

Summary of the Research

This study examined impacts of cellular phone usage on the Nigerian society. The thesis of the study purports the Nigerian population has perceived impacts from the use of the cellular phone. In addition, the study aimed to address the following research questions:

1. Underserved customers outnumber overserved customers in Nigerian cellular phone usage.
2. Cellular phone usage has had some impact on the perceived safety and well-being of its users.
3. Survey participant perceive cellular phone usage has increased the connectivity between the user and family.

Although, the main purpose of this research was to examine the positive impacts of cellular phones on the Nigerian society the review of literature assessed both the positive and negative impacts of this technology in the country and throughout the world. Further, it identified areas for further development and developed recommendations that would help improve further study.

Overall, the findings delivered mostly agree and strongly agree responses. Conclusions followed showing underserved customers outnumbered overserved customers in Nigerian cellular phone usage; cellular phone usage has had some perceived positive impacts on the safety and well-being of its users; and users feelcellular phones have increased the connectivity between the user's family and business.

Recommendation for Future Work

The researcher would recommends this the topic/thesis should be extended to rural area for wider participation of the citizens in Nigeria. This would produce higher number of results for better conclusions rather than depending on the urban dwellers to represent this population sector. Results/data from rural dwellers and urban dwellers together would represent the entire population of the country

In addition, the research should focus on specific sector of the economy. This will give insights of cellular phones' impacts on that particular sector and how it has boosted the economy. Further, focusing on a particular sector will maximize data to be collected from that sector. This could be used to assess the sector's income/expenditure.

Furthermore, the researcher would recommend the governmental sector and the military to relax restrictions on information. Because of the sensitive nature of the military and some governmental jobs, they have been reluctant to share information evaluated to research. However, the government could be more lenient regarding research into their sectors to realize potential positive results.

Appendices

Appendix A

Table A1.

Survey Instructment

S/N	**Statement on Research Variables**	**1**	**2**	**3**	**4**	**5**	**N/A**
`	**Underserved/Overserved Customers**						
A1	I am satisfied with the applications (software) available on my cell phone from the network providers.						
A2	I am satisfied with the number of services available from the network providers.						
A3	I feel satisfied with the innovations/technology (hardware) from the network providers.						
A4	I am satisfied with the network's promotional offers compared to their counterparts in other developing countries.						
	Customers' safety						
B1	I feel safer with having a cellular phone.						
B2	Now I have a cellular phone, I have the assurance of safety while driving a car.						
B3	Generally speaking, my cellular phone gives me a sense of safety.						
B4	My cellular phone provides me with emergency responsiveness.						
B5	Overall, my cellular phone has given me a sense of well being.						
	Connectivity						
C1	I feel more connected with						

	my family members now I have a cellular phone.						
C2	I can contact friends and loved ones while in different locations.						
C3	I can communicate/connect easily with people who live in rural areas.						
C4	The cellular phone has increased my connectivity with my work or business.						
C5	In general, the cellular phone has increased my connectivity with people.						

Appendix B

Table B1

The data

Underserved/Overserved Customers (A)				Customer Safety (B)					Connectivity (C)				
A1	A2	A3	A4	B1	B2	B3	B4	B5	C1	C2	C3	C4	C5
4	2	1	4	1	4	4	3	4	1	2	4	1	1
2	2	3	4	3	4	5	3	2	1	1	2	1	1
2	4	3	4	5	5	3	2	5	1	1	1	1	1
2	1	2	1	2	2	1	2		1	1	2	2	2
1	1	3	1		1	2	3	2	1	1	1	1	1
2	2	2	4	1	4	4	1	3	1	1	1	1	2
4	4	2	2	3	4	3	2	2	2	2	1	1	1
2	3	4	5	2	5	3	2	2	2	1	2	2	1
2	3	3	3	1		4	2	3	2		2	1	1
2	4	3	5	2	5		5	5	1	1	1	1	1
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4	4	3	3	5	3	5	5	5	5		4		
2	2	2	2	2	1	1	1	1	2	3	4	3	3
4	4	4	4	4	4	4	4	4	4	4	4	4	4
2	3	3	4	2	3	3	3	3	3	1	2	2	2
3	2	2	3	1	4	2	2	2	1	1	3	2	2
4	4	3	4	1	2	1	2	1	1	1	1	1	1

Underserved/Overserved Customers (A)				Customer Safety (B)					Connectivity (C)				
A1	A2	A3	A4	B1	B2	B3	B4	B5	C1	C2	C3	C4	C5
1	1	1	1	1	1	1	1	1	1	1	1	1	1
2	3	2	2	1	4	4	2	3	3	2	2	2	2
2	3	3	2	1	3	3	1	2	1	1	2	2	1
4	4	4	3	3	3	3	3	4	4	4	4	4	4
3	3	4		2	3	3	1	2	2	2	2	2	2
3	3	3	3	3	3	3	2	2	2	2	2	2	2
1	2	3	3	1	2	1	1	1	1	1	2	1	1
5	4	4	4	5	4	4	4		5	5	4	5	4
1	2	3	4	1	3	3	2	4	1	1	4	2	2
3	5	3	5	1	3	3		2	1	2	1	2	2
2	2	2	4	1	3	1	1	1	1	1	2	1	1
4	4	2	3	1	3	1	2	1	1	1	1	1	1
2	3	3	2	4	3	4	2	2	1	2	3	3	2
5	4	4	4	5	4	4	4	4	5	5	4	5	4
2	4	3	4	2	4	5	2	3	1		3	2	3
2	3	5	1	2	5	2	2	4	2	1	2	1	1
3	2	4	5	2	3	3	3	2	1	1	2	1	1
3	2	1	5	1	5	2	1	2	1	1	3	1	1
5	2	2	3	2	4	4	2	2	1	3	3	2	2
2	2	1	4	1	4	1	2	2	1	1	1	1	1
4	4	3	1	2	3	2	4	4	4	4	3	4	2
2	4	5	5	1	2	2	4	1	1	3	2	1	2
4	4	2	3	1	5	2	2	4	1	1	3	2	1
2	3	2	2	2	3	3	3	3	2	2	2	2	2
1	1	1	1	2	3	3	2	3	2	1	1	2	3
1	2	2	2	2	2	3	4	3	3	1	2	2	2
2	3	2	4	4	2	3	4		4	3	2	3	4
2	3	2	3	2	3	2	3	3	2	2	2	2	3
2	3	2	3	1	2	3	2	3	1	1	1	2	2
2	2	1	2	1	2	1	1	2	1	1	1	1	1
2	3	3	3		3	2	2	2	1	1	2	1	1
1	3	2	4	1	5	2	5	5	1	1	5	4	1
4	4	4	4	1	4	4	5	1	1	1	1	1	1
2	2	1	2	1	3	1	2	1	1	1	1	2	2
2	1	3	3	2	5	3	3	2	2	2	2	2	1
2	3	1	1	1	2	3	1	2	3	1	1	1	2
2	1	4	3	1	4		1	3	2	2	1		1
2	3	2	1	2		1	1	2	1	1	2	2	1
3	1	1	2	1	4	3	2	2	1	1	2	2	2
2	2	3	2	1	3	2	1	2	2	1	3	2	2

Underserved/Overserved Customers (A)				Customer Safety (B)					Connectivity (C)				
A1	A2	A3	A4	B1	B2	B3	B4	B5	C1	C2	C3	C4	C5
1	1	2	2	1	4	2	1	2	2	2	3	1	2
2	3	3	2	1	3	2	1	2	2	2	3	2	2
4	3	4	2	2	3	4	4	2	1	1	1	2	1
2	2	2	3	2	2	2	1	2	1	1	2	1	1
2	2	2	3	1	1	1	1	1	1	1	2	1	1
1	1	3	1	1	3	3	2	2	1	1	1	1	2
1	2	1	2	3	1	4	4	1	2	1	1	2	1
2	3	2	3	1	4	2	1	4	1		2	2	1
2	1	2	3	3	4	4	3	3	2		2	2	2
2	1	4	1	2	4	2	4	1	2	2	2	4	2
2	2	2	2	1	1	1	1	2	1	2	2	2	2
2	2	2	2	2	3	2	1	2	1	1	1	1	2
1	2	2	2	2	2	2	2	2	1	2	2	2	2
2	2	2	2	2	2	2	2	2	1	2	2	2	1
1	2	1	2	1	2	2	1		1	1	3	1	1
2	1	1	2	2	2	2	2	1	1	1	1	1	1
1	2	2	4	1	3	2	2	2	1	1	1	1	1
2	2	2	2	1	1	1	1	2	1	2	2	2	2
2	1	1	2	2	2	2	2	1	1	1	1	1	1
1	1	1	1	2	2	2	2	1	1	1	2	1	2
1	2	2	2	2	2	2	3	2	1	2	2	2	2
1	2	2	4	1	3	2	2	2	1	1	1	1	1
2	2	2	2	2	2	2	2	2	1	2	2	2	1
2	2	2	2	2	3	2	1	2	1	1	1	1	2
1	1	1	5	1	4	3	1	3	1	1	3	2	2
1	2	2	2	2	2	2	3	2	1	2	1	1	1
1	2	2	2	2	2	2	2	2	1	2	2	2	2
1	1	2	2	2	2	2	2	3	1	2	1	2	1
2	2	2	2	2	2	2	2	2	2	2	2	2	2
1	1	1	1	2	2	2	2	1	1	1	2	2	2
1	3	3	4	1	5	3	1	1	1	1	1	1	1
3	3	4	2	2	4	3	1	1	1	1	3	3	4
3	2	3		5	1	1	3	5	3	4	5		
1	3	3	4	1	5	1	1	1	1	1	1	2	2
2	2	2	2	1	2	2	1	3	1				
1	3	3	4	1	5	3	1	1	1	1	1	2	2
3	2	2	2	5	1	1	1	5	3	4	4		
5	5	4	4	4	5	4	4	5	3	4	5	3	1
3	3	2	4	1	1	1	1	1	2	1	1	1	1
3	3	4	2	2	4	3	1	1	1	1	1	3	3

Underserved/Overserved Customers (A)				Customer Safety (B)					Connectivity (C)				
A1	A2	A3	A4	B1	B2	B3	B4	B5	C1	C2	C3	C4	C5
3	3	4	3	1	2	1	1	1	1	2	1		
1	3	3	4	1	5	3	1	1	1	1	1	2	2
1	4	3	5	2	4	4	1	1	2	2	2	4	4
4	4	4		1	3	3	2	1	2	1	1	3	2
1	3	3	4	1	5	3	1	1	1	1	1	1	2
4	4	3		1	3	3	2	3	1	1	3	1	2
3	3	3	4	1	1	1	1	1	1	1	1	1	1
2	2	2	2	1	1	1	1	1	3	1			
3	3	4	3	1	1	2	2	1	1	1			

References

Abi, J., Heeks, R., & Whalley, J. (2008). The Impact of mobile telephony on developing country micro-enterprise: A Nigerian case study. *Research Article, 4(4),* 47-65.

Abiodun, A. J, Omotayo & Oyenyi. (2008). Customers service in the retention of mobile phone users in Nigeria. *African Journal of Business Management, 2(2),* 1-5.

Adeleke, A., & Aminu, S.A. (2012). The determinants of customers loyalty in Nigeria's GSM Market. *International Journal of Business and Social Science, 3 (14),* 209-222.

Adesope, O.M., & Efe-Omojevwe, Z.A. (2010). The impact of Global System for Mobile Communication (GSM) revolution on low income earners in Nigeria. *20 (3),* 1-3 Retrieved from http/www. Iimahd.ernet.in /egov.

Adeyinka, T., Ajiboye, J.O., Emmanuel, A.O., and Wojuade, J.I. (2007). Stakeholders' perceptions of the impact of a global system for mobile communication on Nigeria's rural economy: Implication for an emerging communication industry. *The Journal of Community Information*, *3 (4)*.1-13

Ahmad, M.S., Ibhrahim, I., & Oye, N.D. (2011). Role of Information Communication Technology (ICT): implications on unemployment and Nigerian GDP. *Journal of international Academic Research, 11 (1).* 1-9.

Akinrinmade, A.F., Ijarotimi, O., & Lawal, W. (2013). Effects of unrestricted mobile phone usage in selected public places in Nigeria: A case study of Akure. *International Journal of Science and Research (IJSR), 2(5).* 224-228. Retrieved from http://www.ijsr.net.

Asiegbu, I.F., Igwe, S.R., & Iruka, C.H. (2012). Antecedent of intention-to-use a particular mobile service among South-South University lecturers in Nigeria. *International Journal of Business and Social Science, 3 (19),* 272-282.

Goon, P., Han, G.S., Lee, H., Muda, R., & Nair, M. (2012). Antecedent to mobile phone diffusion in a developing economy: The case of Malaysia. *International Journal of Management, 29 (1),* 205-227

Hammond, A., & Prahalad C.K. (2002). Serving the world's poor, profitably. *Harvard Business Review*. 4-11.

Hollenbach, F.M., & Pierskalla, J. H. (2013). Technology and collective action: The effectof cell phone coverage on political violence in Africa. *America Political Science Review, 107 (2),* Pg. 207-224

IIahiane, H. (2011). Mobile phone use, bricolage and the transformation of social and economic ties of micro-entrepreneur in urban Morocco. *International Journal of Business Anthropology, 2(1),* 31-47.

Isabona, J. (2013). The impact of telecommunication revolution in Nigeria: Health sectors perspective. *International Journal of Engineering Sciences, 2 (8),* 415-420. Retrieved from http:/www.tijournals.com.

International Telecommunication Union. (2008). Online statistics. Retrieved from http://www.itu.int/ITU-D/ICTEYE/Indicators/indicators.aspx .

Juwah, E. (2011). Telecommunication business in Nigeria: How far? Nigeria Communication Commission. Pg 1-9

Kolter, P. (1991). Marketing management: Analysis, Planning, Implementation and Control, N.J: Eaglewood Cliff.

Livingston, S. (2011). Africa's evolving infossystems: A pathway to security and stability. Africa center for strategic studies. Retrieved from http://africacenter.org. Pg. 1-69.

Lola, G.K., Olufemi, M. S., and Agboola, Y.H. (2012). Mobile Telecom (GSM): It impacts on household income generating capacity and business expansion in selected states in southwest Nigeria. *America-Eurasian Journal of Scientific, 7 (1).* 32-40

Madelely, J. (2007). Mobile phoned- a way out of poverty? *Appropriate Technology, 34 (1).* Pg. 9.

Mark, S. (16 May 2010). Study links cancer to mobile. *Scotland on Sunday (5),* 1-3. Retrieved from http://search.proquest.com

Mbiti, M., & Aker, J.C., (2010). Mobile phone and economic development in Africa. *Journal of Economic Perspective, 24 (3),* 207-232.

Mechael, P.N., (2009). The case for mHealth in developing countries. *Innovations/ winter 2009, 4 (1),* Pg 103-118.

NCC (Nigeria Communication Commission) 2010. Published article of the Tell Magazine, January 25, 2010, pp: 29-37.

Olatunbosun, J.M. (2009). Examination Malpractice in secondary schools in Nigeria: What sustain it? *European Journal of Education Studies , 1(3),*101-108.

Pertierra, R. (2005). Mobile Phones, Identity and discursive intimacy. *An Interdisciplinary Journal on Human in ICT Environments, 1 (1), 23-44*. Retrieved from http:/www.humantechnology .iyu.fi

Rohman, K.I., (2012). Will telecommunication development improve the quality of life in African Countries? *Info: the Journal of Policy, Regulation and Strategy for Telecommunications, Information and Media, 14 (4),* 36-51.

Sheng, H., & Trimi, S. (2008). Emerging trends in M-Government. *Communication of the ACM, 5 (5).* 53-58.

Taiwo, R., (2010). “The thumb tribe”: Creativity and social change through SMS in Nigeria. *California Linguistic Notes, 35 (1),* 1-17.