Routledge
Taylor & Francis Group

The Effects of Mobile Phone on the Socio-economic Life of the Rural Dwellers in the Niger Delta Region of Nigeria

Ebikabowei Emmanuel Baro* and Benake-ebide Christy Endouware

The University Library, Federal University, Otuoke, P.M.B. 126 Otuoke, Bayelsa State, Nigeria

This article aims to provide information on the effects of the mobile phone on the socio-economic life of the rural dwellers in the Niger Delta region of Nigeria. The study adopted a semi-structured interview method. The study covered nine villages selected from Delta and Bayelsa States in the Niger Delta region of Nigeria. Convenience sampling technique was used to select 129 respondents who voluntarily agreed to participate in the study. The interview was tape recorded and the information collected from the tape recordings were transcribed and coded. Similar viewpoints toward the same question were put together for the analysis. The study revealed that the mobile phone has brought immerse socio-economic impact on the rural dwellers in the Niger Delta region of Nigeria. The study revealed that mobile phone use enable the rural dwellers to communicate with family members and friends in urban areas; relatives in urban areas send recharge cards for them to sell for money instead of traveling to meet them, and Call Center Operators become self-employed and through that make a living. Finally, the frequent recharging of mobile phones leads to indebtedness. The participants mentioned challenges such as network failure, non-availability of recharge cards, unreliable or complete absence of power supply to charge batteries, high charges by Network Service Providers, stealing of mobile phones, and unskilled persons repairing phones in rural areas. The introduction of mobile phones has lead to reduction of rural–urban migration by many jobless youths.

Keywords: mobile phones; telecommunications; rural areas; Nigeria

Introduction

In 2001, the former president Olusagun Obasanjo introduced the Global System for Mobile (GSM) communications in Nigeria. When you stand at a busy Lagos street corner for 10 minutes, you cannot count the number of commuters and pedestrians both making or receiving calls and those engaging in retailing recharge cards. Mobile telephony is one of the information and communications technologies (ICTs) that is reshaping and revolutionizing communication in an increasingly global village. The former United Nations Secretary-general Kofi Annan, points out that, "If harnessed properly, Information and Communication Technologies (ICTs) have the potential to improve all aspects of our social, economic and cultural life, ICT can serve as an engine for development in the twenty-first century" (Annan, 2003, p. 1).

The National Policy on Telecommunications has as a medium-term objective to ensure that public telecommunication facilities are accessible to all communities in the country (Federal Republic of Nigeria, 2001). In response to the International Telecommunication Union (ITU) mission of developing telecommunication in rural communities, the Federal Government of Nigeria in collaboration with two Chinese firms (Alcatel Shanghai Bell and ZTE Corporation) has embarked on a National Rural Telephone Programme. The first phase of which has so far covered 218 local governments in the 36 states of the Federation (Usman, 2005).

The Niger Delta region of Nigeria

The Niger Delta is Africa's largest delta covering some 7000 square kilometers. About one-third of this area is made up of wetlands. The entire Niger Delta topography is characterized by a maze of effluents, creeks, and swamps criss-crossing the area, low-lying plains in varying dimensions (Alagoa, 1999). The Niger Delta region is situated at the southern part of Nigeria. It is made up of nine states, namely: Delta, Bayelsa, Edo, Rivers, Akwa Ibom, Cross River, Ondo, Abia and Imo. The people speak different languages such as Ijaw, Urhobo, Ishian, Kalabare, Isoko, Ibibio, Efik, and Ibo. They engage in different means to earn a living, such as: fishing, farming, canoe carving, palm-wine tapping, rubber taping, palm oil production, and small enterprises.

Mobiles blur the lines between livelihoods and lives, and not just among smartphone-wielding information workers. Rather, this blurring can be experienced by almost anyone engaged with work (Donner, 2009). Several studies have shown that telephone and micro-enterprises provide the most significant part of income generation and development in many developing countries, and that they are "a key ingredient in poverty reduction" (ILO, 2001; Palmer, 2004, p. 31). Since telecommunications started their services in Nigeria, the rural areas were denied access to the services until, the advent of GSM which extended its services to the rural areas of Nigeria. For Example, Adeoti and Adeoti (2008) found that the relatively lower cost of acquiring GSM lines stands out more than any other factor as the driver of decision to adopt GSM lines by small-scale entrepreneurs in a major Nigerian city (Ibadan). The rural dwellers have not been feeling the impact of telecommunications services either in their social or economic life prior to the introduction of mobile phones. Despite the worldwide boom in mobile phone ownership, studies of the social and economic effects of mobile phone use in the rural areas of developing countries are rare. Therefore, this study will provide information on the effects of mobile phones on livelihoods of rural dwellers in the Niger Delta region of Nigeria. The study, therefore, will provide answers to the following questions.

Research questions

RQ1. To know the effects of mobile phones on the social life of the rural dwellers.
RQ2. To know the effects of mobile phones on the economic life of the rural dwellers.
    (i) The private mobile phone owners.
    (ii) The Call Center Operators.
RQ3. To know some of the challenges facing mobile phone users in the rural areas.

Literature review

Social effects of mobile phone to rural dwellers in Africa

Different works on the use of mobile phones and social capital in sub-Saharan Africa have been conducted by scholars. James Goodman's work for Vodafone concludes that, in South Africa and Tanzania, mobile phones are used mostly in strong links (family and friends) but also in weak links with others outside the community, including businessmen (Goodman, 2005, pp. 59, 63). Other much larger multicountry studies (Miller et al., 2005; Souter et al., 2005) also show that the telephone is used extensively to maintain social networks (Molony, 2007).

The existence of an intrinsic perspective (the mobile's utility for pursuing self-presentation/social uses and gratifications such as "to be like everyone else") focused on style, happiness, and social status given the way mobiles have been socially constructed and aggressively marketed as status symbols and consumption items (Donner, 2004). Duncombe and Heeks (2001, p. 19) conclude that the telephone is the information-related technology that has done the most

to reduce costs, increase income and reduce uncertainty and risk. Phones support the current reality of informal information systems, they can help extend social and business networks, and they clearly substitute for journeys and, in some cases, for brokers, traders and other business intermediaries.

Presently, the cheap nature of the GSM has led people of both low- and high-income levels to have access to mobile services, either through owning or sharing a phone. Electricity also does not pose as a barrier to owning a phone, as batteries can be charged in the nearest town or charged locally by a generator. As for the rural dwellers, mobile phones have typically had positive economic and social impacts. Mobile phone creates an informed society where everybody learns the act of communicating with each other via mobile phones (Nwokoro, 2005).

Some of the benefits of the telecom sector as enumerated by Nwokoro (2005) includes: a narrowing of the rural–urban divide, improvement of family and social relationships, as well as a significant improvement in the security situation and corporate social responsibilities that have brought smiles to a segment of the Nigerian society. Writing on the effects of cell phone in Africa, Butler (2005) enumerated the benefits to include communicating with distant family members, making it easier to find employment opportunities, having more options during emergency situations. Jagun, Heeks, and Whalley (2008) point out that there are ways in which costs and risks are being reduced and time is saved, often by substitution of journeys. Jamais (2006, p. 14) asserted that, "the villager . . . May not need a phone . . . to live her day-to-day life, but if it allows ongoing contacts with her son in a city hundred of miles away, that phone . . . will be something she will treasure."

Effects of mobile phones on market information

In a comprehensive review of the contributions of telecommunications to development, Saunders, Warford, and Wellenius (1994) argued that telecommunications can contribute to economic development in the following ways: better market information; improved transport efficiency and more distributed economic development; reduction of isolation and increase in security for villages, organizations, and people; increased connectivity to and coordination with international economic activity. It is expected that the diffusion of mobiles throughout the population of a developing nation would enable each of these factors, just as landlines have done. Mobile phones have reduced travel needs, provided better access to business information, easy contact with family members and friends (Usman, 2005). That is why Jamais (2006) pointed out that the phone gets used for a wide variety of purposes, such as staying in touch with families and getting commodity prices.

Similarly, Butler (2005) remarked that mobile phones enable farmers to check prices in different markets before selling produce, and eventually allowing the quick and easy transfer of funds. Mobile phones seemed particularly to be valued because they were seen to substitute for unproductive travel (Jagun et al., 2008). Examples given by the scholars Jagun et al. (2008) were journeys by weavers to an intermediary only to find that there were no orders available, or by an intermediary/weaver in search of a particular color of thread that proved out of stock, or other journeys where the intended visitee was absent from home. Jagun et al. (2008, p. 57) state that, "mobile phones were seen to have reduced some of the risks inherent in commerce. Mobile phones had reduced the number of journeys required, journeys that were seen as sources of physical risk."

Ochonogor (2006) points out that telecommunications services boost traders contact with farmers/suppliers, reduce the need to travel, improves trade, and create informed society. His study established the fact that even those who do not own mobile phones make use of it, as they patronize pay-phone-centers to make their contact and reach others.

At the domestic level, ICT allows micro and small enterprises (MSES) operators to have more reliable communication and access broader sources of information than ever before. There is a growing body of literature (Donner, 2004; Jagun et al., 2008) showing how MSEs, a hugely important source of income and labor for many Africans (Commission for Africa, 2005, p. 239; World Bank, 2004, p. 39), have taken up mobile with vigor.

ICTs have the potential to accelerate sharing of information, ideas, and strategies by individuals and communities and also they enhance people's ability to make the informed decisions that would lead to economic and social development (Umar, 2006). This development, Umar argued, would help to bridge disparities between the rich and the poor, the rural and the urban, men and women, the north and the south, and encourage a collaborative global network toward equality and empowerment for all. The issue of communications for rural and remote areas is critical, as policy statements and recommendations have confirmed the need to promote basic communication, broadcasting, and the Internet as tools for development in rural and remote areas (Duncombe & Heeks, 2002). Previous studies reported that mobile phones offer access to information, particularly about prices (Bertolini, 2002; Eggleston, Jensen, & Zeckhauser, 2002), and productivity, by time-savings, or reduction of travel expenses (Bertolini, 2002), in addition to constant connectivity with friends, family, and business contacts (Katz & Aakhus, 2002). Overa's study demonstrates how cell phones "telecommunication pioneers" have changed informal traders mode of operation to reduce both transportation and transaction costs in Ghana. It is argued that traders with access to tools for more efficient communication over long distances provide better services and create a higher profit potential than others (Overa, 2006). The Commonwealth Telecommunications Organization completed a thorough study looking at the economic impact of telecommunications and poverty reduction across three developing countries (Souter et al., 2005), its findings are that telecommunications can help in enabling producers, intermediaries, and consumers to receive information about the availability and price of goods, thus enhancing market performance.

Effects of mobile phones on business

Mobile phones have become an essential tool for small businesses. Some of the areas through which rural dwellers can have sustainable livelihoods (in this context, the means through which people earn a living to enable them meet their family needs such as paying children's school fees). Through mobile phones, small-scale businesses such as the Call Center Operators (CCOs) – where an individual provides telephone services for the community for per-minute charge have emerged. Some service providers have already provided added incentives to this type of business such that Public Telephone Operators are given special bonuses and tariffs so that they can make some profit. Mobile telephony, as foreseen by the World Trade Organization, turned out to be a lucrative business in Nigeria. In every nook and cranny of Nigeria's streets, mobile telephone business is viable and many hitherto unemployed people are now involved. These range from people who were unemployed, professional graduates, particularly young women and people between the ages of 17 and 30. In many cases, young women, fresh out of high school even the university top the list of those involved in the mobile phone business either CCOs or selling recharge cards for profit-making. Related to this is the sale of recharge cards, where recharge cards are bought at a discount and sold at the standard rates. The provision of connectivity to the rural areas meant development of those areas while, from a business perspective it meant tapping into the neglected rural market constituting 80% of the population and at least 50% of the economy (Umar, 2006).

In Botswana, the state-owned Botswana telecommunication corporation, under a clear government mandate, set itself the target of serving all identifiable demand in villages (Clarkstone,

Dymond, & Mrazek, 2003). The center for Economic Policy Research Studies on the social and economic impact of mobile phones reported that small businesses in South Africa rely on mobile phones, while the Nigerian market is doubling annually (Gumm, 2005). When mobile telephony was introduced in Umuahia, Abia State in Nigeria, a young Business Administration graduate who was laid off by Golden Brewery where he worked as a store manager started a communication center at Item Street as a wholesale dealer and retailer of mobile phones, SIM cards, and accessories, including recharge cards to other small CCOs and individuals. He admits that the business is profitable and good, as the profit he makes from the business enables him to increase his capital base as well as support his family. In addition to the financial gain derived from the mobile telephone business, he has acquired skills in repairing minor faults, and this further increased his income (Oji-Okoro, 2006). Duncombe and Heeks (2002) reported that poor rural entrepreneurs in Botswana rely heavily on informal, social, and local information systems. These systems, as Duncombe and Heeks argued, can also be constrained and insular, priorities for breaking this insularity will be greater access to shared telephone services. A good day's earning not only ensure sustainability of the business, but also goes a long way in meeting strategic family needs such as educational fees and health-care expenses.

Africa's market, for example, has grown on average by 60% over the past few years. The continent now has the highest ratio of mobile-to-total telephone subscribers on the planet (ITU, 2008). Telephone is now available for the first time to hundreds of millions of people in developing countries such as Nigeria; even in the lowest-income areas people now own handsets and can privately subscribe to receive services from mobile phone operators. For example, one of the fastest growing ICTs in Nigeria today is the mobile telephone with prepaid phone cards considered as the key stimulus to this growth. Umar (2006) states that mobile phone usage has been growing twice as fast in low-income countries as compared with high-income countries between 2001 and 2005. The rapid spread of the mobile phone in so many African countries is a remarkable phenomenon, especially in the context of their huge economic and social challenges. There have been large infrastructural investments, which have enabled millions of people to communicate better. One frequently used measure is to formalize services access and investment obligations as part of corporation's mandate. This has been the case, for example, in Thailand, the National Telecommunications Operator has assumed the primary responsibility of connecting every village and sub-village in the country to the network (Kayani & Dymond, 2005).

Mobile telephony is no doubt an enabler of emerging lucrative businesses that can move from micro- to medium-scale business if appropriately managed. According to Charles-Iyoha (2006, p. 64),

> mediated access through mobile telephone may likely act as a bridge to women's full participation in the knowledge economy if its potentials are fully optimized by rural dwellers, particularly women who constitute the bulk of the labour force in rural Nigeria.

The emerging rural initiatives such as Mtel's Orange Training Campaign, Cetel's Project ROSE, and the Ikoyi/Obalende Local Government Poverty Alleviation Programme being supported by Cetel (Peter, 2005) will go a long way in facilitating sustainable livelihood among rural dwellers. Molony (2009) reported on three Tanzanian businesswomen who have managed to enter the high-profit area of bulk exporting of African blackwood (ebony) carvings. Their experience shows the successful use of ICT applications as crucial tools to existing networks and to maintain trust with wealthy foreign buyers. With the help of ICT to deal with these relationships, the women stay in touch by "keeping up appearance" at a social level, albeit at a distance.

In Nigeria, one success story of empowering rural dwellers is the MTN Rural Telephone Project. The project was implemented in partnership with Growing Businesses Foundation, a non-profit organization, which interfaces with identified micro-finance institutions, train beneficiaries, and monitors the projects. This project is directly targeted at the women in the rural areas of the country. The project being a micro-finance scheme enables rural women in Nigeria, referred to as "phone ladies" to operate using a small loan given to them through micro-finance institutions (Umar, 2006). This way, the women are empowered as they are provided viable business opportunities. The pilot phase of the rural telephone project tagged the "Ogene" project was launched at the Ofubi Africa centre, Enugu in Eastern Nigeria. The project, which kicked off with five beneficiaries is steadily gaining ground and acceptability and has been replicated in over 90 rural communities in Enugu, Akwa Ibom, Edo, Delta, Kogi, Kaduna, Borno, and Kwara States (Umar, 2006).

The recent directive from the Nigerian Communication Commission for all users of the mobile lines to have their lines registered before the end of September 2011 for security reasons, led to telecommunication service providers to employ thousands of youths for the mobile line registration exercise in the cities and rural areas. These exercise made many fresh graduates who were unemployed become employed by the service providers and earn money. This was earlier pointed out by Nwokoro (2005, p. 23) emphasizing on the impact of the Tele-communications in Nigerian society stated that,

> by all standards, the sector has performed exceptionally well in meeting the National Economic and Empowerment Development Strategy (NEEDS) targets and socio-economic development ... over 135,000 persons have been directly and indirectly been employed by the operators and their distribution chain components ...

The downside of mobile phone usage

Network congestion and network failures are some of the reasons for switching networks from one network to another in the rural areas. This leads to customers complaining of their calls not going through thereby discouraging them from using such networks (Charles-Iyoha, 2006). Another major challenge includes inadequate power supply which sometimes keeps CCOs out of business (Tiemo, 2006). This may be the reason why some operators of call centers having extra batteries or establishing cordial relationship with owners of electric power generating sets who reside close to the call centers. Other problems include robbery of mobile sets from call centers, recharge cards, and total sales realized in the call center (Oji-Okoro, 2006). Ochonogor (2006) also enumerated the challenges of those using mobile phones and CCOs to include the following: theft, erratic power supply, understanding of the menu bars, high cost of recharging, low validity period, network congestion, network failure, and withholding of SMS.

On the other hand, since the advent of the mobile phone use in Nigeria, many users have been indebted as a result of recharging their phones and making calls frequently. The mobile phones no doubt have made some people to be perpetual liars – for example a boy will call a girl in Yenagoa to say he is in Abuja the Federal Capital of Nigeria whereas he is in Yenagoa the Bayelsa State capital. That is why some scholars have emphasized the need for "trust" in the use of mobile phones (Lloyd-Evans & Potter, 2002; Molony, 2006). Molony (2006) suggested that mobile phone can help farmers with supply and demand information, but he noted that this is only so long as there is trust between the two. In this respect, the mobile phone is a technology that both customer and retailer employ to ensure that a message is communicated in the most efficient way possible so that both parties can make reliable methods of conducting business that was first established when both parties met face-to-face.

Methodology

The study covered mobile phone users and CCOs in the rural areas of the Niger Delta region of Nigeria. Eight villages in Delta and Bayelsa States were selected for the study. These villages were selected based on the fact that economic and social activities flourish in them. Economic activities include fishing, farming, canoe carving, palm-wine tapping, rubber taping, palm oil production, sand supply, and other small-scale businesses. Social activities include beach carnivals, masquerade festivals, and traditional marriage ceremonies. In each of these activities, the rural dwellers always use the GSM to communicate with those of their friends and relatives in far places to give them current information concerning those activities. In the same manner, those engaged in economic activities also communicate with their customers on how to sell their products, contact others for market prices.

Using convenience sampling technique, participants who willingly agreed to be engaged in an interview were selected. In total, 129 respondents voluntarily agreed to participate in the study. The interviews were conducted with each participant separately. The interviews lasted for about 30 min with each interviewee. A semi-structured interview with open-ended questions was used (Appendix 1). Interview method was chosen to collect data because in the rural areas not every person that owns a phone can read and write, but they can speak either good English or pidgin English. The breakdown of the participants by village and state is as follows:

- 17 participants from Aghoro in Bayelsa State,
- 18 participants from Amassoma in Bayelsa State,
- 15 participants from Sagbama in Bayelsa State,
- 16 participants from Bomadi in Delta state,
- 17 participants from Burutu in Delta State,
- 14 participants from Odimodi in Delta State,
- 10 participants from Ayakoromo in Delta State,
- 22 participants from Patani in Delta State.

Among the respondents that participated in the interview, 53 are using the mobile phone for commercial purposes, that is, operating call centers and selling recharge cards, and charging batteries with generator for people at the rate of N50 (US$0.4) per battery as means of their livelihood, while 76 are private owners of mobile phone for personal use.

Data analysis

The interviews with every single participant were tape recorded. The information collected from the tape recordings were transcribed and coded by a statistician, Diepreye Okodoko (a lecturer at Niger Delta University). The answers were listed by topics and then reorganized so that similar viewpoints toward the same question were put together deductively. The responses were finally grouped into similar categories for analysis.

Results and discussion

Effect of mobile phone on the social life of the rural dwellers

The responses from the 129 participants were used to provide answer to question 1. The responses were analyzed and grouped under similar categories (Table 1). The study revealed that the rural dwellers in the Niger Delta region use the mobile phone to communicate with their friends, and family members staying far away from the villages either in the urban areas (mentioned 109 times), followed by makes them to be up-to-date with different current events in the society (mentioned 84 times) ($n = 129$). According to one participant "I use my

GSM phone to call my children in Lagos everyday to know how they are doing." This finding is in agreement with Nwokoro (2005) who stated that use of mobile phone improves family and social relationships. Mobile phones according to Rettie (2008, p. 45) enable interaction in places where it was previously impossible, facilitating social networks. The researcher concludes that mobile phones increase access to networks and facilitate the development and maintenance of network ties; this highlights the catalytic role of communication technology in social network. For example, Quadir (1998) reported that the migrant workers throughout the world from Bangladeshi villages could call home to know how their families were doing and if the money they were sending home was indeed reached its destinations. Thus, in villages where phones had arrived, life changed for people that lived there, not just for the women who retailed telephone services.

More than half (61.2%) of the participants mentioned that "mobile phone helps them to send SMS messages to people" ($n = 129$). Other social effects mentioned were "send emails to people," "happy to own a phone." Mobile telephone usage by individuals in the rural areas enables them to communicate with loved ones and sending of SMS messages to people to keep in-touch with happenings. People can also discuss what is going on in their respective communities and share information, and also with the added value of relaying instant voice messages to other people. The ownership of mobile phones has also made people of different groups; youths, men, and women be like their friends who probably got GSM first. In other words, this makes them to feel happy that they now belong to mobile phone owners in the rural areas.

The majority of participants mentioned that they use the GSM to have access to the Internet to connect with friends on Facebook, Twitter, and other social networks (mentioned 77 times) ($n = 129$). Instead of traveling to urban areas before having access to cyber cafes, the youth in the rural areas simply use their GSM to connect to the Internet and chat with friends on Facebook and other social networks. As mentioned by one participant "my GSM phone is my cyber café, with it I get access to Internet and communicate with my friends on Facebook." These have allowed many to keep relationships with childhood friends and relatives whom they have not seen for a very long time. The responses also show that they use the GSM to search for relevant information online, snap photos in social gatherings such as at beach parties and also video events.

The effect of mobile phone on the economic life of private mobile phone owners in the rural dwellers

For clarity, the responses of the 76 private mobile phone owners were used for analysis to provide answer to question 2(i). The responses were analyzed and grouped under similar

Table 1.   Effect of mobile phone on the social life of the rural dwellers.

Categories	Frequency	Percentage
To communicate with their friends and family members that are staying far away from the village	109	84.5
Makes them to be up-to-date with different current events in the society	84	65.1
Helps them to send SMS messages to people	79	61.2
Access to Internet to connect with friends on Facebook, Twitter, and other social networks	77	59.7
Helps them to send emails to friends in the absence of cyber cafés in rural areas	73	56.6
Feeling happy to own a phone like their friends	68	52.7
Using the mobile phone to snap photos and video events	64	49.6

categories (Table 2). From Table 2, majority (94.7%) of the participants mentioned that using the GSM helps to save money that could have been used for travel ($n = 76$). Making mobile phone calls saves time and money by substituting for journeys. Money is saved when compared with cost of transportation just to deliver a message somewhere in the urban area. For example, interviewees mentioned a call rate of N25 (US$ 0.2) per minute being cheaper than a taxi cost for an average journey of N1000 (US$8), given that calls were normally completed in less than 10 min to deliver an important message. This reinforced the earlier findings of Tiemo (2006, p. 97) who stated that the use of mobile phones "has reduced the risk of traveling among the rural dwellers." Several researchers such as Jagun et al. (2008), Ochonogor (2006), and Bertolini (2002) have also concluded that making mobile phone calls substitute for travel that would have cost a lot of money.

Mobile phone "now affordable for everyone" was mentioned by participants 71 times ($n = 76$). This finding agrees with the findings of Adeoti and Adeoti (2008) that the advent of mobile telephony in Nigeria has significantly improved telephone access among the strata of the population that could not afford the relatively expensive and inefficient fixed telephone lines. Mobile phone lines becoming cheap and affordable to all allow people of different economic status both rich and poor to have access to telecommunications services in the rural areas. Mobile telephony presents innovative approaches to bridge the digital divide between the rich and the poor through its affordability. Prior to the advent of the mobile phone, only a few who were privileged and economically strong benefited from Nigerian Telecommucations Limited (NITEL), Nigeria's publicly owned telecommunications services. It was so bad that a public officer once said that telecommunications services are not for the poor. Today, the story is different as the rural areas now have access to the telecommunications services, Kudos, due to the deregulation of the sector which paved the way for private sector participation in telecommunications service provision, particularly mobile telephony in Nigeria. With N3500 (US$28), one can buy a GSM phone and have access to telecommunications services. Some of the poorest youths, men, and women in the villages now held in their hands an instrument of global communication with which they communicate with their family members and friends living far from the village.

The majority (89.5%) of the participants mentioned that "people from urban areas send recharge cards to their relatives in the rural areas to be sold for money" ($n = 76$). According to one private mobile phone user – *through the mobile phone, my aunt sends recharge cards to me which I will sell in turn to get money that I will spend at that particular time*. In other words, people in the rural areas get money from their relatives in urban areas without necessarily traveling to meet them in the urban areas to request for money. Therefore, the mobile phone has helped them avoid the travel expenses and the risk involve in traveling to meet relatives. Owning

Table 2. Effect of mobile phone on the economic life of the rural dwellers.

Categories	Frequency	Percentage
Helps to save money that could have been used for travels to meet friends/relatives in the urban area	72	94.7
Now affordable for everyone to have access to its services	71	93.4
People from urban areas send recharge cards to their relatives in the rural areas to be sold for money	68	89.5
Owning GSM leads to debt by recharging everyday	67	88.2
Owning GSM helps to make business connections	56	73.7
Saves time and money that would have been used in going to cyber café	53	69.7
Engaging in battery charging business with generator as source of making money	38	50

GSM leads to debt by recharging everyday was mentioned 67 times by participants. In the words of one private mobile phone owner – *it affects my finances negatively by recharging all day just to call people*. That is to say, the frequent use of the mobile phone to make calls leads to people owing debt by buying recharge cards on credit. Some people can go to the extent of using the money they would have use for family up-keep for recharge cards only to make calls.

Other areas mentioned by the participants were "saves time and money that would have been used in going to cyber café" mentioned 53 times by the participants. Since there are no cyber cafes in the rural areas, the mobile phone users simply connect to the Internet to browse for information or send email messages to friends. Half (50%) of the participants mentioned engaging in battery charging business to make money ($n = 76$). The use of mobile phones by nearly everyone in the rural areas has brought in new business, by engaging in battery charging with generator as source of their livelihood. In order to overcome the challenge of lack of electricity in the rural areas, young boys and girls who are jobless engaged in small-scale business such as charging batteries for a fee in the communities. The young boys and girls, who engage in that business, buy small generator and sockets as many as possible and nailing them on a flat board, where they are connected to the generator. This gives the opportunity to those private mobile phone users in rural areas that want to charge their batteries do so at the rate of N50 (US$0.4) per battery.

The effect of mobile phone on the economic life of CCOs in the rural dwellers

Responses of the 53 mobile phone CCOs were used to provide answer to question 2(ii). The responses were analyzed and grouped under similar categories (Table 3). The study revealed that mobile phone helped to operate phone call business as their source of livelihood (mentioned 52 times) ($n = 53$). Since GSM licensing, a number of "phone shops" have sprung up around villages in the Niger Delta region of Nigeria, this have paved way for small-scale businesses such as "Call Center Operating." These are physical premises or the so-called "umbrella people" who sit outside under an umbrella, selling recharge cards, using their mobile phones to make calls for per minute charges. With the phone call business, jobless youths, and men and women now become self-employed. These, in other words, have reduced the rural–urban migration where youths evacuate the villages in search of employment in the cities. This finding supports the findings of Tiemo (2006) who stated that the emergence of GSM in Nigeria has brought many opportunities such as GSM call centers, offered as small-scale businesses which have provided employment to members of the society. He concluded that the rural dwellers having recognized that ownership and maintenance of a mobile line is important to elevating the standard of living in the rural communities in Delta State. Nigeria is now

Table 3. The effect of mobile phone on the economic life of CCOs in the rural dwellers.

Categories	Frequency	Percentage
Helped to operate phone call business as their source of livelihood	52	98.1
Mobile phone call business is simple to operate	51	96.2
Sales of recharge cards and other GSM accessories	44	83.0
Little capital is involved in starting the phone call business	43	81.1
It saves money by sending SMS messages to customers that could have been used for travels to get prices of goods	31	58.5

officially the largest growing market for telecommunications in Africa and possesses the most vibrant fixed and mobile telephone sectors in Africa (Umar, 2006).

A total of 44 (83.0%) participants mentioned "sales of recharge cards and GSM accessories" ($n = 53$). This finding supports earlier findings by Charles-Iyoha (2006), who reported that a number of female respondents in Lagos, Ogun, and some parts of Delta State affirmed that they now have a source of livelihood and regular income as well as give a semblance of financial independence. She further stated that 75% of the 50 women interviewed indicated that this was their first job and only source of income. According to Umar (2006, p. 45), "a large majority of small businesses owners said mobile phone have brought higher profits, turnover and increased efficiency, although they are also paying higher call charges." As a tool for sustainable livelihoods, the mobile telephone also provides employment for many who would have been idle to sell mobile phone accessories. With many unemployed youths in Nigeria, those that switched to mobile phone call business are happy because they have an opportunity to earn income to support themselves and their families.

The majority (96.2%) of the participants mentioned that mobile phone call business is simple to operate ($n = 53$). According to the participants, all you need to do is to learn how to make call, check call duration and load credits for customers to use. Forty-three participants also mentioned that "little capital is involved in starting phone call business" ($n = 53$). One participant added that,

> what you need to do is to buy one or two cheap Nokia phone sold at N3,500 (US$28) each, buy one big MTN umbrella, plastic table and two or three plastic chairs for customers. That is what it takes to start mobile phone business in the rural areas.

For example, a local government chairman in Delta State, in order to fulfill his campaign promises of empowering the youths in the rural areas, bought generators and GSM phones and distributed them to communities for them to use for phone call business. This involvement of the rural poor became appreciated as a good development strategy for promoting self-employment. Aitkin (2004, p. 24) noted that "the introduction of telephones can have a rapid and dramatic impact on women in rural and remote communities." Since the advent of the GSM in Nigeria, most businesses in Africa's most populous nation run on mobile phones. Nigeria is a good example for a case study of a success story on the impact of GSM on any country's economy. GSM network provides coverage to homes, to workplaces, and even to the wilderness. People carry handsets with them as they move from place to place and between social environments. By enabling and strengthening social and economic relationships at a distance, mobiles shift time and place, and complicate contexts and roles to an even greater degree than the landlines that preceded them (Donner, 2009).

More than half (58.5%) of the participants mentioned that "it saves money by sending SMS messages to customers" ($n = 53$). The mobile phone helps small-scale business owners to communicate effectively and conveniently by sending text messages from customers to retailers and receiving business information such as prices of goods. This finding agrees with Jensen (2007, p. 889), who in his study of the fishing industry in Kerala, the South India, talks of a "digital provide" because fishermen without mobile phones do not benefit from some of the spillover effects of improved market functioning created by those who do own mobile phones. According to the researcher, the richer fishermen who purchased phones found their profitability increasing roughly twice as much as that of the poorer fishermen who did not own phones. Similarly, Jagun et al. (2008, p. 61) reported that in terms of objective evidence and also in the perceptions of stakeholders, mobiles were seen to reduce the delays, reduce the financial costs, and reduce the personal risks of involvement in commerce in the cloth-weaving sector in Nigeria. The researchers stated that, mobile phones did help to make trade and markets in the cloth-weaving sector operate somewhat more efficiently and effectively.

The challenges faced by mobile phone owners and CCOs in the rural areas

The responses from the 129 participants were used to provide answer to question 3. The responses were analyzed and grouped under similar categories (Table 4). The highly mentioned challenge was that of "unreliable/absence of power supply" (mentioned 121 times) ($n = 129$). The absence of electricity supply in the rural areas is a challenge to mobile phone users in the rural areas of Nigeria. This may be why they end up by patronizing those charging battery for a fee of N50 with private generator. More than half (59.7%) of the participants mentioned "high charges by Network Service Providers e.g. MTN" ($n = 129$). CCOs often complain of not making enough gain due to high charges by Network Service Providers. Network failures was another challenge mentioned 73 times ($n = 129$). According to one CCO "when the network is bad, it affects the business, customers will no longer make calls." This finding agrees with Charles-Iyoha (2006) who in her study identified network congestion and the challenge of providing quality services with inadequate infrastructure as reasons for switching networks in Nigeria. In the same manner, Ochonogor (2006) also in his study identified network congestion, network failure, and withholding of SMS as some challenges facing mobile phone users and operators in Obiaruku and its environs in Delta State, Nigeria.

Other challenges mentioned by participants were "stealing of mobile phones" mentioned by 56 (43.4%) participants, "unskilled persons repairing phones in the rural areas" 51 (39.5%), and "non-availability of recharge cards" mentioned by 44 (34.1%) participants ($n = 129$). CCOs and mobile phone owners in the rural areas always complain of non-availability of recharge cards. Some times, they travel miles to get recharge cards for sell or use. Other challenges are high charges by Network Service Providers, e.g. MTN (mobile telephone network), unskilled persons repairing phones in the rural areas is a major challenges that confront the mobile phone users and CCOs in the rural areas in the Niger Delta region of Nigeria. Mobile phone users in the rural areas mentioned challenges such as unreliable or complete absence of power supply to charge batteries, high charges, network failures, stealing of phones, and non-availability. On 19 September 2003, mobile phone subscribers in Nigeria took the unprecedented step of switching off their handsets en masse. The subscribers took this symbolic step in protest against perceived exploitation by the existing mobile phone companies. Among other things, they were angered by allegedly exorbitant tariffs, poor reception, frequent and unfavorable changes in contract terms, and arbitrary reduction of credits (Obadere, 2006).

Interestingly, the question about "are there other ways the mobile phone has been of help to you?", 78 (60.5%) of the participants mentioned that "the advent of mobile phones have improved the security situation in the village" ($n = 129$). Nearly, all villages have vigilante group that secure the village from robbers and suspected criminals. Findings from this study revealed that mobile phone have helped the village vigilant groups to communicate between them and the Nigerian Police Force in the city case of any suspected person or group of persons around their community area. In other words, it is a tool used to improve security

Table 4.   The challenges faced by mobile phone owners and CCOs in the rural areas.

Categories	Frequency	Percentage
Unreliable/absence of power supply	121	93.8
High charges by Network Service Providers, e.g. MTN	77	59.7
Network failures	73	56.6
Stealing of mobile phones	56	43.4
Unskilled persons repairing phones in the rural areas	51	39.5
Non-availability of recharge cards	44	34.1

situation in the rural areas, thereby, helping them to make the areas free from criminals who make the villages their hiding place.

Conclusion

The rural dwellers use the mobile phone to communicate with their family members living far away from the villages, either to hear from them on how they are faring or to deliver an important message concerning the family. Before now, rural dwellers in a bid to reach out to their friends and family members travelled a long way to the urban areas, but with the advent of the GSM, contact can be made without traveling from one place to the other. Mobile phones seemed particularly to be valued because they were seen as a substitute for unproductive travel which confirmed the picture described in the literature. The GSM also helps the rural dwellers to communicate with friends through Facebook and other social networks as a way of keeping relationships.

Mobile telephone is creating sustainable improvement in the quality of Nigerians living in the rural areas and ensuring socio-economic transformation in the development process. As a result, mobile phones have revolutionized the methods of carrying out business in Nigeria and have brought considerable benefits to communities and small businesses as well as improved the rural dwellers way of living. Entrepreneurs have testified to the fact that it costs them less to transact business on a mobile phone than traveling from one destination to another. It is even cheaper to relay messages through SMS compared with having to make a call on both mobile and landline telephones. Since the advent of the GSM in Nigeria, thousands of jobs have been created and some very successful small- and medium-scale businesses have emerged. Mobile phones were seen to have reduced some of the risks inherent in commerce. They had reduced the number of journeys required; journeys that were seen as sources of physical risk. In Nigeria, most of the poorest people live in the rural areas. Hence, the focus of any vision-minded government or private investors should be to do all that is possible to alleviate poverty in the rural areas. When the rural dwellers are denied from having access to telecommunication services, the men and youths go out in search for white color jobs and better life in the cities.

Finally, this study has provided information on the area that the penetration of this technology in rural Nigeria moved the rural dwellers from poverty to some level of hope and empowerment to reduce rural–urban migration in search of white color jobs that are not in existence. In other words, it will facilitate the inclusion of Nigerian rural dwellers in Nigeria's emerging knowledge economy. Mobile telephone services have come to stay and will remain to boost the economy, attract foreign direct investment as well as encourage the local private sector, boost business productivity, enhance social interactions and family relationships, stem the rural–urban migration in Nigeria, and create job opportunities.

Challenges such as network failures, absence of electricity in the rural areas, non-availability of recharge cards, and high charges by service providers were mentioned as some problems facing the use of mobile phones in the rural dwellers in the Niger Delta region of Nigeria.

Acknowledgements

Notes on contributors

Ebikabowei Emmanuel Baro holds Masters in Library and Information Science from Delta State University, Abraka, Nigeria. He works as Senior Librarian at the Federal University, Otuoke, Bayelsa State, Nigeria.

Benake-ebide Christy Endouware is presently pursuing her Masters in Library and Information Science, Delta State University, Abraka. She works as Assistant Librarian at the Federal University, Otuoke, Bayelsa State, Nigeria.

References

Adeoti, J.O., & Adeoti, I.A. (2008). Easing the burden of fixed telephone lines on small-scale entrepreneurs in Nigeria: GSMlines to the rescue. *Telematics and Informatics*, *25*(1), 1–18.

Aitkin, H. (2004). Rural women and Telecommunications in Developing countries. Retrieved June 30, 2011, from http://bcn.boulder.co.us/aerier.resources/section/intro.htm

Alagoa, J.E. (1999). *The land and people of Bayelsa State: Central Niger Delta*. Port-Harcourt: Onyoma Research Publication.

Annan, K. (2003). Message from United Nations Secretary-general Kofi Annan. Retrieved December 3, 2010, from http://www.int/wsis/annan.html

Bertolini, R. (2002). *Telecommunication services in sub-Sahara Africa*. Frankfurt am Main: Peter Lang.

Butler, R. (2005). Cell phone may help save Africa. Retrieved June 25, 2011, from http://www.mongababy.com/2005/0712.rhett.butler.html

Charles-Iyoha, C. (2006). Mobile telephony, NEEDS, SEEDS, the Nigerian woman and livelihoods: Rights and the actualization of the millennium development goals. In C. Charles-Iyoho (Ed.), *Mobile telephony: Leveraging strengths and opportunities for socio-economic transformation in Nigeria* (pp. 63–73). Lagos: Ezcell Communications.

Clarkstone, R., Dymond, A., & Mrazek, P. (2003). *Rural Telecommunications Development in Botswana: Socio-Economic and strategic Issues*. IEE International Conference on Rural Telecommunications, London, October 1990.

Commission for Africa (2005). *Our common internet: Report of the Commission for Africa*. London: Commission for Africa Secretariat.

Donner, J. (2004). Microentrepreneurs and mobiles: An exploration of the uses of mobile phones by small business owners in Rwanda. *Information Technologies and International Development*, *2*(1), 1–21.

Donner, J. (2009). Blurring livelihoods and lives: The social uses of mobile phones and socioeconomic development. *Innovations: Technology, Governance and Globalization*, *4*(1), 91–101.

Duncombe, R., & Heeks, R. (2001). Information and communication technologies and small enterprise in Africa: Lessons from Botswana. Retrieved from http://idpm.man.ac.uk/rsc/is/ictsme/ictsmeaf.shtml

Duncombe, R., & Heeks, R. (2002). Enterprise across the digital divide: Information systems and rural microenterprise in Botswana. *Journal of International Development*, *14*(1), 61–74.

Eggleston, K., Jensen, R., & Zeckhauser, R. (2002). Information and communication technologies, markets, and economic development. In G. Kirkman, J. Sachs, K.S. Schwab, & P. Cornelius (Eds.), *Global information technology report 2001–2002* (pp. 62–74). New York: Oxford University Press.

Federal Republic of Nigeria. (2001). *National policy on telecommunication*. Abuja: Nigeria Communication Commission.

Goodman, J. (2005). Linking mobile phone ownership and use to social capital in rural South Africa and Tanzania. In D. Coyle (Ed.), *Africa: The impact of mobile phones* (pp. 53–65). Newbury, UK: Vodafone.

Gumm, D. (2005, March). Mobile phone growth fastest in African. *Vanguard*, p. 37.

ILO. (2001). *Local employment in the informal economy*. Geneva: International Labour Organization.

ITU. (2008). *World telecommunication indicators database*. Geneva: International Telecommunication Union.

Jagun, A., Heeks, R., & Whalley, J. (2008). The impact of mobile telephony on developing country microenterprise: A Nigerian case study. *Information Technologies and International Development*, *4*(4), 47–65.

Jamais, C. (2006). Mobile phones and development: Leapfrog nations emerging technology in the developing world. Retrieved June 25, 2011, from http://cellphone2.htm

Jensen, R. (2007). The digital provide: Information (technology), market performance and welfare in the South Indian fishers sector. *The Quarterly Journal of Economics*, *122*(3), 879–924.

Katz, J.E., & Aakhus, M. (Eds.). (2002). *Perpetual contact: Mobile communication, private talk, public performance* (pp. 1–13). Cambridge, UK: Cambridge University Press.

Kayani, R., & Dymond, A. (2005). *Options for rural telecommunications development*. Washington, DC: The World Bank.

Lloyd-Evans, S., & Potter, R.B. (2002). *Gender, ethnicity and the informal sector in Trinidad*. Aldershot, UK: Ashgate.

Miller, D., Skuse, A., Slater, D., Tacchi, J., Chandola, T., Skuse, A., & Hearn, G. (2005). Information society: Emergent technologies and development communities in the South. Report, London: Information Society Research Group.

Molony, T. (2006). I don't trust the phone; It always lies: Trust and information and communication technologies in Tanzanian micro – and small enterprises. *Information Technologies and International Development*, *3*(4), 67–83.

Molony, T. (2009). Carving a niche: ICT, social capital, and trust in the shift from personal to impersonal trading in Tanzania. *Information Technology for Development*, *15*(4), 283–301.

Molony, T.S.J. (2007). Non-developmental uses of mobile communication in Tanzania. In J.E. Katz (Ed.), *The handbook of mobile communication studies* (pp. 73–85). Cambridge, MA: MIT Press.

Nwokoro, O. (2005, July). Telecom NEEDS. *Vworld*, p. 30.

Obadere, E. (2006). Playing politics with the mobile phone in Nigeria: Civil society, big business & the state. *Review of African Political Economy*, *33*(107), 12–46.

Ochonogor, W.C. (2006). Effects of telecommunications services on rural women market traders in Obiaruku and its environs. In C. Charles-Iyoha (Ed.), *Mobile telephony: Leveraging strengths and opportunities for socio-economic transformation in Nigeria* (pp. 101–112). Lagos: Ezcell Communications.

Oji-Okoro, M. (2006). Mobile telephony and sustainable livelihoods in Nigeria: Case studies from South East Nigeria. In C. Charles-Iyoha (Ed.), *Mobile telephony: Leveraging strengths and opportunities for socio-economic transformation in Nigeria* (pp. 53–62). Lagos: Ezcell Communications.

Overa, R. (2006). Networks, distance, and trust: Telecommunications development and changing trading practices in Ghana. *World Development*, *34*(7), 1301–1315.

Palmer, R. (2004). *The informal economy in sub-Sahara Africa: Unresolved issues of concept, character and measurement*. Edinburgh: University of Edinburgh, Centre of African Studies.

Peter, O. (2005, April–June). A widow's prayer. *Vworld*, p. 16.

Quadir, I. Z. (1998). *Connecting Bangladeshi Villages*, Paper presented at Development Workers' Course: Women in Agriculture and Modern Communication Technology, Denmark, March 30 – April 3, 1998.

Rettie, R. (2008). Mobile phones as network capital: Facilitating connections. *Mobilities*, *3*(2), 41–59.

Saunders, R.J., Warford, J.J., & Wellenius, B. (1994). *Telecommunications and economic development* (2nd ed.). Baltimore: Johns Hopkins University Press.

Souter, D., Scott, N., Garforth, C., Jain, R., Mascarenhas, O., & McKemey, K. (2005). *The economic impact of telecommunications on rural livelihoods and poverty reduction: A study of rural communities in India (Gujarat), Mozambique and Tanzania*. Report, Commonwealth Telecommunications Organization report for UK Department for International Development.

Tiemo, P.A. (2006). Impact of global system of mobile (GSM) Communication services on rural communities in Delta State, Nigeria. In C. Charles-Iyoha (Ed.), *Mobile telephony: Leveraging strengths and opportunities for socio – economic transformation in Nigeria* (pp. 91–99). Lagos: Ezcell Communications.

Umar, J. (2006). Mobile telephony and sustainable livelihoods for rural women in Nigeria. In C. Charles-Iyoha (Ed.), *Mobile telephony: Leveraging strengths and opportunities for socio-economic transformation in Nigeria* (pp. 41–52). Lagos: Ezcell Communications.

Usman, P. (2005, April–June). Cellular telephony is one of the greatest benefits of Nigeria's democracy. *Vworld*, p. 30.

World Bank. (2004). *Skills development in sub-Sahara Africa*. Washington, DC: World Bank.

Appendix 1. Interview questions

The following questions were used as guide in the interview to explore the issue of the effects of mobile phones on the socio-economic life of the rural dwellers.

1. What are some of the ways the mobile phone has helped you socially?
2a. What are some of the ways the mobile phone has helped you economically as a private mobile phone owners?
2b. What are some of the ways the mobile phone has helped you economically as a private mobile phone owners as a Call Center Operators?
    Are there other ways the mobile phone has been of help to you?
3. What are some of the challenges you face by using mobile telephone or operating call centers in this area?