

**Mobile Phones' Contributions to Socio-Economic Development
according to Sen: Corn Growers' Perceived Impact in the Congo**

by

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A Doctoral Thesis

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Abstract

Research questions

This research was focused on exploring the impact of communication technologies on rural populations in the Congo. In particular, this research posed two questions:

1. Do mobile phones produce development in rural areas of the Congo?
2. Do mobile phones improve the living conditions of people?

The questions helped examine ways in which mobile phones were or were not engendering development among these populations.

Methods

The research was undertaken using four methods:

1. Phenomenology,
2. Sen's capability approach,
3. Participatory method, and
4. Ecological method

Phenomenology aimed to cater to the experiences and meanings of mobile phone uses. Sen's capability approach allowed the interviews to be focused on the basic needs of the poor. Participatory method provided a greater participation of respondents in discussion groups, and ecological method helped achieve a higher inclusion of key players in the targeted area.

Major findings

The major findings of this study included:

1. Much of the literature on mobile phones and development was not representative or inclusive of key players and their day-to-day lives.
2. Studies have tended to present snapshots or single-focused accounts of mobile phone and development.
3. Authors of mobile phone research have tended to see rural populations with an urban-led bias, leaving aside the actual characteristics of rural areas.
4. Mobile phones were not limited to a person and her properties, but rather mobile phones were owned and shared by the community.

5. Participants expressed a need for technical skills and means to be available to the community and their members.
6. Households were not separated, but rather they were connected to allow people take care of one another.
7. People were connected through collective solidarities in order to come to the aid of those with special needs.
8. Literature and mobile phone sponsors or companies were disseminating mobile phones with an extractive and commercial tendency, focused principally on fees of batteries, chargers, and prepaid cards.

Major contributions

The major contributions of this research revolved around the focus on:

1. technology to enhance the needed technical skills among concerned populations.
2. shared ownership of mobile phones to cater to both users and non-users of mobile phones among concerned populations.
3. connected households to capitalize on the dynamics of family among concerned populations.
4. collective solidarities to accommodate the processes of aiding one another among concerned populations.
5. capabilities, from a commercial or extractive aspect to capabilities to enhance the capabilities of people to afford mobile phones fees.
6. capabilities, from a corporate or business aspect to capabilities to enhance the capabilities of people who did not and could not own a business.
7. human basic needs to enhance the capabilities of mobile phone users with regard to human basic needs.
8. outliers or the marginalized to attend to those left out among concerned populations.
9. mobile phone-centric libraries to enhance the storage and retrieval of needed information among concerned populations.

Dedication

A vous les refoulés Kasaiens auxquels justice n'a jamais été rendue, injuriés entre autres sous le titre de *bilulu*, humiliés, ameurtris, mutilés, et torturés sous les applaudissements et permissions des autorités,

A vous les enseignants du quartier Katapula et autres, clocharisés et abandonnés, desquels j'ai appris le Français que je fignole,

A vous les exclus et victims d'injustices puissamment montées et dissimulées,

A vous Elias et Fidelie mes parents,

cette oeuvre est le fruit et/ou la reconnaissance de vos efforts.

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Glossary

- Basic needs: primary necessities without which human life is impossible.
- Bracketing also called reductive, epochal, or transcendental phenomenology is the process by which the researcher brings into question their taken-for-granted presuppositions, misconceptions, and biases that preclude the fuller acquisition and actualization of knowledge
- Capabilities: freedoms, options, opportunities, and the like that people enjoy to live better and fuller lives.
- Category: that which is proper to something or someone, also called theme, rubric, or heading.
- Characteristic: trait, dimension, aspect, or mark engraved or sealed to indicate or identify the nature of someone or something
- Combination: endeavor to put (something or someone in or by) two items alongside
- Commodities: products, (economic) goods, or services provided
- Community: set of people tied to one another by more or less permanent activities or locations
- Comprehensive services: activities that attend to the full range of basic needs that people are faced with, such as fuel or firewood, water, food, shelter, cloth, etc.
- Context: environment, setting, scene, background, or milieu in which something or someone is embedded.
- Crystallization: the use of multiple methods, or triangulation, to ensure an in-depth understanding of the phenomenon studied
- Development: an integrated endeavor to unravel the wellbeing of individuals and their societies, with a view to expanding people's capabilities
- Experience: degree to which a person has been impacted or affected by a specific phenomenon, which includes perceptions, feelings, affections, emotions, etc.
- Functionings: things that a person may choose to do or to be
- Group: a set of people constituted for a specific task
- Impact: influence, action, effect, or impression exerted by someone or something on another.
- Intentionality (from Husserl's perspective): idea of *directedness*, *drivenness*, *extendedness*, etc., as opposed to isolation, fixity, reclusion, etc.
- Interpretation Characteristic: meanings, reflections, lessons learned, worldviews, or perspectives shared about a specific topic or phenomenon.
- Intersubjectivity: idea that humans achieve their actualization in tandem with other beings

- Living conditions: generic term indicating the possibilities or means with which a person or a group of persons has in order to fulfil their basic needs and best function as humans
- Method: strategy with which to attend to the research questions posed in a given inquiry
- Methodology: umbrella term that keeps together as a set of methods applied to specific research, usually split between positivism and interpretivism
- Model: set of specific concepts with which to apply a given theory within a given research design
- Paradigm: a philosophy underlying the research process, also called philosophy, assumption, approach, view, position, orientation, tradition, epistemology, underpinning, ontology, foundation, etc., depending on where the emphasis is being placed
- Qualitative research: allows in-depth analysis of context-centric and thick knowledge of that which is being investigated
- Quantitative research: establishes verifiable, predictable, and generalizable assumptions from a sample to the larger population
- Saturation: a state of research that is reached when no newer information is found about a data, theory, or category
- Sedimentation: process whereby things have been deposited in the course of time and have accumulated into layers to form the foundations of human experiences and history
- Technique: strategy with which to apply a specific task in a research process
- Theory: a set of demonstrated relations with which to explain a phenomenon or topic of research
- Thick description (from Husserl's perspective): endeavor to drill deep into and bring to light the sediments and patterns piled up in lifeworlds
- Utility: state of being convenient, useful, comfortable, beneficial, etc.

Acronyms

- GDP: Gross Domestic Product (outputs minus inputs of a nation's residents)
- GNP: Gross National Product (outputs minus inputs of enterprises owned by a nation's citizens)
- ICT: Information and communication technology
- IDRC: International Development Research Centre
- ICT4D, also ICTD: Information and communication technology for development
- IMF: International Monetary Fund
- IT: Information technology
- ITU: International Telecommunication Union
- LIS: Library and Information Science
- LSE: London School of Economics
- MPI: Multidimensional Poverty Index
- OECD: Organization for Economic Cooperation and Development
- SMS: Short Message Service
- UNESCO: United Nations Educational Scientific and Cultural Organization
- USAID: United States Agency for International Development

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Chapter One: Introduction

Introduction

Development has become one of the most debated topics of our times. At the same time, since the last few decades mobile phones have been pervading all spheres of social life. As Harris and Cooper (2015) argued, “there are more mobile phones in use today in the world than there are people” (p. xxxv, see also Yan, 2015, p. xxxix). Indeed, there exists a sizeable amount of publications and venues dedicated to development and mobile phones, with varying levels of work done. Nonetheless, increasing anecdotes, taken-for-granted national data, easy-to-fund surveys, commodity information, price information, and the like are reflections of ways in which mobile phones are being viewed and related to day-to-day lives of the world’s poorest. Similarly, scholarly works done on mobile phones and development have been displaying some trends worth reflecting on. Consequently, the idea of development coupled with grinding poverty arising between and within nations has been gripping mobile phone authors to levels unseen before.

Global extreme poverty

Perhaps more appealingly, the widespread belief “that over the past 25 years, the world has reduced the rate of extreme poverty by two-thirds” (World Bank, 2015a, p. 2) and the rising consensus among analysts that the elimination of extreme poverty cannot be reached (Lange & Klasen, 2015; World Bank, 2015a) by the year 2030 -- the set deadline of the newly adopted global development program (*Sustainable Development Goals*, 2015) -- call into question the figures presented about poverty on the one hand and the manner in which the development of the world’s poorest is being handled on the other. One would imagine that considering the claimed reduction of extreme poverty *by half* the last few decades, the remaining half of poverty would undoubtedly be disposed of. However, on no account (see details on discussion chapter, section on contributions to prior bodies of work) did the new *Sustainable Development Goals* (2015) follow through regarding the remainder rate or half of poverty, the mistakes ascertained in the old *Millennium Development Goals* (2000), and on the proposed amends (Lange & Klasen, 2015; Sen, 2013b).

As Sen (2012) rightly deplored, “as we see the world around us, it is difficult not to be moved by the thought that there are huge injustices in the world in which we live” (p. 101, see also Chambers, 1997, p. 1; Chambers, 1983/2013, p. 2). Even more importantly, as Aker and Blumenstock (2015) noted,

While the body of empirical evidence... provides preliminary evidence of the impact of mobile phone technology in sub-Saharan Africa and elsewhere, there are considerable gaps in our understanding. These gaps are important, and offer a cautionary tale in terms of using existing empirical findings to develop mobile phone-based development policy. (p. 365)

One of the gaps found in literature is that rural populations are underrepresented in most mobile phone research (see details in discussion chapter). This study aimed to make a contribution to the understanding of mobile phone technology among selected rural populations.

Anecdotes in literature

Perhaps interestingly, a casual look at the literature of mobile phones and development shows that the claims made on mobile phones are abuzz with anecdotes propelled by experts and media reporters. To explain, the English word anecdote comes from the Greek (Liddell & Scott, 1843/1996) participle ἀνέκδοτος [anekdotos], from the verb ἐκδίδωμι [ekdidōmi]. There are two particles *an* and *ekdidōmi*, meaning un-publish, un-verify, un-check, etc. The word *anekdotos* means un-published, un-verified, un-checked, non-factual, non-given, etc. A quick illustration, among many others, is helpful here. In one of the highly reputed scholarly journals of economics and development studies, the *Journal of Economic Perspectives*, Aker and Mbiti (2010b) wrote, “mobile phones are also extending the reach of medical workers and medical services. In the Democratic Republic of Congo, mothers can call a hotline to ask questions about their child’s health status” (pp. 222-223).¹ At face value, this statement raises several questions. For example,

¹ The passage or article was also published at the Center for Global Development in Washington, DC (see Appendix I for development agencies and Aker and Mbiti, 2010a, p. 22, for the passage aforementioned). Apart from the abstract, the articles (Aker & Mbiti, 2010a, 2010b) are identical.

the statement is not clear as to the location, context, participants, interview, method, sampling, finding, research question(s), variable(s), etc.

Explanation of anecdote

A hotline (*The Oxford American Dictionary*, 1999) is defined as “a direct exclusive line of communications, especially for emergencies”. A direct line presupposes a landline phone or system, with a general switchboard and direct lines, all of which is inexistent in the Democratic Republic of the Congo (ITU, 2007a, 2007b, 2007c, 2007d; World Bank, 2013, 2015b). A mobile phone is a direct phone line in and of itself, and thus does not need a hotline. Even if mobile phone technology were a hotline with a switchboard, it is unrealistic, in fact unsafe and illegal, to check the status of a person’s health over a mobile phone conversation. The idea behind the statement might be that mobile phones are making wonders in developing countries, but the story is out of place and the reality of rural populations -- the gist of the present doctoral study -- is all the more *misrepresented*. What is troubling in the story related above is the Western bias behind it. A mobile phone call (domestic) in the Congo costs US \$1 per minute (Mthembu-Salter, 2009), which is nothing in the US, but a fortune, considering the situation of mothers in the Congo, “a country,” as Aker just recently reminded readers, “that has been plagued by intense civil war for much of the past two decades” (Aker, 2013, see abstract). A regular medical check-up takes at least 15 minutes, not to mention required tests, fee payment, and medical jargon that need additional time of explanation or conversation. It is questionable that Aker’s unsupported statement has escaped reviewers’ attention, let alone the paper has been verbatim published in the Working Paper Series of the Center for Global Development, Washington, DC.

This means that the paper has undergone at least two rounds of reviews. This also shows the magnitude, if not pressure, of popular belief and (Western) bias regarding mobile phone uses in Africa. The reason for this might be that reviewers were Westerners and thus were less likely to question that part of the story lest they were seen as being against the wonders induced by mobile phones in developing countries. Another point worth mentioning about anecdotal evidence is the *sensational* presentation of mobile phones. As Chaudhuri (2012) wrote, “in poorer nations, with historically very low levels of wireline penetration, they [mobile phones] have emerged as the *de facto* communication channel... The adoption of mobile technologies has

been *unforeseen and phenomenal* [emphasis added]” (p. 326). While there might be some truth that mobile phones are phenomenal with their ever-upgraded applications, for example, the statement makes it sound as if mobile phones cause no concern to people in rural areas, such as fees, batteries, chargers, etc. The present doctoral study sought to give voice to rural populations about mobile phones and development.

Democratic Republic of the Congo

The Democratic Republic of the Congo (see Figure 1) has a population of 57 million inhabitants in 2005, and 68 million in 2011 (World Bank, 2013). For consistency sake, this study used the word Congo to indicate the Democratic Republic of the Congo. Indeed, “the first cellular call in Africa was made in Zaire [now Congo] in 1987 (the operator was Telecel)” (Coyle, 2005, p. 3). Currently, there are over a dozen of mobile phone providers concentrated in Kinshasa, primarily from China, South Africa, and India (e.g., Zain, Vodacom, Celtel, etc.). The number continues to change as circumstances of mobile phone providers fluctuate rapidly. Zain is a merger of previous small mobile phone providers.



Figure 1: Map of the Democratic Republic of Congo (Source: Google)

Being the country that underwent the first experiment of mobile phone use in Africa and around the world does not render the Congo any better or any more productive than any nation. In fact, in one of the least cited and known studies, unquoted even by noted authors and agencies of mobile phone technologies, DeMaagd (2008) warned,

We see mobile phones everywhere except in the productivity statistics... Mobile devices are quickly becoming one of the most pervasive forms of information and communication technology (ICT). Yet pervasive is not the same as productive. As this study shows, the rapid adoption of mobile devices has not resulted in a corresponding increase in productivity across the globe.

As the statement above implies, much of the literature claiming mobile phone-generated development displays loose, if any, connections with prior bodies of works done on mobile phones and development.

Relevance and state of the debate

The present doctoral study owed its relevance to the arguably growing advancements of mobile phones among the poorest populations of the world, and to the claims and promises of economic development brought by these technologies. In 2007, the ITU presented the Congo to have 10.5 % of mobile phone subscribers whereas Sub-Saharan Africa was shown to have 18.2 %. Four years earlier, in 2003, Congo had 1.9 % mobile phone subscribers and Sub-Saharan Africa 2.8% (ITU, 2007c, 2007d). The growth is one of more than 100 % both for the continent as a whole, and for most individual countries, including the Congo. Congo is located at the center of Africa (see Figure 2).

It bears noting that the prices referred to have to do with basic items (e.g., cloth, roof, utensils, seeds, grains, etc.) for which one-on-one or face-to-face communication is needed in order to check the items before the purchase, especially fresh produce, fruit, chicken, goats, etc. As is clear below, face-to-face contact is essential to African cultures (see Molony, 2005). In addition, renowned authors of economic growth do not class mobile phones among the features of economic growth (Weil, 2012). Also pertinent is the fact that recent reviews of mobile phone literature have not presented mobile phones to be an indicator of economic development (Duncombe, 2012a, 2012b). Mobile phones have the potentials of development, but so does any technology. Another issue endemic in mobile phone literature is surveys and their positivistic allegiances (Beuermann, McKelvey, & Vakis, 2012; Duncombe, 2012a, 2012b; Duncombe & Boateng, 2009).

Remark about market information

The literature keen to hail commodity information, price information, and market information as a marker of economic development produced by mobile phones (Aker, 2010, 2013; Aker & Fafchamps, 2013; Graham & Nikolova, 2013; Ilahiane & Sherry, 2012; Martin & Abbott, 2011; Priya & Mathiyalagan, 2012; Zanello, 2012) continues to attract and confuse mobile phone readers. On this score, Aker and Mbiti (2010b) made a pertinent observation,

Yet even if mobile phones can enhance access to resources and information, they cannot replace investments in public goods such as roads, power, and water. In fact, they are less effective without them. Without roads, a trader might be able obtain better price information, but still be unable to transport goods to the market. Without power, a firm could receive more customer orders via mobile phone, but would still have work hours limited by the available sunlight. (pp. 228-229, see also Aker & Mbiti, 2010a, p. 25; Aker, 2010, p. 58)

Although in different terms, Aker's and Mbiti's (2010b) remark was preceded by that of Heeks and Jagun in 2007, which asserted that development cannot be reduced to mobile digital data. Since mobile phone literature has tended to be scattered, Heeks' and Jagun's (2007) observation

went unnoticed. A definition or prognostic of development comprised only of market information, commodity information, m-banking, and price information is incomplete (Aker, 2010, 2011, 2013; Aker, Collier, & Vicente, 2013; Aker & Fafchamps, 2013; Aker & Ksoll, 2012; Aker, Ksoll, & Lybbert, 2012; Aker & Mbiti, 2010a; Donner, 2007b; Duncombe, 2012a, 2012b; Graham & Nikolova, 2013; Priya & Mathiyalagan, 2012; Tobbin, 2012; Zanello, 2012). Due in large part to an incomplete understanding or presentation of development, mobile phones are being presented as a miracle of our times.

Mobile phones as a miracle

In a recent statement of the ITU, Brahim Sanou, Director of the ITU Telecommunication Development Bureau, presented mobile phone penetration around the world, and particularly in developing countries, as a miracle to celebrate.

Every day we are moving closer to having almost as many mobile-cellular subscriptions as people on earth. This is exciting news... Let us all celebrate this mobile miracle that I have no doubt will hasten our pace towards sustainable development... In 2013, there are almost as many mobile-cellular subscriptions as people in the world. As global mobile-cellular penetration approaches 100% and market saturation is reached, growth rates have fallen to their lowest levels in both developed and developing countries. Mobile-cellular penetration rates stand at 96% globally; 128% in developed countries; and 89% in developing countries. (ITU, 2013)

It is clear from the statement above that mobile phone penetration is taking exciting dimensions among various populations in the world. The reality of mobile phones on the ground, however, calls more for sustained inquiry than popular celebration.

Skepticism about mobile phones

Sustained studies have raised persistent skepticism with regard to the big numbers found in the hype and buzz about mobile phone penetration. Aker and Fafchamps (2013) warned, “expansion in mobile phone coverage has improved access to information throughout the developing world, particularly within sub-Saharan Africa... [However,] there are *fewer studies assessing the impact*

of the technology on [crop] producers [emphasis added]” (p. 1). The impact of mobile phones upon people’s lives remains one of the biggest unaddressed questions in ICT-related research. As Michaelowa and Spörri (2012) noted,

However, these developments [of mobile phones for example] only reflect short-term changes, and much more significant changes can be expected in the long run, even if the concrete effects on labor markets as well as on the economy as a whole (nationally and internationally) are hard to predict. Moreover, the effect of ICT is not necessarily unambiguously positive [with regard to development]. (p. 83)

The effects of mobile phones on the lives of users are not as straightforward as claimed. Another cautionary remark that needs to be made here is that mobile phones are not the cheapest ICTs nor the most ubiquitous or helpful technologies on earth. To give one example, “in the developing world, the radio – so-called old technology – has a powerful reach, particularly in rural areas or sparsely populated regions. Radios are everywhere, with at least 75% of households in developing countries having access to a radio” (UNESCO, 2012, p. 248). It makes wonder why the rapturous acclaims of development surrounding mobile phones penetration in developing countries do not cross-reference research on radio, a technology that has been touching/affecting the lives of the poor since its inception more than a century ago. As UNESCO (2013) insisted, “as radio continues to evolve in the digital age, it remains the medium that reaches the widest audience worldwide. This multi-purpose medium can help people... It can save lives during natural or human-made disasters”. Several studies have presented radio as a potential tool of development and empowerment for isolated populations (Diasio, 2010; Gatua, Patton, & Brown, 2010; Myers, 2000, 2009; Wasserman, 2011). The statements aforementioned are a glaring indication that mobile phones are in no way the only technology susceptible of development among rural populations.

Mobile phone features

The reason for the emphasis on mobile phones might be that mobile phones are incorporating more features or applications for users than radio. This study proposed to give voice to the concerned populations in order to validate or invalidate economic development driven by mobile

phones. Indeed, “to measure the determinants of mobile phone adoption... reliable and accurate data at the individual-, household-, and village-level are needed” (Aker & Mbiti, 2010b, p. 226). The present research addressed afresh mobile phone penetration, with a focus on the context-embedded individual, household, and village levels. Another point of relevance, perhaps due to the fact that mobile phones do not amount to a stand-alone subject with a well-defined department in university settings, can be found in the scattered nature of the literature concerned with mobile phones. What is published about mobile phones, or related topic, in one institution or area of research is most likely unquoted or ignored in another institution or area. To give just one example among others, Anderson’s and McKay’s (2010) important remarks about the measurement of development and of poverty in rural areas, based on government data, are unquoted in works concerned specifically with the improvement of people’s lives or the elimination of poverty and its measurement by governments (Alkire, Roche, & Sumner, 2013; Alkire & Santos, 2013). This doctoral study aimed to bring synergistic collaboration into greater focus.

Collaboration between scholars

Collaboration helps address the flaws of governments-collected data and context-disconnected surveys. Another phenomenon of interest related to collaboration between scholars is that surveys have been taking endemic proportions in information science. As Bawden and Robinson, (2012) rightly denounced, “this [the method of surveys] is, and has always been, the most common method for carrying out research in library and information science... It is a method very much in the social science research tradition” (p. 308). By undertaking a phenomenological inquiry, this study aimed to depart from the mass production of survey studies and related shortcomings in information science. Several authors have bemoaned the monotonous and uncritical uses of surveys and/or similar methods in information science (Afzal, 2006; Hjørland, 2014; Järvelin & Vakkari, 1992; A.R. Sandstrom & P.E. Sandstrom, 1995; Vakkari, 1998, 2008; Wilson, 2000a). Afzal (2006) posited, “repetitive emphasis on surveys and questionnaires for user studies, information-seeking behavior, and exploration of individual needs has simply created monotony in the LIS literature that is saturated already with such user studies” (p. 24). As seen below, survey and its context-independent positivistic principles (details in methodology chapter) do not help drill deeper in the real words of participants. The rampant use of surveys in

information science is in large part due to the dominance or espousal of the sender-received model drawn from Shannon's (1948) information theory. Shannon's theory has left an immense impact on information science and social science fields. The Shannonian theory tends to relegate information agents (thus mobile phone customers) to the status of passive receivers.

Information science and poverty

Still another point of this study's relevance springs from information science literature, which, despite the paths proposed by its founders or leading figures (Farradane, 1948, 1953, 1954, 1955; Feather, 1992, 2003; Menou, 1985, 1993, 1995a, 1995b, Meyer, 2001, 2003; Otlet, 1888, 1895, 1914, 1916, 1919, 1926, 1929a, 1929b, 1934, 1935; Otlet & La Fontaine, 1895; Shera, 1968, 1970, 1971) is plagued by an alarming paucity of works concerned with rural poverty and the enhancement of the capabilities of the world's poorest. Otlet, for example, reflected on various social issues, such as famine, race, Blacks, human rights, etc. Also, few theoretical debates about the development of rural populations can be found in Feather (1992), Menou (1993), Meyer (2001, 2003), and Madden, Bryson, and Palimi (2006), with no sustained prior and subsequent connection or follow-up in the field of information science. The reason for this might be that information science has been influenced by the cognitive or behavioristic paradigm also called the user-centered studies, of which Sense-Making is the most dominant. As Dervin (1983) stated,

The term 'Sense-Making' is a label for a coherent set of concepts and methods used in a now 8-year programmatic effort to study how people construct sense of their worlds and, in particular, how they construct information needs and uses for information in the process of sense-making. (p. 3, see also Dervin, 2005, pp. 25-29; Savolainen, 2006, p. 1118; Savolainen, 2008, p. 202)

This model re-echoes Shannon's theory of noise and transmission channel. Thus, since information ought to be transmitted from one end (sender) to the other (receiver), the channel has to be clear of noise. One of the consequences of this model, as noted above, is to see people as receivers and the task of the researcher is one of taking out the noise or non-sense in order for the transmitted information to take effect. Mobile phones alongside economic metrics such as GDP, GNP, income, etc. can be considered as (information) tools to be transferred to a population in

order to produce development in that population. Moreover, the behavioristic paradigm tends to insist on information (behavior) as tasks, motivations, needs, applications, etc. (see Bates, 2010; Savolainen, 2006, 2007, 2008, 2012, 2013), with little to no attention paid to the range of capabilities of those concerned. The present doctoral study went beyond the information tasks to investigate the range of capabilities that the world's poorest have in their daily lives.

Study's title: Socio-economic development. As clarified in literature review chapter, under the heading clarification about socio-economic development, the present doctoral did not espouse the economic model also called econometric perspective of the concept development. In fact, the biggest thrust of Nobel Prize economist Sen (1988, 1999, 2009a, 2009b, 2012) is to persistently discourage the economics-based notion of development. Two reasons account for this well-known clarification and repositioning of the concept development. First, as explained in literature review chapter, since its inception after World War II, development studies has been unsuccessful in best capturing and measuring poverty around the world (Alkire *et al.*, 2015). Most specifically, local populations are neither consulted nor represented when development is conceptualized. Obviously, as Ferguson remarked, "it does not make sense to exclude from development debate the local interest groups at the heart of aid efforts" (2016, p. 5). To this end, this doctoral research aimed to give voice to concerned populations in rural areas about what development is or does among them and from their perspectives.

Second, even in developed countries, development studies has been unable to tackle or capture the increasing inequalities seen to creep between and within countries (OECD, 2011). Therefore, authors have used a variety of qualifiers to depart from the flaws of the econometric model of development, such as sustainable development, socio-economic development, social development, human development, etc. in an effort to best address and relay the real struggles of the world's poorest. Similarly, as explained in literature review chapter, information science has been called to go beyond the cognitive paradigm (Bawden & Robinson, 2012) that tends to drift away from the real context or lives of participants, and thus to engage with the concept of development or sustainability to the fullest (Cibangu, 2015d; Chowdhury, 2012, 2013, 2014, 2015a, 2015b). In particular, persistent calls have been made and indeed unheeded for information science to engage with rural development (Feather, 1992). Therefore, in this study,

as is made clear in literature review chapter, development is taken to mean, not the imposition of criteria imported from outside or elsewhere, but as the expansion of capabilities, options, or opportunities that the world's poorest (Sen, 1997a, 1997b, 1997c, 1999, 2009a, 2009b) in rural areas have with regard to human basic needs, such as shelter, water, clothing, health, and food. In order to achieve this, the present doctoral study took the debate to rural areas and aimed to let the poor talk themselves as to how they go about human basic needs. In this sense, this study is an information science study that looks at rural development and information technologies.

Corn growers and perceived impact. Corn constitutes a staple for the investigated populations (Kalinda *et al.*, 2014; Kankonde & Tollens, 2001), something around which other food commodities and their crops tend to revolve. Corn commodities (i.e., corn on the cob, roasted corn, grilled corn, corn porridge, corn seeds, corn flour, etc.) are essential in rural areas as well as in cities because of the lack of infrastructures needed for farming facilities and businesses. Therefore, corn seeds are stored or safeguarded as a resource, asset, and currency since they allow individuals in investigated rural areas to undertake transactions or more exactly barter in villages and to make purchases in the city. Barter is an exchange of something against the surplus of items stored without involving money or cash (*The Oxford American Dictionary*, 1999). This is common in rural areas where cash is rare or nonexistent due to the lack of basic infrastructures. Since the aim of the study was to give voice to selected participants, and to inquire into ways in which mobile phones produced development in rural areas from the perspective of those concerned, the study focused on the impact of mobile phones as perceived by corn growers in the Congo themselves. Unlike most studies that use and dictate data and criteria parachuted from New York or London to describe rural populations and their lives or experiences with mobile phones, the idea behind the present doctoral research was to capture the experiences that individuals or corn growers in rural areas of the Congo were having with mobile phones, from the perspectives of and according to concerned populations themselves. In this sense, the study endeavored to reverse the widespread method of top-down data, and replace or complement it with the grass-root method of bottom-up, more precisely, locally grounded and infused information about mobile phones and development in rural areas. Sen's (1988, 2009a, 2009b) approach was employed in order to narrow down the complex, multifaceted topic of development to the core concept of basic needs or capabilities among rural populations. The

phrase socio-economic development, as noted above, was used to circumvent the positivistic and large-scale accounts of development propelled by most economic research done on rural populations around the world.

Aims and objectives

The aims of the study were:

- to inquire into ways in which mobile phones produce development in rural areas of the Congo from the perspectives of concerned populations
- to give voice to selected rural populations to capture their own accounts or lived experiences of mobile phone uses and development

To address these aims, the objectives were set as follows:

- to peruse the literature of mobile phone and development studies as to the positions and theories held on mobile phones and development
- to identify the methods best suited to the research questions posed
- to interview concerned populations about the extent to which mobile phones generate development
- to identify the characteristics, contexts, experiences, and interpretations of key players with regard to mobile phones and development
- to identify the range of capabilities that people have in using mobile phones
- to identify the weaknesses and strengths of the methods chosen: capability approach, phenomenology, ecological method, and participatory method
- to identify paths for further research on the topics of mobile phone uses and development

Research questions

Two closely related research questions were asked:

1. Do mobile phones produce development in rural areas of the Congo?
2. Do mobile phones improve the living conditions of people?

Living conditions are a concept now almost universally used by authors of development studies to depart from econometric criteria of GDP, GNP, and similar matrixes in order to best define development. According to Sen (2009a, 2009b), living conditions represent the realm of possibilities and means that humans have or necessitate in order to fulfil their basic needs and thus best function as humans. Impact means influence, effect, action, impression held by a person or thing on another. The English word impact comes from the Latin past participle *impactus, a, um*, of the verb *impingere, impingo* meaning: to push, to strike, to drive, to thrust, to dash, etc. From the Latin verb *impingere* comes the Latin noun *impactio, onis*, meaning: action, effect, strike, blow, etc. (Lewis & Short, 1879). The idea is to exert a force, action, influence, etc. on something. In this study, as noted in methodology chapter, impact is measured by the amount or spectrum of capabilities, possibilities, or options that people in rural areas have with regard to human basic needs such as shelter, water, food, health, and clothing. The point being, this study looked deep into how mobile phones in rural areas have an action, effect, influence, or force upon the possibilities, opportunities, or capabilities that the poor have with regard to human basic needs.

Summary

As the study's main introduction, chapter one maps the background of mobile phone research alongside the field of development studies. Mobile phones are contrasted with the idea increasingly adopted by authors that the elimination of extreme poverty around the world cannot be reached by the year 2030, the deadline of the newly proclaimed *Sustainable Development Goals* (2015), just as it was not in 2015 at the closure of the deadline set for *The Millennium Development Goals* (2000). Coupled with the fantastic advances of mobile phones, the endemic poverty seen around the world sharply calls into question the claims that mobile phones produce development in rural areas. The relevance and state of the debate concerning mobile phones are

emphasized as anecdotes continue to surround the accounts of mobile phones in rural areas. Then the chapter goes on to present a brief description of the Congo and exposes the aims, goals, and research questions of the study.

Chapter Two: Literature Review

Introduction

This chapter seeks to be a review of prior literature that maps the theories or approaches and central concepts along the lines of which authors have come to grips with mobile phones and development. The literature review covers two main separate fields and respective bodies of works: mobile phone and development studies. The idea of bringing these fields together or schematizing them together is neither the goal of this study nor of both fields. This study was simply suggesting collaboration, based on a researcher's interests and topics (see Figure 3).

Schematic View of Concerned Literatures



Figure 3: Generic map of mobile phone research

The above figure shows the literatures or sub-specialties. These sub-specialties – although cross-cut by mobile phones -- have emerged in unrelated circumstances and for different purposes (see details below), and thus are entities to be considered as particularities, with a view to avoiding the common tendency of squeezing particularities into a unique and universal model of reality.

As noted earlier, interconnecting or relating these sub-specialties was neither the aims of this study, nor the concerns of this study's participants, nor the nature of the sub-specialties themselves, nor the methods of this study. Experts of identified sub-specialties can no doubt collaborate more precisely work together, depending on the research questions posed. Indeed, mobile phones have been approached from a wide-ranging variety of theories.

While mobile phones were created in the 1980s, researchers are not unanimous about the birth country and location of mobile phones: Japan, Europe, or US (Katz & Aakhus, 2002; Bellis, 2013; Donner, 2003, 2005, 2006a, 2007a, 2007b, 2007c, 2008a, 2008b, 2009; Donner & Escobari, 2010; Katz, 2006, 2008; Katz & Aspden, 1998). Despite the creation of mobile phone in the 1980s, and its public use in the 1990s, the field of mobile phone did not take shape till the early 2000s (Duncombe, 2009a, 2009b, 2012a, 2012b; Duncombe & Boateng, 2009). Even there, as is clear above, "there is mounting anecdotal evidence from country studies that access to telecommunications [or mobile phones] in rural areas enhances development" (Buys, Dasgupta, Thomas, & Wheeler, 2009, p. 1494; see also *Crossing across the Digital*, 2005; Molony, 2008b, p. 638; Gough, 2005, p. 1; Donner, 2006a, p. 26; DeMaagd, 2008; Jensen, 2007, p. 881; Coyle, 2005, p. 8; Futch & McIntosh, 2009, p. 54; Porter, 2012, p. 252; Rashid & Elder, 2009, p. 12; Smith, Spence, & Rashid, 2011, p. 82; William & Torma, 2007, p. 17).

Anecdotal evidence applies also to a much bigger area of ICTs (see Wang, 2015, p. 19), wherein research is proven to be too generic or limited to a macro-level (see May, Dutton, & Munyakazi, 2014, p. 50). To add to the conundrum, the lack of access to and knowledge about rural areas obscure all the more the understanding of mobile phone penetration in African villages.

Many developing country governments and development agencies are focusing on extending telecommunications services into rural areas, as they seek to encourage growth, alleviate poverty and overcome a perceived "digital divide". Mobile technologies are playing a major role in this effort. However, relatively little is known about how rural communities and small businesses use mobile technologies, and what impacts they are having. (Samuel, Shah, & Hadingham, 2005, p. 44)

As noted in the statement above, the conditions in which rural communities around the world live, not to mention the level of education or literacy, compromise the prospects of research conducted in that sort of setting, causing many authors to regard rural populations as less of a candidate for research than they do for urban or semi-urban communities. This chapter is structured around six major points:

- (1) clarification about socio-economic development,
- (2) Sen and economic development,
- (3) background of mobile phones,
- (4) criticisms against claims of development attributed to mobile phones,
- (5) theories of mobile phones and economic development, and
- (6) development approaches

Clarification about socio-economic development

An increasing number of development authors have proposed the term socio-economic development or social development and related understandings to depart from the economics-riveted notion of development (Brokensha, 2001; Filgueira, 2001; Sen, 1988). In fact, although the concept development is one of the most pressing topics of our times, it has come to mean different things for different people in different situations and in different locations. The English word development comes from the French word (see *Larousse*, <http://www.larousse.fr/>) *développer*, which has two particles *des-velop*, meaning to unfold, unwrap, unroll, expand, spread out, etc.

Five major meanings of development

Social science literature shows five major trails of meanings ascribed to development: (1) psychological, which represents the unfolding of human personality (Greve, 2001; Kalsched, 2013; Lerner, 2001, 2009, 2011; Harris & Butterworth, 2002; Thornton, 2008), (2) philanthropic, the most common in information management/science and related fields, which entails humanitarian or small-scale managerial works in rural or poor areas of developing nations (Brokensha, 2001; Clark, 2002, 2005, 2006, 2009; Duncombe, 2012a, 2012b; Heeks, Subramanian, & Jones, 2013; Mohan, 2008; Thirlwall, 2008; Todaro, 1997; Unwin, 2009a,

2009b, 2009c, 2009d), (3) infrastructural, which involves facilities, houses, transportation structures, land, energy/water supply, etc. (Adams & Tiesdell, 2012; Perry, 2001), (4) economic, which requires specific metrics/statistics, such as GDP, labor, capital, currency, health insurance, etc. (Ashraf, Weil, & Wilde, 2013; Henderson, Storeygard, & Weil, 2012; Weil, 2012), and (5) journalistic, which means event, story, fact, account, etc. (*The Oxford American Dictionary*, 1999)

Development as a holistic endeavor

Nonetheless, recent literature has tended to present economic development as an integrated and holistic endeavor (Buenstorf, 2012; Giugale, 2014; Grabowski, Self, & Shields, 2015; Lockner, 2013; McMichael, 2012; Potter, Conway, Evans, & Lloyd-Evans, 2012; Rowe, 2009; Sen, 1988, 1999, 2009a, 2009b; Shim, 2010; Zelizer, 2013). This doctoral study took development to mean an integrated endeavor to unravel the wellbeing of individuals and their societies, with a view to expanding people's capabilities. Also, this doctoral study employed the words prosperity, development, and wellbeing interchangeably. For consistence sake, the study employed the term development to indicate socio-economic or social development. To this end, the doctoral study did not propose to measure development with fixated traditional metrics, such as GDP, GNP, income, etc.

As Nobel Prize-winner economist Sen (1988) explained,

The GNP [just like other economic metrics] captures only those means of well-being that happen to be transacted in the market, and this leaves out benefits and costs that do not have a price-tag attached to them... In assessing what kind of a life that person has successes in living, we have to take a more *integral* [emphasis in original] view of that person's life... It must be noted that GNP is, in fact, a measure of the amount of the means of *well-being* [emphasis in original] that people have, and it does not tell us what the people involved are succeeding in getting out of these means, given their ends. (p. 14-15, see also the limitations of GDP, Sen, 1997c, pp. 388-389; Deaton, 2010a, pp. 13-15)

The aforementioned limitation of (economic) metrics shows the necessity of a holistic view of development adopted in this study. The reason being, “poverty is characterised by its multidimensionality, spanning across a number of factors” (Jarrett, 2013, p. 3, see also Alkire *et al.*, 2015, p. 2). Consequently, the concept developmental was taken, in this doctoral study, in its fullest sense beyond the narrow psychological, infrastructural, and econometric connotations. In the same way, although concerned with an information technology (mobile phones), this doctoral study was not a study of human information behavior, the reason being that integrated development encompasses a much broader world and related lived experiences than a mere information behavior (i.e., tasks and clicks) limited to a mobile phone’s screen. This is not to say that information behavior is not important, but that the focus of the study was not on a specific design or behavior of mobile phone. To summarize, development “simply suggests improvement in the conditions and quality of life of the population. Greater levels of wealth,” Filgueira (2001) explained, “technological advancement, and public policies permit people to live better, to consume more, to feed themselves better, and to get sick less frequently” (pp. 3583-3584).

Amartya Sen and economic development

Amartya Kumar Sen (Agarwal, Humphries, & Robeyns, 2005; Atkinson, 1999; Gaertner, 2007; Sen, 1998a) was born on November 03, 1933 in a university campus where his mother Amita Sen was a student, in Santiniketan in West Bengal, an Eastern state of India, whose major city, Calcutta, is known to be a culturally vibrant center. His research interests cross-cut a variety of subjects: philosophy, economics, development studies, ethics, gender studies, business, etc. After Sen received the Nobel Prize in economics in 1998, his capability approach, articulated in 1999 in his book *Development as freedom* to present a newer vision of economic development, brought him to the forefront of academia and industry. Nonetheless, his capability approach traces as far back as his doctoral dissertation, *Choice of Techniques*, in 1959 (Sen, 1960). Since his PhD studies at Cambridge University, Sen was concerned with the measurements and techniques in vogue to best determine poverty, economic development, famine, unemployment, social welfare, real income, justice, freedom, etc. The concern with poverty and the methodology taken to capture it threads Sen’s oeuvre.

Sen (1999, 2009a, 2009b, 2011, 2013a, 2013b, 2013c) departed from traditional or arm-chair economics wherein people's wellbeing is limited to top-down metrics (e.g., GDP, GNP, income, etc.) imposed upon the poor regardless of local realities and struggles. Sen defined people's greater freedoms as the means and ends of development, equity, and justice. Capabilities represent the range of freedoms or opportunities that people have to enjoy better and fuller lives. The goal of development is to remove the unfreedoms with which the poor wrestle. The reason being, "very many people across the world suffer from varieties of unfreedom" (Sen, 1999, p. 15). Unfreedoms threaten the quality of life both in developed and developing nations. Thus, "development consists of the removal of various types of unfreedoms that leave people with little choice and little opportunity of exercising their reasoned agency" (Sen, 1999, p. xii). Capabilities provide the opportunities with which people enjoy the freedoms from misery, poverty, unemployment, unhappiness, etc. Capabilities allow people "to have a good life while alive (rather than a life of misery and unfreedom" (Sen, 1999, p. 14). The present doctoral study looked at the range of capabilities rural populations had in their day-to-day lives.

Background of mobile phones

One of the reasons for the rapid adoption of mobile phones in Africa lies in the lack of infrastructures. ITU (2007a) explained,

Cheaper infrastructure and larger regional penetration, cheaper handsets, competitive markets and business models oriented to the needs of the poorer segments of the population, such as affordable prepaid cards, have resulted in a mobile boom in Africa during the last decade. (p. 2)

As the number of mobile phone users grew in Africa, the idea of ICT, more particularly, mobile phones as an enabler of economic development, began to gain currency among experts and business people. Therefore, the prescription to allow economic development to happen in Africa was believed to be about people's access to mobile phones. ITU (2007a) clarified,

Nowadays, it is broadly understood that access to ICT can contribute tremendously to economic development. To create access to ICT is a major challenge to African and

foreign governments, the private sector and civil society. Regarding the advantaged of mobile technologies, Africa's ICT/telecommunication future will likely be wireless. (p. 2)

The steady increase of mobile phone uses in Africa was also associated with the decline, if not backwardness, of landline communication. As Wilson and Wong (2003) noted, "one of the first questions a potential investor asks of African and other governments around the world is whether the country has a modern and effective telecommunications system. Telecommunications systems have become a requirement for attracting direct foreign investment" (p. 157). Under its various forms, such as computer and Internet skills, income, gender, age, information access, health care, technical capacities, etc., digital divide (Fuchs, 2013; Fuchs & Horak, 2006) was another pressure put on African leaders to allow for the adoption of new wireless technologies.

Lack of landline phones

It needs also be underlined, as explained above, that the main reason why African nations allowed mobile phone uses was the inability to provide the required infrastructures of landline phones. As can be imagined, "slow growth in main (fixed) lines leads Africans to use mobile cellular phones as means of communication. Mobile cellular technology has a higher coverage rate in the region" (ITU, 2007a, p. 2). Since access to mobile phones was believed to be a driver of economic development, African nations permitted a wide array of mobile phone providers to open mobile phone offices and services on the continent. Policy or regulations had to be adapted to allow more efficient adoption of mobile phones (Howard & Mazaheri, 2009). As is now clear, the pressures exerted on African governments to obtain mobile phones for their constituencies did not involve specifically the development of people nor the situation of rural populations. In the meantime, the largest portion of African population lives in rural areas. In fact, "some two-thirds of people in Sub-Saharan Africa reside in rural areas" (ITU, 2007b, p. 1). Mobile phones were and still are believed to bring about economic development and therefore rural populations are likely to be better off with these new technologies. But close analysis of official data shows that rural populations remain underserved, a problem not keenly addressed by analysts of mobile phone literature. As ITU (2007b) elaborated,

This is a challenge since the lowest level of administrative division in most African countries tends to be one layer before villages. Few countries in Africa compile official data on the number of villages because government administration does not reach that deep. Schools, health clinics, post offices and other public facilities are usually available only at a level higher than villages such as a district capital. Indeed, the lack of basic infrastructure rather than the number of inhabitants often defines whether a locality is a village in Africa. (p. 1)

Perhaps ironically, a village in Africa is not determined by the number of inhabitants, but by the *lack of basic infrastructures*, all of which revolve around basic needs, the unit of analysis taken in the present doctoral study. It becomes clear that, unlike popular rhetoric of mobile phone-led development, a number of factors such as invitation of mobile phone providers and the understanding or definition of rural populations (i.e., villages) all the more separate mobile phone penetration from economic development. In other words, governments allow mobile phone providers to come to Africa not because of rural populations or villages, which are not even known or accounted-for, but because mobile phone dissemination does not require the expenses and duties needed to build infrastructure(s). The history of mobile phones plays an important role as well.

Social connection with others

Since their inception, mobile phones have been adopted for physical mobility and social connection with others, not for development *per se*, much less rural populations who by definition were not recorded on any official database. As Katz and Aspden (1998) remarked, “ownership of mobile communications is determined more strongly by location effects, for example, need to be in touch or being highly mobile” (p. 1, see also Pitrado, 1993; Roos, 1993). Household income and ethnicity were also among the determinants governing mobile phone uses. More pertinently, “we found that the key determinants of mobile communications ownership were household income, race/ethnic background, need to be in touch and social/work mobility” (Katz & Aspden, 1998, p. 1). Ethnicity refers to the economic status of minorities populations surveyed in Katz’ and Aspden’s study in the US, the majority of which were Blacks and Hispanics. Blacks and Hispanics were shown to have lesser household incomes and therefore

they displayed a low rate of mobile phone uses. This economic aspect has motivated the present doctoral study to look deeper into the claims of mobile phone penetration and economic development. Katz' and Aspden's study would have demonstrated that mobile phone uses helped minorities, for example: Blacks, Native Americans, Asians, and Hispanics in the US to obtain or improve household incomes. That was not the case, however, and one can see how people's development was not the primary goal of mobile phone penetration.

Commercialization of mobile phones

However, a number of subsequent mobile phone studies claiming mobile phone-enabled development have not taken into account the primary purposes of mobile phone devices. The reason for this might be the commercialization of mobile phones as soon as they were made available to the public. In the US, there were 1% mobile phone users in the 1980s and mid-1996, and only 14.5% of the US population had a mobile phone (see Katz & Aspden, 1998, p. 133). Katz' and Aspden's research represents one of the first articulate inquiries done on the early uses of mobile phones. To that effect, "the study draws on data from seven [US] national mail or telephone random surveys carried out during the period 1993-1995 and totaling more than 10,000 respondents" (Katz & Aspden, 1998, p. 133). Interviews were undertaken on mobile phones and landline phones. Since participants were randomly selected from a national repository, the study was representative of the US population layers. What is lacking in Katz' and Aspden's study, as proposed in the present doctoral study, is an inquiry that targets specifically the uses of mobile phones among the poorest populations. The example of the US here serves to highlight the history of mobile phones and related purposes with regard to economic development, the focal point of the present doctoral study. The present doctoral study proposed to fill this gap left in mobile phone literature since the early stages of mobile phone penetration.

In addition, Katz and Aspden (1998) used statistics to undertake their study. In 2002, Katz and Aakhus found social mobility and easier communication to be key features of mobile phone uses. They argued,

We look at how people's lives are different now that copper tether and monopolistic tariff no longer constrain communication-at-a-distance. We also assay how organizations and societies, or, more precisely, social arrangements in physical space, have become transformed... It is about how the internal psychological feeling of being accessible or having access changes social relationships. (Katz & Aakhus, 2002, pp. xxii)

Social mobility allows greater ability of users to access or relate with relatives, friends, (co-)workers, individuals, or institutions.

Global poverty

As is apparent above, since their inception in the 1980s, and their commercial uses in the 1990s, mobile phones were viewed as a means of social mobility and human interaction. As technological advances continued to take spectacular dimensions, with a gap increasingly seen between the haves and have-nots, the concept (global) poverty -- a threat to the development of humans especially in rural areas around the world -- started to preoccupy authors and policy makers. In September 2000, in its General Assembly, the UN adopted a specific plan of development for all citizens around the world, commonly called *The Millennium Development Goals* (2000), the first of which was to end global poverty and hunger by 2015. Meanwhile ICTs continued to invade and shape the landscape of societies and their members. Since the topic of ICTs was not mentioned in the millennium declaration of development, much less mobile phones, the *World Summit on the Information Society* (2003) met in Geneva in December 2003 to focus more exclusively on information society and its potentials. Thus, a clear commitment and belief that ICTs be the fodder of human development was made. The members of the summit stated,

We, the representatives of the peoples of the world, assembled in Geneva from 10-12 December 2003 for the first phase of the World Summit on the Information Society, declare our common desire and commitment to build a people-centred, inclusive and development-oriented Information Society, where everyone can create, access, utilize and share information and knowledge, *enabling individuals, communities and peoples to achieve their full potential in promoting their sustainable development and improving their*

quality of life [emphasis added]. (*World Summit on the Information Society*, 2003, see section Declaration of Principles, No 1)

ICTs were believed to be the tools with which, not only to interact or communicate with, but, and more importantly for the present doctoral study, to improve the quality of people's lives.

Mobile phone-led development

For better or worse, economic development and ICTs, and more precisely mobile phones, started to be mentioned together, and the belief of ICTs- or mobile phone-led development dominated governments, industry, and academia. The members of the summit specified,

We recognize that education, knowledge, information and communication are at the core of human progress, endeavour and well-being. Further, Information and Communication Technologies (ICTs) have an immense impact on virtually all aspects of our lives. The rapid progress of these technologies opens completely new opportunities to attain higher levels of development. (*World Summit on the Information Society*, 2003, see section Declaration of Principles, No 7)

Actions with regard to ICTs or mobile phones started to be taken, at least envisaged, along the lines of *The Millennium Development Goals* (2000), discussed above. As can now be anticipated, a study of mobile phone uses and economic development resonates with this millennium momentum. More pertinently, the plan of action taken at the summit was “to connect villages with ICTs and establish community access points” (*World Summit for the Information Society*, 2003, see section Plan of Action, No 6). The idea of mobile phone uses in rural areas was increasingly making its way into the circles of experts and policy makers. It was argued, for instance, that “the economic benefits of rural ICT access stem primarily from *access to information, markets, and increased business opportunities* [emphasis added]” (Buys, Dasgupta, Thomas, & Wheeler, 2009, p. 1494, see also Ilahiane & Sherry, 2009, p. 86; Rashid & Elder, p. 13). As explained below, access to information leads to market efficiency and greater business activities. By the same token, a framework of diffusion or transfer of technology and/or information dominated academia and industry as mobile phones were attracting experts’

attention. To no small extent, the field of mobile phone has been influenced by development studies and information systems, with the diffusion of innovation (Rogers, 2003, especially pp. 1-35) being the leading theory of interpretation for several years.

The diffusion of innovation seeks the adoption of communication means and their usability among concerned individuals. One of the benefits of this theory is its insistence that appropriate skills be taught to the receiving population.² The goal of the diffusion theory is to maximize the acceptance of given new technologies. The principle of this theory can be located in two-way communication between the customers and the designers (see Rogers, 2003, p. 6). Since it was a corrective made to the Shannon's information theory, which was based on the concept of linear transfer from sender to receiver of information, Rogers' theory has had an immense impact across disciplines. As can now be understood, the widely received diffusion of innovations generated a great interest in the usability of information means, leaving aside the effects of technologies on people's lives.

Criticisms against the claims of development attributed to mobile phones

Due to overwhelming media reports on mobile phones, this section is intended to make some clarification about the claims of development attributed to mobile phones in developing countries. Equally of relevance here is the history of technology and of information technology adoptions (Geoghegan, 2008; Haigh, 2001, 2011, 2013; Kline, 2006), whereby technology determinism was rebutted. An important detail to bear in mind is the careful position held by authors whose writings and research have been used to proclaim (the belief of) mobile phone-created development. These authors have nuanced their position by specifying that mobile phones present some potentials for development, and as such mobile phones are not a replacement of development. Indeed, six most important critics have raised concerns over the claims of development attributed to mobile phones.

² For further discussion see also Y. Rogers (2004) and Legris, Ingham, and Colletette (2003), among others.

First, the earliest articulate critique of mobile phone spread among the world's poorest was that of Singhal *et al.* (2005) in reaction against the Village Phone program undertaken in Bangladesh. The Village Phone project was the first to draw the world's attention to the developmental effects of mobile phones among the poor in developing countries (Aminuzzaman, 2002; Aminuzzaman, Baldersheim, & Jamil, 2003; Lawson & Meyenn, 2000). In their study, Singhal *et al.* (2005) concluded that the Village Phone project widened the gap between the poor and the rich in Bangladesh. But, to some extent, Singhal *et al.*'s (2005) study went unnoticed. The second earliest study was that of Vodafone and LSE (see details below, section on the sixth key theory of mobile phone development) regarding mobile phones in developing countries (Coyle, 2005, 2007; Goodman, 2005; Gough, 2005; Samuel, Shah, & Hadingham, 2005; Waverman, Meschi, & Fuss, 2005; Williams, 2005). Just a quick reminder, Vodafone -- one of the leading firms of mobile communications in Africa -- collaborated with the LSE to produce this study. However, this study (with its series of papers) is one of the least researched and known works of mobile phone literature. The reason might be the discontinuation of the working paper series as well as the collapse or reshuffle of Vodafone company.

Most mobile phone authors have tended to provide swift and brief references to this Vodafone study (Coyle, 2005, 2007; Goodman, 2005; Gough, 2005; Samuel, Shah, & Hadingham, 2005; Waverman, Meschi, & Fuss, 2005; Williams, 2005). Consequently, the Vodafone study was taken to mean that mobile phone spread is the magic of development, with the consequence that the caveats of the study were simply overlooked. Yet, the Vodafone study was one of the first studies to point out the overwhelming and most often unquestioned anecdotes covering the idea of development fueled by mobile phones. It is a surprise that the tendency toward anecdotes continues to supplant systematic inquiry and evidence concerning mobile phones and development. As has become a learned lesson in development studies (Kiely, 1999, 2006; Potter, Binns, Smith, & Elliott, 2008; Thirlwall, 2008; Zoomers, 2008; Toyama, 2015), not one technology is taken to be the silver bullet of development.

For example, cautioning against the mentality of projecting the Western world into developing countries, Gough (2005) warned,

It seemed extraordinary that a technology that has clearly taken the world by storm had attracted so little rigorous research... We wanted the work to be able to survive the scrutiny of a potentially skeptical audience... Most important is the fact that the ways in which mobiles are used, valued and owned in the developing world are *very different from the developed countries* [emphasis added] ... The value of communications in the developing world is also different. (p. 1)

Although they sound familiar, these remarks do not always come into play when claims are made about market and m-banking with regard to mobile phones in developing countries. Authors have tended to plug the idea of Western market (i.e., price transactions) into African realities. Gough (2005) elaborated, “people in Africa use mobile phones very differently... Mobiles are informally shared between people... The developed world model of personal ownership of a phone is not relevant, or indeed appropriate, to the developing world” (p. 2). Not only is m-banking built on a society of individual bank accounts and mobile phone subscriptions, but no banking business can thrive on loosely owned money. Furthermore, Coyle (2005) wrote, “the spread of telecommunications should improve growth and consumer well-being in poor countries. Earlier research suggests that, as might be expected, telecommunications rollout boosts growth... but the data limitations made the results problematic” (p. 6). Data limitations such as the loose representation of the situation proper to the world’s poorest are mentioned in the remark. Note also that as soon as Waverman’s, Meschi’s, and Fuss’ (2005) article to show the link between mobile phones and economic development in Africa was published, its claims were called into question by Wilson, Best, and Kleine (2005), warning authors not to consider any technology as a silver bullet.

The third author critical of the equation development and mobile phone spread is Molony (2005, 2007, 2008a, 2008c, 2009) with his study on Tanzanian farmers and wood traders. Molony not only showed that mobiles can lead to development, but that in Africa mobile phones were being looked at primarily as a means of social cohesion or communication, with face-to-face contact being the central nerve of African cultures. However, mobile phone authors have tended to minimize, if not, discount face-to-face contact in the name of mobile phone spread. The fourth author to be critical of the link between mobile phones and development is DeMaagd (2008)

with his study on productivity. DeMaagd (2008) found the claims of development being produced by mobile phones to be anecdotal. DeMaagd (2008) used the well-known criterion of productivity to infer a nation's or society's development. Ironically, DeMaagd (2008) asserted that data about productivity do not include mobile phones. The fifth authors objecting to the claims of development led by mobile phones are Rashid and Elder (2009). Rashid and Elder undertook a comprehensive review of IDRC projects run around the world to specifically assess the widespread claims of development generated by mobile phones. Rashid and Elder (2009) came up with the idea of mobile phones as a "*white elephant*" [emphasis added] (p. 14) just like any technology that came before them. Rashid and Elder (2009) posited,

However, there is still a lack of evidence of usage of mobile phones as a tool to solve development problems, due mainly to the difficulty in measuring their social and economic impacts. Moreover, there is an absence of a thematic approach to analyzing the impact of mobile phones on development... Such analysis can assist in determining the sectors or areas where mobile phones can have the highest developmental impacts and identifying the sectors where further research is needed. (p. 2)

In the statement above, mobile phones are not shown to solve development problems nor do they help measure development.

The sixth author unconvinced of the developmental impacts of mobile phones is Carmody (2010, 2011, 2012, 2013). In 2010, with his reflections on Africa in the face of globalization, Carmody saw globalization to be no different from colonization in Africa, with mobile phone spread in African countries fueling or repeating the destructive structures of colonization. From a different perspective, Blumenstock, Gillick, and Eagle (2010) along with Blumenstock, Shen, and Eagle (2010) found mobile phones to be profiting the rich, and not the poor in Africa. For example, Heeks (2010a) pinpointed a lack of transformational effects of ICTs (see also Webster, 2006a, 2006b) in developing nations inasmuch as ICTs (i.e., mobile phones) add more information and customers, but they do not change the structures or quality of society. Heeks (2010a) spoke of technology boosterism and cyber utopianism. To be clear, Heeks (2010a) noted, "but ICT has perhaps been an especially marked case, launched via a series of reports and events that were

strong on promise and hype; reeking of ‘technology boosterism and cyber utopianism’” (p. 629). The technology boosterism and cyber utopianism of mobile phones are being forgotten. In 2011, Carmody indicated that the colonial extractive politics continues to ruin the African continent. In detail, Carmody (2011) wrote,

The political economy of colonialism was centered on resource extraction, and historically most Africans have benefited very little from their resources. The Asian footprint in Africa to date has been heavily based on natural resources...As many African currencies are unconvertible, natural resources serve as substitute currencies... And the majority of Africans have benefited little from them. (p. 190)

The extractive nature and purpose of Asian, particularly Chinese investment, in Africa does not prove to be reversed by mobile phone spread in Africa. As Carmody (2011) explained,

Current Asian investment [in Africa] fits with an extractive rather than a productive and transformative pattern of globalization. This must be changed through policies of embedding foreign investment and linking it to domestic companies so that they too can grow and expand into overseas markets. Whether such a goal can be realized will depend on relations with China... While China has an Africa strategy, Africa does not have a China strategy. (pp. 192-193)

As is clear from the statement above, China is being worse than the West in Africa. Indeed, “the Chinese ‘march into Africa’” (Carmody, 2011, p. 192) is being hailed as the catalyst of development in Africa, and yet mobile phones just like the Chinese are reverberating the extractive and non-transformational patterns of transaction that this march has been injecting into Africa.

The seventh and last author to call into question the developmental effects of mobile phones is Mansell (2012). Mansell (2012) pertinently wrote,

Empirical research on the impact of mobile phones in developing countries is fragmented. Many studies focus separately on markets, technology, or social interaction, but they rarely examine a combination of these aspects... Research on capability-building processes related to mobile communication services and platforms, however, is absent from studies on the potential benefits for users in developing countries. (p. 1)

The lack of connection with prior work and untapped areas is emphasized here. Studies have tended to focus on certain stories related to a specific aspect of a problem as diverse and all-encompassing as development or well-being of humans. Furthermore, mobile phones are not shown to change the lives of the poor. To the contrary, as Carmody (2012) clarified,

Mobile phones have then been absorbed into, but have not transformed, economic structures in Africa. In fact, these inequitable structures produce poverty, as do mobile phones for many less powerful, if not quite powerless, people, when mobiles are inserted into the structures. Only developmental states in Africa can leverage the positive developmental potential of mobile phones and other new ICTs to achieve wider economic transformation. (p. 12)

It is clear that to the extent they are being advertised and implemented, mobile phones are a tool of pauperization. Mobile phones multiply the quantity of information, transactions, and customers, but they do not subvert the historic and structural causes of poverty in Africa. Carmody (2012) identified this phenomenon as the “informationalization of poverty” (p. 1). It was also shown that mobile phones merely augment the voice or communication produced. In other words, mobile phones bring about “crowdvoicing” (Heeks, 2010b, p. 23) in that they disseminate the voice/information of the crowd. In 2011, Abraham made the same remark, dismissing the tendency by mobile phone authors to fetishize mobile phones. The present doctoral study proposed capability approach as the framework with which to best capture the developmental effects of mobile phones in rural areas of the Congo, looking at the quality of life lived by the poorest.

Although rarely acknowledged, the line of work critical of mobile phone-produced development continues to draw stauncher proponents and fresher empirical evidence, to name a few: Aker and Blumenstock (2015), Aker and Mbiti (2010a), Blumenstock (2012), Blumenstock and Eagle (2012), Carmody (2013), Clarke, Wylie, and Zomer (2013), Dulani, Mattes, and Logan (2013), and Hofmeyr (2013). One of the strongest arguments made is that mobile phones are found to be concentrated in the hands of the rich or well-off among African populations whose majority lives with an average of less than \$1.5 a day, a figure that mobile phone authors have tended to bypass (see Blumenstock, 2012). The main reason for this might be that economic figures on mobile phones tended to be seen as the province of economic sciences (Waverman, Meschi, & Fuss, 2005). Perhaps the most defeating evidence against the link placed between mobile phones and development can be found in the newer positions of the World Bank (2013) and/or the increasing rise of inequalities across the globe (Bullock, 2013; Grabowski, Self, & Shields, 2015; Jarrett, 2013; OECD, 2011; Potter, Conway, Evans, & Lloyd-Evans, 2012; Shaefer & Edin, 2013; World Bank, 2015a). Most importantly, the gains obtained from the services of mobile phone penetration (e.g., price reduction, m-banking, business opportunity, etc.) are not shown to profit the poorest nor to draw in-depth research.

Mobile phones and economic development

Mobile phones have been associated with economic development in eight key theories: (1) micro-loans or credits, (2) small enterprises, (3) social mobility, (4) market price(s), (5) m-banking, (6) GDP and related metrics, (7) health informatics, and (8) policy or regulations. The first theory according to which mobile phones are conducive to development in developing countries is micro-loans or micro-finances. It bears noting that in this study theory was taken to mean a set of demonstrated relations with which to explain a phenomenon or topic of research. As mentioned earlier, one of the earliest, perhaps the most influential and cited, development programs that has brought the idea of mobile phone-generated development to the forefront of research is the one called Village Phone, a program undertaken in Bangladesh. This is not to confuse with Knowledge Villages, a project, developed by Swaminathan (n.d.) in India, the focus of which is not primarily placed on mobile phones.

In 2003, Aminuzzaman, Baldersheim, and Jamil (2003) undertook a study about Village Phone, a project that offered small loans or micro-credits and mobile phones at cheaper prices to women in rural Bangladesh. With mobile phones, the loan-offered women provided mobile phone services (i.e., in-calls and out-calls) to people in surrounding rural areas. The services helped the women to earn money and pay the loan. Women were able to make a living in rural Bangladesh, and the loans were processed through Grameen Bank. The word Grameen comes from the Bangladeshi word *gram*, meaning rural (see *Bank for the Poor*, 2013). Village Phone was created in 1981 by Nobel Prize-awarded and Vanderbilt University-trained economist Muhammad Yunus (Yunus, 2007). The project rose to fame in the 2000s, with the Nobel Prize being awarded simultaneously to the organization and to Yunus and, later to another board member of the organization (Yunus, 2011). In fact, “the study [about Village Phone] began in 1998 and concluded in 2001, with data collection carried out mainly in 1999 and 2000” (Aminuzzaman, Baldersheim, & Jamil, 2003, p. 334). Samples were taken from Grameen Bank, clients were interviewed, key informants unrelated to Grameen Bank were also interviewed, and case studies were undertaken to supplement the surveys. The idea behind Village Phone is for poor women to supply mobile phone services in order for them to be able to earn benefits. Yunus (2011) explained,

A lot of people from the villages resisted your joining Grameen Bank. They were opposed to seeing women handle money and earn money. They tried to frighten you by telling you about the horrifying outcomes of accepting money from Grameen Bank... But you did not get frightened. You became united with each other. You vowed with deep resolve that you would bring prosperity to your families... You increased the amount of savings that you hold, many times over. You have educated your children. Through Educational Loans, many of them are today studying to be doctors and engineers. Many of your children have completed their education and are now doctors, engineers and professors.

Village Phone allowed women, traditionally dominated or enslaved in Bangladeshi culture, to make a living and attend to their families by selling mobile phone services. Village Phone has generated social and economic empowerment of rural women in Bangladesh. As Aminuzzaman, Baldersheim, and Jamil (2003) indicated,

At the individual level, the VP [Village Phone] has indeed contributed significantly to income generation... Moreover, at the community level, it has narrowed gaps between cities and villages by enhancing more communication between family members. Economically, it has increased business transactions and dissemination of information. (p. 327)

In order to be granted loans, women had to have a minimum credit or bank account. To be precise, Village Phone deals with entrepreneur women, not ordinary/poor women in Bangladesh. These entrepreneurial women are said to be poor because they only have a few dozen US dollars, from which they could start business with Village Phone. Poor women or those completely deprived cannot join Village Phone, an indication that Village Phone is a micro-credit business. As Lawson and Meyenn (2000) specified,

Grameen Bank's primary line of business is to make microloans, typically under US\$200 [£123.72], to women *entrepreneurs* [emphasis added] in villages, financing installation and working capital for their stores, cottage industries, and other businesses. It also provides these women with credit to buy cell phones from Grameen Telecom. The women then provide mobile pay phone service in their shops, the local market, and elsewhere, charging a markup agreed on with Grameen Telecom. (para 2)

Not surprisingly, Village Phone displays a number of drawbacks, such as gender limitation, gap between the haves and have-nots, inattention to basic needs, insistence on monetary solution, bank-binding contracts, etc.

Indeed, Aminuzzaman, Baldersheim, and Jamil (2003) remarked,

The strongest impacts of the VP are found in the areas of transport mobility and family relations. The VP enhances the geographic reach of the users while, at the same time, reducing the need to travel to obtain information... Surprisingly, *the VP has had less of an impact on the economic activity of the users* [emphasis added]. However, it should be

remembered that it was previously found that the direct economic benefits were more pronounced for owners than for users. (pp. 343-344)

The Village Phone's insistence on and assistance to certain women, namely those who could/can have a bank or credit account, have left the end-users and other members of society poorer than the credit-rescued women. Sure enough, "a Grameen Bank member, usually a woman, obtains ownership of the mobile phone under the lease-financing program of the bank" (Aminuzzaman, Baldersheim, & Jamil, 2003, p. 328). Among others, Singhal *et al.* (2005) showed the inequalities left or uncovered by Village Phone in Bangladesh, and Kabeer (2013) called for deeper qualitative research about Village Phone in Bangladesh and its clients. Mobile phones remain a tool of social mobility and human interaction/communication. The present doctoral study went beyond social mobility and took a holistic look at the targeted society, irrespective of gender or assets to craft ways in which mobile phones can be of economic interest to all those involved.

Village Phone was replicated in Rwanda with the idea to provide, like in Bangladesh, bank credits to rural populations in this African nation. In 2009, Futch and McIntosh undertook a quantitative study about the introduction of Village Phone or Tel'Imbere in Kinyarwanda [Local/official language in Rwanda], a project run by Grameen Bank in collaboration with mobile phones provider MTN [Multinational Telecommunications Network], headquartered in Johannesburg, South Africa. The study was not conducted on the basis of gender, and lasted from 2006 to 2007. Surveys were performed in households and communities served by Tel'Imbere. Results did not replicate the (arguable) successes of Village Phone in Bangladesh, and wealth was shown as the indicator of mobile phone coverage. As Futch and McIntosh (2009) observed,

The introduction of a Village Phone had a substantial impact on reported access to telecommunications for local entrepreneurs... Despite this improvement in access to telephony, the actual prices received by farmers were not affected. Reported labor time in household enterprise increased dramatically for Village Phone operators, but positive

impacts on consumption or overall business profits were not found. (p. 54, see also pp. 61 & 69)

In contrast to Bangladesh, Village Phone's impact in Rwanda was not so much about increased income as it was about access to ICTs or social mobility. Perhaps, even more challenging, prices were not affected despite increased access to ICTs among entrepreneurs in Rwanda. Worth mentioning also is the fact that Village Phone in Rwanda did/does not target rural populations, an important dimension of the present doctoral study. Numerous studies (Blumenstock, 2012; Blumenstock & Eagle, 2012; Blumenstock, Eagle, & Fafchamps, 2012; Blumenstock, Gillick, & Eagle, 2010; Blumenstock, Shen, & Eagle, 2010) have found mobile phone owners in Rwanda to be wealthier, more educated, and more privileged than the rest of population, confirming earlier criticisms of inequality fostered by mobile phone penetration, not to mention the steady gap between the rich and the poor (e.g., housing, education, healthcare, etc.). Similar trends were noted in Uganda (Burrell, 2010) or elsewhere around the world (Duggan & Smith, 2013; Huyer, Hafkin, Ertl, & Dryburgh, 2005). Also conducive to inequality between the haves and have-nots is the pay-as-you-go service offered by cellular providers. As ITU (1998) noted,

Cellular operators in a number of countries have introduced "pay-as-you-go" or prepaid services in order to attract new users. This has proven to be a way to reach segments of the mass market that would not otherwise be able to afford cellular service. Per minute calling charges are often significantly higher but users do not have to sign a contract or commit to a monthly bill. These services can be especially attractive to users that do not have the required credit-worthiness [money/bank account]. (p. 44)

The present doctoral study targeted Congo's poorest to assess ways in which mobile phones can be best used by rural populations. These populations are unable to afford a bank account or micro-credit. Micro-credits can offer some benefits as seen above, "however," Karnani (2007a) remarked, "that is not enough; the key issue is whether microcredit helps eradicate poverty" (p. 103). Micro-credit practice seeks to establish business under the model of banking transactions, and not to tackle to poverty or development in its myriad facets. Even in the area of banking, the

challenges involved in establishing and sustaining a micro-credit institution in both developed and developing countries are enormous. As Karnani (2007a) demonstrated,

Some clients of microcredit are certainly true entrepreneurs [in developing nations], and have created thriving businesses—these are the heart-warming anecdotes. However, the vast majority of microcredit clients are caught in subsistence activities with no prospect of competitive advantage... The median business operated by the poor has no paid staff; most of these businesses have very few assets as well. With low skills, little capital, and no scale economies, these businesses operate in arenas with low entry barriers and too much competition; they have low productivity and lead to meager earnings that cannot lift their owners out of poverty... Even with greater availability of financial services in developed countries, only a small fraction has used credit for entrepreneurial purposes. Most clients of microcredit are not microentrepreneurs by choice and would gladly take a factory job at reasonable wages if possible. (p. 104, see also Karnani, 2007b, 2009a, 2009b)

Competitiveness and productivity remain negligible in micro-credit business created in developing countries, and mobile phones are not shown to resolve these challenges. The present doctoral study looked beyond the profit-making institutions to probe the capabilities available to the poor in their day-to-day realities.

After micro-finances, the second theory in which mobile phones are being associated with economic development is small enterprises or micro-enterprises (Boateng, 2011; Donner, 2006a; Donner & Escobari, 2010; Jagun, 2007; Jagun, Heeks, & Whalley, 2008; Ilahiane & Sherry, 2009, 2012; Samuel, Shah, & Hadingham, 2005). Micro-enterprises have been found to be one of the most important components of economic production in developing countries (Fluitman & Oudin, 1991; Palmer, 2004). Integral to the informal economy, micro-enterprises have the potential to create jobs, increase productivity, and eliminate poverty in the concerned society and country. Though not without objection (detail below), the argument is that mobile phones increase business opportunities of micro-entrepreneurs. In 2006a³, Donner investigated the extent

³ This paper has also been published in the journal *Knowledge, Technology, & Policy* (Donner, 2006b).

to which mobile phones offered benefits to micro-entrepreneurs in Rwanda. Donner (2006a) wrote,

Mobiles are allowing microentrepreneurs [in Kigali, Rwanda] to develop new business contacts... James [a Rwandan entrepreneur/baker] purchased a mobile phone—his first telephone of any kind. Now, customers call him to place orders, he calls suppliers to order flour and other materials, and he and his employee stay in touch no matter where they are in the city. He now can respond to orders from throughout the country, not just in his neighborhood... His business has increased 30% due to the mobile. (p. 3, see also Boateng, 2011, p. 59)

Mobile phones are increasing work possibilities and clientele of micro-entrepreneur(s) in Rwanda. Donner (2006a) conducted a survey of individuals in Kigali who used mobile phones and ran a small business.

Nonetheless, as Donner (2006a) acknowledged, “three potentially sensitive themes were not addressed: in the profile section, income/revenue of the business and ethnicity; in the call log section, extramarital romance” (p. 9). While potentially sensitive themes could jeopardize the lives of some of the interviewees or participants, considering the conflicts aflame in the region, the survey did not take into consideration the income of the respondents, an important factor that could shed light on the ability of the respondents to attend to their basic needs and to those of their families. As is clear in the present doctoral study, basic needs constitute an important construct with which to capture the capabilities of selected individuals and societies. Analyzing national data, Samuel, Shah, and Hadingham (2005) undertook similar research in South Africa, Egypt, and Tanzania. In this respect, Samuel, Shah, and Hadingham (2005) found a steady increase of business outcomes among micro-entrepreneurs, owing to mobile phones use. In a different fieldwork, Jagun, Heeks, and Whalley (2008) focused on a cloth-weaving micro-enterprise in Nigeria, with a focus on the supply chain. The supply chain involved weavers, sub-weavers, and final buyers. In-depth semi-structured interviews and in-person meetings were conducted. Observation, photographs, and field notes were being taken by interviewers (see Jagun, Heeks, & Whalley, 2008, p. 52). Results confirm prior research done on mobile phone-

assisted micro-enterprises, namely, the increase of business. Challenges of costs, risk, speed, and delays were reduced. However, Jagun, Heeks, and Whalley (2008) cautioned “that reduction [of costs, delays, or risks], though, was by no means [close] to zero, largely because journeys and in-person meetings remained an integral part of trade even post-mobile” (p. 61). In-person meeting, as defended in the present doctoral project, is essential to the consumption and purchase of items of basic needs. Only, an in-depth inquiry, as seen in the present doctoral work, can address this issue.

Perhaps most importantly, while mobile phones are claimed to allow greater business opportunities, no direct evidence was shown to produce development. As Jagun, Heeks, and Whalley (2008) noted, “our fieldwork provided no direct evidence on this [link between mobile phones and development]” (p. 62). This statement was confirmed by Rashid and Elder (2009) in a broad-based review of IDRC-sponsored development projects, a review focused on developmental effects of mobile phones. It is one thing for a micro-enterprise/society to have greater business opportunities through mobile phone uses, it is another thing for that society to be developed. Basic needs and the struggles they involve are some of the best indicators used in the present doctoral study to ascertain development. In the same vein, it would be curious to examine the effects of the weaving business upon the broader targeted society (e.g., individuals, families, neighborhood, and community).

In sum, three major items need further research in these and similar studies about small businesses with regard to mobile phone penetration, namely; the extent to which (1) end-users or clients are being affected or helped by said increase in business activities, (2) rural populations are involved, and (3) basic needs of both the micro-entrepreneurs and clients are improved. The present doctoral study went past the mere multiplication of mobile phone calls experienced by micro-entrepreneurs to the real world of the concerned populations, especially the poorest of the poor, with an emphasis being placed on basic needs and related capabilities.

The third theory of mobile phone uses is social mobility, a characteristic that reaches as far back as the inception of mobile phones in the 1980s. As is clear above, social mobility, social networking, or, social cohesion proves to be the primary and original goal of mobile phones and

their design (Aker & Blumenstock, 2015; Bertel, 2013; Geser, 2006; Goodman, 2005; Jagun, Heeks, & Whalley, 2008; Lee & Gereffi, 2013; Ling *et al.*, 2012; Mansell, 2012; Maree *et al.*, 2013; Pitroda, 1993; Roos, 1993). As Aker and Blumenstock (2015) stated, “historically, the primary function of the mobile phone has been a communications device over voice and Short Message Service (SMS) protocols” (p. 356). Social communication, or as some would argue, social mobility is often translated in business networks in order to indicate development (see above, theory of business networks). Still, the communicational characteristic of mobile phones plays a no less influential role in diverting the attention of mobile phone authors and designers from the focus and need(s) of development. As Jagun, Heeks, and Whalley (2008) put it well in their study,

This study confirms the need to understand *mobile phones as devices for communication of information*. That may seem an absurdly naïve statement of the obvious, but its implications are not always recognized—that one must therefore build analysis of a major part of mobile telephony’s impact on an informational foundation, first understanding the role of information in the phenomenon under investigation, and *only then moving on to study mobile telephony* [emphasis added]. (p. 60)

As is clear from the statement shown above, development falls under the items believed to be exogenous, perhaps alien, to mobile phones and their uses. However, the present doctoral study advocated for a broader social or civic role/impact of mobile phone uses and companies in the communities of the world’s poorest.

One of the most poignant researchers in the area of mobile phones seen as devices of social mobility or networking is Molony (2005, 2007, 2008a, 2008b, 2008c, 2009). Molony conducted a research into the effects of mobile phones on farmers in South of Tanzania. He investigated the changes brought by mobile phones into the relationships between potato and tomato farmers. The study was part of a 15-month qualitative fieldwork he undertook from 2003 to 2004 in Tanzania. Confirmed by other phases of his research done on construction micro-entrepreneurs and blackwood traders in Tanzania (Molony, 2005, 2007, 2008a, 2008c, 2009), Molony’s (2008b) study

shows that, as elsewhere in the world, mobile phones in Tanzania are commonly put to an ordinary, “non-developmental”, use that appears to be ignored by northern agencies, research organizations and media who seem to be preoccupied by the potential for mobile phones to aid personal or collective “development” in poor countries. (p. 639)

Social cohesion constitutes an essential characteristic of human societies that mobile phones cannot simply supplant. But, it is also true that social cohesion does not exclude development, especially in rural populations wherein much of the work undertaken in households revolves around basic needs in order to survive. For example, Ilahiane’s and Sherry’s (2009, 2012) studies of mobile phones among micro-entrepreneurs in Morocco confirmed the need for both social network and an increase of business possibilities. It is safe to say that people’s development, more precisely fuller life, is incomplete when social cohesion is lacking in society. The present doctoral study went beyond Molony’s (2008a, 2008b) research – social cohesion also called transparency -- to envisage development as holistic. Social cohesion is only one of the basic capabilities professed by Sen. As Sen (1999) wrote,

Transparency guarantees [emphasis in original] deal with the need for openness that people can expect: the freedom to deal with one another under guarantees of disclosure and lucidity... These guarantees have a clear instrumental role in preventing corruption, financial irresponsibility and underhand dealings. (pp. 39-40)

Going past the mere idea of social cohesion, this doctoral study looked at the broader range of capabilities surrounding basic needs. The goal is not just having mobile phones to allow people to get in touch, but to help them enjoy fuller and better lives.

Molony’s (2008b) research corroborates prior research on in-person interaction being essential in Africa. Molony (2005) maintained, “the need for direct, personal interaction through face-to-face contact – one of the most pervasive features of African MSE [medium size enterprise] economies – emerge as a common theme across the case study industries” (p. ii, see also Molony, 2008b, p. 639-640; Molony, 2009, p. 285). Mobile phones are called to enhance face-to-face contacts

between humans. Kupfer (2007) advocated for the importance of virtual mobility coupled with physicality. The present doctoral study involved face-to-face contacts with concerned rural populations. This is to avoid the overstatement of online presence since the populations dealt with do not have the Internet in order to go online.

Another gap the present doctoral study planned to fill relates to qualitative research in mobile phone literature (see Agüero, de Silva, & Kang, 2011, p. 29; Molony, 2008b, p. 638; Molony, 2007, p. 78). While Molony undertook “qualitative research that looks in detail at different sub-sectors of the economy, and assesses how individuals interact with other entrepreneurs” (2008b, p. 638), the present doctoral study undertook in-depth and sedimented qualitative research with an emphasis being placed not on business people, but on ways in which mobile phones affect the living conditions of the poorest of the poor in their daily lives/struggles. As Molony (2007) insisted,

Only with multiple, in-depth, and semi-structured interviews [qualitative research], for example, did it become clear that some Tanzanian farmers are in relationship with a *dalali* [Swahili word for wholesaler/auctioneer] who is also their creditor [therefore the contact should be kept, despite the distance/travel to reach him]. (p. 78)

As recommended in the statement above, the present doctoral study went beyond the focus on entrepreneurs, and aimed to assess how much capability or more exactly the range of capabilities the worst-off person (non-entrepreneur) enjoyed.

The fourth theory with which mobile phones are being introduced with the idea of development is market price(s), with a direct consequence of market efficiency, participation, or integration. Studies done in this area insist on the reduction of search costs, travel time, risks involved, and transaction costs (Abraham, 2007; Aker, 2008, 2010; Aker & Blumenstock, 2015; Aker & Fafchamps, 2013; Aker & Mbiti, 2010b; de Silva & Ratnadiwakara, 2008; Ilahiane & Sherry, 2012; Muto & Yamano, 2009; Jensen, 2007; Zanello, 2012). Mobile phones have been linked to market efficiency on the assumption that they allow (better) access to price information and the elimination of risks involved in traveling to remote locations to seek information and market

services or goods. The belief is “that information failures in developing countries constrain the emergence of markets, and constrain business activity and investment” (Jagun, Heeks, & Whalley, 2008, p. 62). Information failures are also called information asymmetries in the sense that information does not flow efficiently from the sender to the receiver. The result is in part “that mobile phones reduced some information failures and their related costs and risks. Accordingly, they did help to make trade and markets in this sector operate somewhat more efficiently and effectively” (Jagun, Heeks, & Whalley, 2008, p. 62). Notable in this theory of mobile phone development is Harvard University Professor Jensen’s (2007) research about price dispersion in Kerala, a predominantly fishing state, South West of India. Facilitated by mobile phone uses, the reduction of price dispersion aka asymmetry of information is believed to have contributed to the welfare of both consumers and suppliers of fish in Kerala, India. Jensen (2007) elaborated,

Fishing is an important industry in Kerala... However, a significant limitation to fish marketing is that while at sea, fishermen are unable to observe prices at any of the numerous markets spread out along the coast. Further, fishermen can typically visit only one market per day because of high transportation costs and the limited duration of the market. As a result, fishermen sell their catch almost exclusively in their local market. In addition, there is almost no storage (due to costs), and little arbitrage on land due to poor road quality and high transportation costs; ultimately, the quantity supplied to a particular market is determined almost entirely by the amount of fish caught near that market [Market opens from 5:00 to 8:00am]. (p. 881)

These and other pressures converge to make prices variant and arbitrary, with the result of impractical/unreliable market. Weekly surveys were conducted from 1996 to 2001 among sardine fishing units, with a total of 35 beach markets each covering every 15 kilometers. Participants were randomly collected, after ensuring the participant’s involvement with fish industry and mobile phone use. Sardine proves to be the common fish in Kerala, based on Jensen’s research. Results show constant fish prices across regions, greater productivity of fish, and greater purchase of fish.

The major issue with Jensen's (2007) study is that this research is a quantitative research, with a direct consequence that the focus is not entirely grounded in everyday realities of the poor(est) in the selected population of Kerala, India. Readers are left unclear as to the extent to which some populations/groups could/can afford fish and mobile phone calls. The study lumps together all walks of people on this part of Indian West coast. Also the sharing or final destination of the benefits of those mobile phone-driven gains in Kerala is unclear. The present doctoral study aimed to bring to light the lived experiences of the concerned population(s), with a view on the struggles surrounding the lack of basic needs, not just fish. In addition, Jensen's (2007) did not say/investigate anything about housing, clothing, health, water, and food with which both fishers and clients struggle on a daily basis, not to mention other groups of individuals in society such as those allergic to fish. As Jensen (2007) acknowledged, "how the gain is shared between producers and consumers and whether each group gains or losses on net is ambiguous" (p. 913). Furthermore, the proposed efficiency of market displays a monolithic/reductionistic idea of market, excluding all other items equally important to the poorest, such as vegetable oil, flour, fruits, blankets, kitchenware, malaria pills, soaps, diapers, salt, sugar, firewood, etc. It is also unsafe to infer economic development from efficient purchases and supplies of a single product on the market. Note that the pressures seen in Kerala (i.e., transportation costs, bad roads, distance, etc.) align themselves with basic needs, the core unit of analysis of the present doctoral study.

More pertinently, Abraham (2007) also conducted research in Kerala – similar to that of Jensen (2007) -- running surveys of both consumers and suppliers of fish. While Abraham (2007) confirmed market efficiency and price constancy with regard to fish, due to the flow of information relayed by mobile phones, he did not infer economic development in Kerala. Interestingly, "when the respondents in the survey were asked which technological improvement made the most difference to them, mobile phones came in third to *mechanization and improved roads and transportation* [emphasis added]" (Abraham, 2007, p. 16). In light of the results outlined above, Abraham (2007) cautioned, "I remain *cautiously* [emphasis added] optimistic about the impact that communication technologies have in rural communities in developing countries" (p. 15). A later study done on mobile phone uses among fishers in Kerala (Sreekumar, 2011) did not testify to economic development. The study of market efficiency led by mobile

phone coverage has been replicated in Africa, Niger (Aker, 2008, 2010; Aker & Fafchamps, 2013; Aker & Mbiti, 2010a) and Ghana (Zanello, 2012) with a focus on grain prices or market participation.

Results have confirmed prior findings concerning market efficiency. Aker (2008) noted, “the introduction of cell phones reduced price dispersion across grain markets, with a larger increase for those markets that were farther apart and over time” (p. 40). As far as economic development is concerned, however, Aker refrained from making comments or drawing conclusions. Aker wrote, “while our results suggest there have been welfare gains associated with the introduction of cell phones in Niger, we have not undertaken a full welfare analysis for farmers” (2008, p. 41). As explained above, welfare is one of the many monikers ascribed to the concept development, depending on the trail of thought taken by the author(s). In-depth and lifeworld-embedded research, as proposed in the present doctoral study, has the potential to provide firmer and safer positions about the effects of mobile phones in rural areas of developing countries.

In a later study of market integration and information flow in Niger, Africa, Aker (2010) clarified,

Mobile phones appear to be a particularly effective and low-cost means of providing such information, and are well-suited to social and commercial norms in sub-Saharan Africa. These issues are central to the current debate concerning the role of information technology in promoting economic development. *Mobile phone infrastructure can have positive spillover effects on markets*, thereby serving as an effective poverty reduction tool for poor rural households. However, *it cannot replace investments in other infrastructure necessary for sustainable development, such as power, roads and electricity* [emphasis added]. (p. 58; see also Aker & Mbiti, 2010a, p. 25; Aker & Mbiti, 2010b, pp. 228-229)

Development cannot be reduced to successful uses of mobile phones for market purposes and gains. It does not mean that mobile phones cannot help enhance people’s wellbeing, just as any technology can, but that mobile phones are not, to borrow Carmody’s (2012) recent expression, “a *technical fix* [emphasis added] for what are primarily problems of power maldistribution

[inequality]” (p. 1). In their survey-infused research about market efficiency among onions traders in the Philippines, for example, Lee and Bellemare (2013) showed the increase of onion prices among onions traders who owned mobile phones, a revelation that more in-depth or lifeworld-grounded research is needed about the impact(s) of mobile phones on the poor, as is suggested in the present doctoral research.

Before being applied to or plugged into mobile phone penetration, the social dynamics of a market need thorough investigation. Karnani (2007) elaborated,

If it is true that the average profit margin in a market is well over 50%, we should certainly endeavor to make the market more efficient and reduce monopoly profits— resulting in significant price reduction. Even allowing for the fact that the poor are often subject to local monopolies, this is a rare situation. Therefore, the only realistic way to reduce price to the consumer is to reduce cost of the producer. (p. 100)

It is one thing to allow market participation, it is another thing to take into consideration the market and its dynamics (e.g., costs and product quality) in order to ensure people’s fuller development. Cost reduction is usually understood as, if not limited to, the purchasing power of mobile phone owners or borrowers. It is also unrealistic to reduce market reality to owners or borrowers of a specific item [i.e., mobile phone], leaving aside important items such as transportation means (i.e., chariots, bikes, wheelbarrows, etc.) and infrastructures, consumers’ income, bags, containers, rain coats, and storage facilities. Without these items, market participation becomes incomplete.

Perhaps even more questionable, the (developmental) benefits attributed to mobile phone use such as market participation, cost reduction, and rapid information flow figure among the benefits known to be proper to or resulting from social capital or social cohesion found in any society. In citing the UK Strategy Unit policy, Goodman (2005) enumerated six general benefits of social capital and wrote:

1. It [social capital] may facilitate *better economic performance*, for example through *reducing transaction costs*, enabling the mobilization of resources and facilitating the *rapid movement of information* [information flow].
2. It may facilitate the more efficient *functioning of job markets*, for example by *reducing search costs*.
3. It may facilitate educational attainment.
4. It may contribute to lower levels of crime.
5. It may lead to better health.
6. It may improve the effectiveness of institutions of government.

Research in rural Tanzania has suggested that increased levels of community participation [social capital] lead to higher household incomes... There appear to be strong correlations between *levels of social capital...* and *socio-economic development* [emphasis added] (p. 54, see also Putnam, 1993, p. 107, 157, 180)

Social capital is believed to lead to development with a broader impact than that of mobile phone uses. The leading factor of benefits is not so much about mobile phone propelling market participation as it is about social capital. Also, markets offer an irreplaceably lively and productive environment for rural communities struggling to survive. People make connections in the market. As Fafchamps (2004) declared,

The time is not far from where Africa was thought to escape the rule of the market. Precolonial realities were idealized as gift economics or pre-capitalist collectivism... As a result, the massive development of market activity that accompanied urbanization and (relative) modernization over the last four decades has gone largely unnoticed. Ironically, one could argue that sub-Saharan Africa today is more market oriented than many advanced countries. (p. 4)

It is not uncommon to find a misleading conception of African markets in mobile phone literature. The closest and pertinent illustration to mention here is farmer markets commonly held in Western societies. By and large, farmer markets constitute a source of economy and

conviviality even in Western societies, with many items being offered at a low and friendly price. At the same time, authors (see Abraham, 2007; Jensen, 2007; Sreekumar, 2011) tend to conceive of African markets as a disorder/asymmetry that mobile phones are called to fix, with Africans being seen as receivers and Westerners as givers. The strongest criticism against development produced by market price/participation comes from Aker and Blumenstock (2015), Srinivasan and Burrell (2015), Blumenstock and Eagle (2012), and Blumenstock, Shen, and Eagle (2010) who showed *inter alia* that mobile phone spread did not erase disparities among the world's poorest.

The fifth theory in light of which mobile phones are linked to economic development is m-banking, m-transaction, m-commerce, or m-payment, with the prefix “m” standing for the word mobile (Adler & Uppal, 2008; Aker & Blumenstock, 2015; Amelio, Djembissi, & Ivaldi, 2007; Coyle, 2007; Goodman & Walia, 2007; Houpis & Bellis, 2007; Mortimer-Schutts, 2007; Shaikh & Karjaluo, 2015; Tobbin, 2012; Williams & Torma, 2007; Yousif, Berthe, Maiyo, & Morawczynski, 2013; Zainudeen, Samarajiva, & Sivapragasam, 2011). M-banking has been hailed to be a potent remover of poverty around the world. Adler and Uppal (2008) claimed, “one of the most promising value-added services for mobile phones is m-commerce – the ability to make purchases or conduct financial transactions by using a mobile phone” (p. 24, see also Hughes, 2007, p. 1). Several m-banking services have been introduced in developing countries. In Bangladesh, for example, “Kamal Quadir [Bangladeshi business man and artist] ... developed the concept of CellBazaar... CellBazaar is essentially a mobile phone-based version of Craigslist [or Amazon]. The service... connects buyers and sellers in an electronic marketplace over mobile phones” (Adler & Uppal, 2008, p. 27). Of the many m-banking services implemented with the possibility of transferring money around the world are G-CASH and G-XI, in the Philippines; ICICI Bank, ABN Amro, and Barclay’s India, in India; M-PESA, in Kenya; and Wizzit, in South Africa (see Adler & Uppal, 2008, pp. 24-29; Maree *et al.*, 2013; Williams & Torma, 2007, pp. 13-14).

As described by Coyle (2007), three characteristics motivate the adoption of m-banking:

One is widespread access to mobiles, at least relative to many other types of infrastructure or household set. A second is the stark lack of access to financial services. A third characteristic, which has aroused particular interest in the aid community, is the rapid growth of inflows of remittances from overseas. (p. 2)

M-banking does not fit the reality of the world addressed in the present doctoral research. The reason being, mobile phones are widely shared (Aker & Mbiti, 2010b; Burrell, 2010; James & Versteeg) in Africa while a bank account is *essentially* private, not to mention how bank services are lacking among rural African populations.

As seen in early lessons of M-PESA deployment, derived from a survey research done on M-PESA (Vaughan, 2007), m-banking service requires basic infrastructures and processes not found in typical rural areas. M-PESA means m-money, a translation of mobile-*pesa*, *pesa* is the Swahili word for money. Moreover, even in urban or semi-urban areas – the primary target of m-transactions, the tendency of m-payment proponents to lean toward and attend to the elite of society -- calls into question the development program of m-payment services. It is the case that M-PESA aims to serve or bank the “unbanked” or “financially excluded,” (Coyle, 2007, p. 7), but it is also the case that the unbanked population is higher in urban than in rural regions. The reason for such inequality might be that rural populations lack the services and assets required to be able to join M-PESA. As noted in several recent studies, m-banking “results show a clear preference of the urban poor” (Mishra & Bisht, 2013, p. 513) or “leads to a focus on urban or semi-urban areas” (Yousif, Berthe, Maiyo, & Morawczynski, 2013, p. 30). As has been pointed out in financial circles, m-banking is just a bank, more precisely, “the ‘front office’ for financial services” (Williams & Torma, 2007, p. 12). More interestingly, much of the attention is being paid to low-income individuals in urban or semi-urban areas, and not to the basic needs of households. All in all, the living conditions of the poorest of the poor do not matter to m-banking researchers and practitioners. As Williams and Torma (2007) acknowledged,

Although the benefits of increased access to finance are well understood, the existing banking paradigms and business models of service delivery are structurally unable to

address the needs for the poor – in terms of the products and services on offer, their cost, and the geographical reach of the bank branch infrastructure. (p. 10)

Unless reality on the ground in rural areas becomes the primary focus of studies and the basic needs of livelihood in rural households are addressed, m-banking remains a service for “low income households” (Williams & Torma, 2007, p. 10), and therefore a tool of exclusion and inequality for those living on less than a dollar per day.

The dominance of shared use of mobile phones in rural areas (James & Versteeg, 2007) comes in sharp contrast to the paucity of attention accorded to it in mobile phone literature. In 2007, Williams and Torma revealingly lamented, “whilst there is little systematic data on the use of mobile transactions, the anecdotal evidence is powerful” (p. 17). Very recently, Tobbin (2012) deplored the lack of systematic evidence characterizing m-banking documentation. Other challenges arising from m-transaction services such as regulations, policies, networks, competitiveness, and interoperability (see Adler & Uppal, 2008; Amelio, Djembissi, & Ivaldi, 2007; Coyle, 2007; Goodman & Walia, 2007; Houpis & Bellis, 2007; Mortimer-Schutts, 2007; Williams & Torma, 2007) are aimed more at business aspects than the poorest of the poor in rural areas. In other words, the phenomenon focused on in the present doctoral study, namely development and its rapports with mobile phone uses, requires a deeper and firmer look into people’s lives in selected rural regions.

The sixth theory under which efforts toward development generated by mobile phones fall is GDP and related metrics (i.e., income, GNP, etc.). One of the most cited arguments behind the diffusion of mobile phones in developing countries is that mobile phones increase GDP, the classical indicator of economic development (Waverman, Meschi, & Fuss, 2005; Williams, 2005). Among the most indicative and comprehensive pieces of works in this strand of mobile phone research is Waverman’s work undertaken in conjunction with a wide range of world famous scholars of economic sciences, and sponsored by top-tier mobile phone companies Nokia and Vodafone (Waverman, Meschi, & Fuss, 2005). Leonard Waverman was then Chair of the LSE. The analysis of the research was done across African nations, with a look at the effects of

telecommunication networks in developed countries. The study covered a period of more than two decades, 1980-2003. As Waverman, Meschi, and Fuss (2005) indicated,

We find that mobile telephony has a positive and significant impact on economic growth, *and this impact may be twice as large in developing countries compared to developed countries* [emphasis in original]. This result concurs with intuition. Developed economies by and large had fully articulated fixed-line networks in 1996. Even so, the addition of mobile networks had significant value-added in the developed world: the value-added of mobility and the inclusion of disenfranchised consumers through pay-as-you-go plans unavailable for fixed lines. In developing countries, we find that the growth dividend is far larger because here mobile phones provide, by and large, the main communications networks; hence they supplant the information-gathering role of fixed-line systems. (p. 11)

The study was based on national data (used by World Bank and IMF) and ITU-provided data. The link between GDP and mobile phone penetration stems from the idea that fixed-line telephony took a long time to be fully deployed and implemented across Western countries due to grand-scale investment and landline construction whereas cellular telephony in developing countries has been implemented in a shorter period of time and with lesser investment than was the case in developed countries. But, Gough (2005), Vodafone International Institutions Director, warned,

More attention should be paid to the characteristics of how people actually do use phones in the developing world in policy debates on increasing access to Information and Communication Technology (ICT). *It is wrong to simply extrapolate our developed world models of needs and usage patterns to poorer nations* [emphasis added]. Understanding the context is vital. (p. 1)

The rural communities considered in this doctoral work did not fit in the model of GDP, nor did/do they benefit from GDP rate or growth. Also, GDP is not the best indicator of development (see discussion below).

Thorough analysis of literature shows that GDP was not meant to be the measurement of people's development. Moreover, the mere indication of economic success does not reflect the real lives of the world's poorest. As Delhey and Kroll (2012) wrote,

There is currently a broad global movement away from considerations of mere economic success towards a new public policy goal involving a broader notion of quality of life. This movement has also spurred the rethinking of which statistics inform us best about a country's situation and how its citizens are faring. For decades, the gold standard was a macroeconomic indicator: the GDP... However, this measure was never meant to be a measure of the welfare of nations (as its creator Simon Kuznets already warned in the 1930s) and so there is growing skepticism about the GDP's usefulness as a measure of national well-being. Slogans such as "beyond GDP" or "redefining progress" challenge the preoccupation with the GDP. (see also Deaton, 2005, 2010a, 2010b, 2010c)

People's development requires authors to capture the forces that characterize the real lifeworlds with which rural populations deal and struggle daily. Delhey and Kroll (2012) proposed the concept happiness in order to best capture the increase of internal inequalities found in developed countries. The present doctoral work espoused the perspective of human capabilities to best inquire into the development of rural populations in the Congo, the reason being that the word happiness can overlook the range of capabilities available to people. A person can be happy even when she is faced with a lack of certain items, but capabilities provide a broader view of what the person can and cannot do in her life.

Extensive literature related to Africa and its development has shown the inadequacy and inefficiency of GDP (Alkire, Roche, & Sumner, 2013; Alkire & Santos, 2013; Dulani, Mattes, & Logan, 2013; Hofmeyr, 2013; Jerven, 2013a, 2013b, 2013c, 2014; Jerven & Duncan, 2012; Mattes, 2008; Mattes & Bratton, 2009; Potts, 2013; Salehi-Isfahani, 2013; Sen, 1988, 1998b, 1999, 2009a, 2009b; World Bank, 2013) measurements and related concepts. As Hofmeyr (2013) rightly observed, "glowing GDP growth figures might therefore offer little solace to people

without jobs or those mired in poverty” (p. 1). The rhetoric of glowing GDP masks the realities of rural populations such as the ones looked at in this doctoral study. As Hofmeyr deplored,

There is a clear disconnect between the glowing reports of impressive GDP growth across much of the continent, and Africans’ own reports of the economic hardships they still confront in their daily lives... The growing protest trend in South Africa may be one example. (2013, pp. 11-12)

A closely related concept, along the lines of GDP, is the concept of economic growth that extensive literature has been claiming about Africa. Several experts have expressed concerns over the proclaimed African economic growth prior to the 2008 financial crisis. Aryeetey, Devarajan, Kanbur, and Kasekende (2012) noted,

The decade leading up to the financial crisis represents a unique period in the economic growth history of Africa. Africa recorded a sustained period of growth while at the same time controlling inflation... However, the sustained growth in the period was not associated with a sufficient drop in poverty across many countries in Africa. (p. 11)

In the grip of poverty, Africa shows a more challenging phenomenon, one of low productivity. Therefore, compared to other parts of the world, Africa offers the least contributions to global economy. As Aryeetey, Devarajan, Kanbur, and Kasekende (2012) clarified,

African economies today is the smallness of their shares in global transactions. Their involvement in global trade is the lowest for all regions at 3.5% of world merchandise exports in 2008 compared to 27.7% for Asia. While their involvement with global capital flows expanded significantly before the recent financial crisis, there are several indications that growth in inflows has been slowed down considerably, and lags far behind that of other developing regions [emphasis added]. (p. 9)

It is important to be mindful of those features in order to best address and assess the developmental effects of mobile phones in Africa. Africa’s small share in global economy

conspires with low incomes and low productivity. Aryeetey, Devarajan, Kanbur, and Kasekende (2012) explained,

A basic difference between African economies and the more developed regions of the world is the more widespread poverty in the region and low incomes derived from most economic activities. Incomes are generally low as a result of the low productivity associated with most production processes. People are involved in low-productivity agriculture and economies have a major challenge introducing industrial activity... Despite several years of economic reforms in most countries, unemployment and under-employment -- and especially low productivity in agriculture -- remain major obstacles in the fight to reduce poverty. (p. 14)

The present doctoral study sought to question the place of mobile phones and development among rural populations in Africa. The study was just as relevant as the moves seen in the fight against poverty prove to be scanty. Aryeetey, Devarajan, Kanbur, and Kasekende (2012) corroborated,

While poverty and inequality will dominate the development discourse in many African countries for a long time, there is little indication that both the governments and their development partners have found the appropriate responses to this challenge. *The lack of response is best illustrated by the fact that there are hardly any policies and programs that facilitate employment-creation on a sustained basis anywhere* [emphasis added]. (p. 14)

It is also fair to consider millions of individuals who are not allowed to protest for their basic freedoms across the continent (see Human Rights Watch website: <http://www.hrw.org/>). To best serve the world's poorest, mobile phone dissemination should be contrasted with growing internal inequalities across the globe, both in developed and developing nations.

The seventh theory with which authors regard mobile phones as a fuel of economic development is health informatics. While health informatics, variedly called bioinformatics, medical informatics, or medical information systems has been established as a discipline for more than

half a century (Lesk, 2013; Neame, 2012; Van Bommel & Musen, 1997), its interests into the topic of economic development remain negligible, due in part to the prevalence of medical issues and related services and processes. Nevertheless, the unstoppable penetration of mobile phones in medical settings and professions has reshaped the make-up of health informatics in several ways. A clearer link placed between health and development can be found in the UN materials concerning *The Millennium Development Goals* (2000), though the role of mobile phones needs further research and a crisper focus. Three of *The Millennium Development Goals* (2000) are related to health: reduce child mortality, improve maternal health, and combat HIV/AIDS, malaria, and other diseases. The underlying goal of health informatics is to provide and protect health to help humans achieve greater development or wellbeing. In so doing, health informatics engages in debates regarding mobile phones as a health-providing or –promoting tool. Notable examples include, among others, research about mobile phones and brain tumor (Khurana *et al.*, 2009; Khurana, Teo, & Bittar, 2009). This doctoral research was not a medical research in the sense that it sought to investigate the capabilities of rural populations regarding the fuller actualization of their lives rather than clinical effects and procedures with mobile phones.

The idea behind this study was to avoid being limited to a specific disease, condition, technology, medication, body part, or ailment, etc. in inquiring about the penetration of mobile phones among rural populations. It can be said in passing that health informatics literature has tended to be more involved in the design of specific technologies (e.g., mobile phones) or in the impacts on specific diseases than it is, for example, in *The Millennium Development Goals* (2000). It can also be clarified that the present doctoral research did not seek to investigate *The Millennium Development Goals* (2000) in and of themselves. Thus the holistic view taken in this doctoral study allowed for more integrated (processes of) development and uses of mobile phones. Also, this doctoral study was looking at the broader spectrum of capabilities surrounding basic needs (i.e., health, cloth, shelter, water, and food).

The eight and last theory in which authors come to grips with mobile phones and development is policy, reform, or regulation(s). To no small degree, policy has been acclaimed as the key driver of mobile phone-led development. Renowned works in this realm of research include, among others, Howard and Mazaheri (2009), Kang and Wu (2013), Jentzsch (2012), and Mohamad

(2014). The overarching thought here is that the better are mobile phone regulations in place the better are the impacts of mobile phones uses for development. The main pitfall in this area of mobile phone research is the top-down approach with which regulations tend to be implemented and researched, with the context of people being the last concern of analysts. As is clear below, regulations require on-going and interactive collaboration between authorities/officials and concerned constituencies or individuals.

Much of mobile phone literature on policy (Howard & Mazaheri, 2009; Kang & Wu, 2013; Jentzsch, 2012; Mohamad, 2014) regards rural populations as recipients of regulations, with authorities being senders, and often in times, judges of regulations and their implementation. Not long ago, Mishra and Bisht (2013) insisted, “state and policy makers, instead of taking decisions on the basis of perception and interpretation of the chosen few, should *continuously listen to what their constituencies (the people) think is appropriate* [emphasis added]” (p. 506, see also Mansell, 2010, p. 22). Therefore, greater capabilities, as suggested in the present doctoral study, given to rural populations constitute a powerful boost not only for the efficiency of policy, but for people’s wellbeing.

In sum, eight major theories have caused authors to establish a link between mobiles and development (see Figure 4).

Map of Mobile Phone Literature



Figure 4: Theories of mobile phone development

First, micro-loans or micro-finance theory teaches that the poor can reach development through a distribution and implementation of small-scale credits. The second theory presents small enterprises as the channel in which mobiles yield development to the poor. The third mobile phone theory holds that mobiles are designed for social cohesion. The fourth mobile phone theory advocates market price as the way in which mobile phones produce development among the poor. The fifth theory privileges m-banking in order for the poor to reach development. The sixth mobile phone considers the traditional metrics of economics, such as GDP, GNP, currency, income, etc. as the required process by which mobile phones yield development. The seventh mobile phone theory places an emphasis on health informatics in ways that mobile phones allow the poor to access medical services. The eight and last mobile phone theory views policy or regulation as the formula with which mobiles can generate development among the poor.

Lessons learned about mobile phones

As is apparent in most mobile phone literature, an increasing body of knowledge (Carmody, 2012, 2013; Duncombe, 2011; Futch & McIntosh, 2009; Jagun, Heeks, & Whalley, 2008; Mansell, 2012; Rashid & Elder, 2009) calls into question the belief that mobile phones produce economic development. As is also apparent from the varying materials of mobile phone

literature, authors tend to focus more on the usability of mobile phones and ensuing benefits or networks than on the actual production of economic development by mobile phones. As one can imagine, “there is less emphasis... on researching the impact of mobiles phones as productive tools – which through local appropriation and adaption can contribute directly to new forms of livelihood and hence economic development” (Duncombe, 2011, p. 285). Following from this view of mobile phone uses is the insistence placed on mobile phone users, entrepreneurs, mobile phone operators, micro-credits holders, traders, farmers, etc., leaving aside the larger audience or community, namely: the end-users, non-mobile phone users, or the poorest of the poor for whom development projects and their funding have been and should be conceived or implemented. In a recent work done on the youth in Scandinavia, for example, Bertel (2013) remarked, “few published studies have examined the everyday use practices outside of specialized populations such as innovators and early adopters [of new technologies such as mobile phones]” (p. 301). Studies have proved to be elitist in their choices and views of mobile phone impact(s). In the same way, the word impact and its multiple toolkits of measurement tend to be reserved to mobile phone operators or users and their lives. This doctoral work looked at key players and took the debate to the roots of how mobile phones produce economic development among rural populations, from the perspectives of those concerned.

Another factor that contributes to drifting development away from authors’ attention is the neglect of prior warnings, more particularly, the lack of systematic evidence regarding mobile phone effects upon the lives of the poor. Conducive to the neglect of prior warnings is the growing multiplication of online (publication) venues and the lack of within- and between-group collaboration brought by these venues. As Rashid and Elder (2009) concluded,

Failure to do it [research on mobile phones] in a systematic and rigorous manner, with clear evidence informing policy and practice, may lead to an M4D [mobile for development] “white elephant”, like so many other technological applications before it [mobile phone]. (p. 14)

Chief among the most neglected warnings regarding mobile phone uses, in addition to anecdotal evidence mentioned earlier, are (1) the prevalence of shared ownership in African communities

(Aker & Mbiti, 2010b; Burrell, 2010; de Souza e Silva *et al.*, 2011; James & Versteeg, 2007; Porter, 2012, 2015; Porter *et al.*, 2012), (2) unreliability of national data (Deaton, 2005, 2010a, 2010b, 2010c; Jerven, 2010a, 2010b, 2010c, 2010d, 2011, 2013a, 2013b, 2013c, 2014; Jerven & Duncan, 2012), (3) non-representation of the poorest in Africa and/or around the world (rural populations and their living conditions) (Alkire, Roche, & Summer, 2013; Dulani, Mattes, & Logan, 2013; Hofmyer, 2013; Mattes, 2008; Mattes & Bratton, 2009), (4) inefficiency of traditional statistical measures (Delhey & Kroll, 2012; Kroll, 2011, 2013), (5) persistence of internal inequalities across nations (Alkire, Roche, & Summer, 2013; Bullock, 2013; Camfield *et al.*, 2012; Smith, 2013; Swaminathan, n.d., Manda, 2013; World Bank, 2013, 2015a), and (6) lack of demonstrated productivity in relation to the proclaimed mobile phone-generated development (Carmody, 2010, 2011, 2012, 2013; DeMaagd, 2008). Newer or more nuanced terms have emerged in order to best tackle the conditions of the world's poorest, such as *lived poverty* (Hofmyer, 2013; Mattes & Bratton, 2009), *inclusive growth* (Manda, 2013), *shared prosperity* (World Bank, 2013), *poverty pockets* (Alkire, Roche, & Summer, 2013), *happiness* (Kroll, 2011, 2012; Delhey & Kroll, 2013), *internal inequality* (Alkire, Roche, & Summer, 2013), and *destitution* (Alkire *et al.*, 2015).

On the one hand, the listed terms highlight the need felt in development circles to best attend to the real world conditions of the poor, conditions that traditional metrics and tools are unable to render or translate (see Deaton, 2005, 2010a, 2010b, 2010c). As Jarrett (2013) wrote, “poverty persists around the world and is exacerbated by growing inequality especially within countries [both developed and developing]” (p. 3, see also Grabowski, Self, & Shields, 2015, p. 3; Shaefer & Edin, 2013, p. 250; OECD, 2014, p. 30; World Bank, 2015a, p. 43; Peet & Hartwick, 2015, p. 11). More alarmingly, “the gap between rich and poor has widened in most OECD countries over the past 30 years. *This occurred when countries were going through a sustained period of economic growth* [emphasis added]” (OECD, 2011, p. 1). On the other hand, the listed terms corroborate the framework espoused in the present doctoral study, which is capability approach, in order to infuse a holistic view of capabilities with and within which the poorest can have/lead fuller and better lives. Accounts of mobile phones geared toward private ownership or subscription face the challenge of shared ownership. The present doctoral study sought to drill

deep in the broader realm of people's lives to trace the largely touted developmental effects of mobile phones.

As shown earlier, extensive studies have shown mobile phones to be concentrated in circles of the privileged/wealthy (Agüero, de Silva, & Kang, 2011; Blumenstock, 2012; Blumenstock & Eagle, 2012; Blumenstock, Eagle, & Fafchamps, 2012; Blumenstock, Gillick, & Eagle, 2010; Blumenstock, Shen, & Eagle, 2010; Burrell, 2010; de Souza e Silva, 2007; de Souza e Silva *et al.*, 2011; Duggan & Smith, 2013; Huyer, Hafkin, Ertl, & Dryburgh, 2005). Such a trend contributes to the outcast/left-out populations getting poorer and poorer, and defeats the claim that mobile phones produce development. There is also growing evidence (Bare & Endouware, 2013; Cibangu, 2013c; de Souza e Silva, 2007; de Souza e Silva *et al.*, 2011; Feather, 2013) that while access to information is being made easier, it involves costs (i.e., battery charges, subscription/contract, software/apps, electricity, etc.).

As Agüero, de Silva, and Kang (2011) noted, "it is still unclear how the poor in developing countries actually afford to use mobile phone services. Although the prices are falling, the expenses of these services may not be negligible to those under severe financial constraints" (p. 19). Results of research done in the slums of Rio de Janeiro in Brazil confirm the financial difficulties associated with mobile phone diffusion among the poor. Evidently, "the first barrier to owning a cell phone is financial" (de Souza e Silva *et al.*, 2011, p. 415). In struggling with financial costs of information access, users in developing countries have devised strategies such as beeping, missed calls, and shared use (de Souza e Silva, 2007; de Souza e Silva *et al.*, 2011; Donner, 2007c; Sey, 2007, 2009; Porter, 2012, 2015; Porter *et al.*, 2012; Ureta, 2008; Taiwo & Igwebuikwe, 2015). To resolve information access costs imposed upon the poor in developing countries, analysts tend to suggest as cheap service and product of mobile phones as possible, leaving aside the capabilities of the poor (e.g., decent job, bank credit/interest, salary raises, qualification, professional skills, awards, heritage, retirement, etc.).

The present doctoral study defended a holistic view of society/development to pinpoint not only the users but perhaps most importantly the left-out victims or non-users in the era of mobile

phone penetration, and assess the range of capabilities available to them. As Blumenstock, Eagle, and Fafchamps (2012) deplored,

There is a sharp divide between people who do and don't own mobile phones, and as we show in this paper, it is the wealthiest who are most likely to reap the risk sharing benefits of mobile money. Such evidence suggests that policies that more actively target poorer segments of the population, and which lower barriers to adoption and use, might better ensure that the potential benefits of mobile phones are realized by those with the greatest need. (p. 1)

Only by living in or immersing ourselves in the lifeworlds of the furthest or worst rural populations can researchers assess and produce firmer indications and conclusions of mobile phone-led development.

A key feature seen in the bodies of mobile phone literature allegiant to the popular belief of mobile phone-driven development is the conclusion that -- owing to the introduction of mobile phones -- the expansion of calls, networks, markets, information, and prices constitute an indication of development for a given micro-enterprise in developing nations. Although it holds some merit to it, such a position, however, translates a short-sighted business view, considering the research questions being posed in this study. Again, this is not saying that micro-enterprise is not valuable for a society's economy, but that the quantity of calls, networks, and business activities represents only a fraction of the larger (rural) society and its economic system and challenges as looked at in this study. Experience shows that unproductive calls or contacts might be avoided. The expansion of business opportunities is not an end in and of itself.

Development approaches

The field of development studies arguably took shape in the 1940s, and since then various approaches have been proposed to conceptualize development. As Potter, Binns, Smith, and Elliott (2008) argued, "a major characteristic of the multi- and interdisciplinary field of development studies since its establishment in the 1940s has been a series of sea-level changes in thinking about the process of development itself" (p. 67). In fact, it was not until the end of

World War II that policy makers faced the challenges of nations' economic development, especially those of war-devastated European nations. Development approaches have emerged under different circumstances, at different times, and for different authors. Each approach has engaged in a specific focal point, based on its proponents' beliefs, worldviews, and agendas. Consequently, it is not uncommon that particular approaches do not relate to and cite each other.

Of the many development approaches available (Grabowski, Self, & Shields, 2015; McMichael, 2012; Mosse, 2013; Peet & Hartwick, 2015; Potter, Conway, Evans, & Lloyd-Evans, 2012), the present study discussed the nine most important: (1) modernization, (2) post-colonialism, (3), logical frame/cost-benefit analysis, (4) development revisited, (5) participatory development, (6) livelihoods, (7) racialized/Westernized development, (8) basic needs approach, and (9) human capabilities. First, modernization is traceable to Marx (1844/1959, 1847/1955, 1867/1977), and asserts that the transfer of technology and attendant concepts indicate development. According to this logic, greater technology indicates greater development. Therefore, research centers on technology patterns and systems, with the development research goal of increasing the understanding of ICTs as systems and artifacts. Indeed, over the course of centuries, technology has had the distinct capacity to change the material and spiritual conditions of humans (Alvares, 1991; Needham, 1969; Schumpeter, 1926/1949). Conceived of as a step-by-step process, quantification of development served to lay out the plans as to how non-Western or developing nations would imitate and copy Western societies. Kiely (2006) wrote,

Modernization theory was the dominant sociological theory of development for much of the 1950s and 1960s. Its principal claim was that development was a process in which 'societies' – defined as nations states – pass through similar stages of development on the road to an end state... The claims of modernization theory can be traced back to the nineteenth and eighteenth centuries... Modernization theorists argued that development represented a transition from tradition to modernity. This was achieved through copying at least some of the (perceived) characteristics of Western societies, such as the development of entrepreneurship and the borrowing of advanced technology. Enhanced contact with the West was considered desirable as it hastened the transition to modernity. (p. 395)

The idea of Westernization is integral to modernization, though development is not a phenomenon limited to Europe and North America (Arnason, 2002; Currie-Alder, Kanbur, Malone, & Medhora, 2014; Needham, 1969; Ravallion, 2009; Shim, 2010). It is important to bear in mind that this is how, across disciplines, a great many development critics have viewed development processes. Examples of modernization include Green Revolution as applied in Mexico and China (Borlaug, 2000a, 2000b, 2007; Perkins, 1997; Smale, Singh, Di Falco, & Zambrano, 2008; Swaminathan, 1996, 2006). One of the major strengths of modernization theory is its focus on technology and its potentials to change human condition. Modernization theory's weakness, however, is the fixation to and equation with the West in terms of development on the one hand, and its ready-made stage-centric view of modernization on the other. The opportunity is to perceive how technology can and should help development work. The threat, however, is the thought that technology is the sole solution. As Kleine (2013) explained, "technologies are frequently a means to an end, and so use of a specific technology may be a capability in itself, but is much more often a tool used to achieve or expand other capabilities" (p. 8). The present doctoral research sought to capture the spectrum of options or capabilities that rural populations enjoy when using mobile phone technologies in their daily lives.

The second development approach is post-colonialism. Primarily rebuking the concepts modernity and development, post-colonialism originated in the struggles against colonial powers after World War II. In recent years, however, post-colonialism has seen a resurgence in the face of new forms of imperialisms that the flow of globalization is carrying worldwide (Loomba *et al.*, 2005). Post-colonialism stands in contrast to the tenets of modernization theory. More particularly, harnessed by independence movements in the 1960s, and lately by the 1990s wave of democracy, the post-colonialist approach refers to "anti-development," "post-development," "beyond-development" (Potter, Binns, Smith, & Elliott, 2008, p. 4), or "*dependentistas*" (Melkote & Steeves, 2001, Kiely, 1999; Pieterse, 2000; Servaes, 2008). Post-colonialism propagates non-Western principles in rebuttal against development that epitomizes Western agendas, ideologies, and interests. Kiely (2006) declared,

Post-development theories argue that the development project is inherently Western and based on the exercise of power over subject peoples in the South... Post development

theories suggest that an alternative is support for social movements that are said to reject the inherent Westernization of the development project, and which support a variety of alternatives to the homogenising discourse of development. (p. 398)

According to this approach, the freer developing nations are from the oppression of the West, the more opportunities they gain for development. Rejection of Western-sponsored development has carried different dimensions among authors, the most important of which are post-colonialism and the anti-aid trend. Post-colonialists posit Western domination as the vehicle and agenda of development (Escobar, 1987, 1992, 2005, 2008, 2009, 2012; Esteva, 1987; Esteva & Prakash, 1998a, 1998b; Melkote & Steeves, 2001; Mignolo & Escobar, 2010; Kiely, 1999; Servaes, 2008). Anti-aid authors regard donors' aid and related investment as harmful to the prospects and practices of local development (Easterly, 2001, 2002, 2003, 2006a, 2006b; Hardin, 1999, 2003; Moyo, 2009, 2011, 2012). Campaigns of activists and some influential academics (Rawls, 1971/2003; Singer, 1972, 2002, 2009, 2012, 2015) defending aid on humanitarian grounds have contributed to a rethinking of aid. In an observation nothing short of relevant, Australian renown activist Singer (2012) remarked, "*If everyone with abundance were to contribute to the effort to reduce extreme poverty and all that goes with it, the amount each of us would need to give would be quite modest [emphasis in original]*" (p. 268). Part of the idea is not to defend aid in and of itself, but to take actions in order to improve people's lives. The remark has led scores of policy makers and donors to provide nearly as much fund to development agencies and projects as criticism was being made about the inaction, if not the complicity, of the West regarding increasing poverty in Africa. The anti-colonialist movement has taken different forms and can be described as "effective altruism," to borrow a recent expression of Singer (2015, p. viii). To explain, Singer (2015) wrote,

Most effective altruists are not saints but ordinary people like you and me... They prefer to focus on the good they are doing. Some of them are content to know that they are doing something significant to make the world a better place... Effective altruism is notable from several perspectives... First, and most important, it is making a difference to the world. (p. viii)

The statement comes down to the idea that indifference in the face of global poverty does not make the world any better than did colonialism.

One of the strengths of post-colonialism is its perception and criticism of developers' domination of the vulnerable. Post-colonialism's weakness is to over-emphasize the West as a colonial power, neglecting local domination and non-Western domination by nations such as Russia and China (Bartenev & Glazunova, 2013; Moyo, 2012). For example, it is demonstrated that recent China's investments in Africa tend to overlook the poor and to repeat colonial flaws (Carmody, 2010, 2011; Quinn & Heinrich, 2011; van Dijk, 2009). Researchers need to assess how local forces and non-Western agencies instill domination in rural populations. The weakness of post-colonialism lies in the implication that without the West, development becomes easy. The present doctoral study did not take a post-colonial approach in order to be able to capture the forces that threaten development on the ground. The reason being, government officials can be just as (even more than) destructive as colonialism since people's welfare in rural areas does not seem to be the primary goal of state priorities.

The third development approach is logical framework analysis, commonly called *log frame*. Log frame has come into development studies through USAID, as a practical application of cost-benefits analysis framework (MacArthur, 1996). After its first use in the 1970s by USAID, log frame gained popularity around the world in the 1980s and 1990s. The practice behind log frame involves weighing the inputs and outputs with specific purposes and means of verification. Drawing on cost-benefits analysis tenets (Atkinson & Mourato, 2008; Borghi, 2008; Casebeer, Raichle, Kristofco, & Carillo, 1997; Frank, 2000; Hummel-Rossi & Ashdown, 2002; Kornhauser, 2000; Levin, 1995; MacArthur, 1996; Mishan, 1976; Mylonakis & Tahinakis, 2006; Nussbaum, 2000a; Sen, 2000b; Sunstein, 2007; Tefvik, 1996), log frame proposes tangible and verifiable outcomes (BOND, 2003). Log frame seeks to attend to the concerns of consumerist and mass production society by evaluating and monitoring development outcomes and related policies and processes in order to minimize losses. Given its narrow emphasis on measurable outcomes, however, log frame has merged into more robust development approaches. The decline of log frame has also distanced cost-benefits analysis from development studies, although cost-benefits analysis, even with its limited scope, can still be of help to development

studies. The major advantage of the log frame is the measurability of outcomes whereas its weakness resides in the disregard of the concerned populations and their local differences and specifics.

The fourth development approach regards participatory development (Ashley, 2011; Beardon, 2001, 2004, 2010; H. Beardon & D. Beardon, 2011; Beardon & Newman, 2011a, 2011b; Beardon *et al.*, 2011; Berdou, 2012; Chambers, 1983/2013b, 1987, 1992, 1993, 1994a, 1994b, 1994c, 1995a, 1995b, 1995c, 1997, 2002/2011, 2004, 2008, 2010, 2012, 2013a; Chetley, 2011; Cleaver, 2001; Cooke, 2001; Cooke & Kothari, 2001; McIntyre, 2008; Mohan, 2001, 2008; Mohan & Stokke, 2000; Morris, 2005; Mosse, 2001; Newman & Beardon, 2011). What is unique about participatory development is its humanistic focus. For a detailed practical and conceptual guide of participatory development practice, Beardon's (2010, see especially pp. 8-12; 14-45) work, among others, is recommendable. As a rebuttal of technological focus, participatory development places humans at the center of social change, dismissing the pre-eminence of "technological progress over human development" (Mohan & Stokke, 2000, p. 178). In this regard, participatory development sheds stark light on the limitations of modernization theorists, who do not tend to take into consideration the role of human participation. Since modernization theorists bypass local populations in rural areas, participation becomes a powerful tool to involve and empower the world's poorest populations. As Mohan (2008) noted,

According to the strongest advocates of PD [participatory development], "normal" development is characterized by biases – Eurocentricism, positivism and top-downism – which are disempowering... The tendency is to equate development with the modernity achieved by 'western' societies and to copy them through planning by experts. (p. 46, see also McMichael, 2012, pp. 3-4)

The goal is to avoid Eurocentrist agendas to involve and empower the concerned. Participatory development involves three key ideas: effectiveness, efficiency, and empowerment (Servaes & Malikhao, 2005; Morris, 2005; Cadiz, 2005; H. Beardon & D. Beardon, 2011; Quarry & Ramírez, 2009). In their variant of participatory development, Quarry and Ramírez (2009) insisted on listening before telling/enacting the story of development. Examples of participatory

development concern Grameen Bank and its Village Phone projects conducted in developing countries (Aminuzzaman, Baldersheim, & Jamil, 2003; Khandker & Khalily, 1995; Singhal *et al.*, 2005). By directly involving those concerned in the development project, in contrast to traditional development discourse whose program springs from and pertains to experts, participatory development has proved effective and efficient by making local communities leaders of their own development. Participatory development has gained momentums in various areas of technology-oriented disciplines, the most vocal of which is Human Computer Interaction, with the seminal works of Cooper (2004), Nielsen (1992a, 1992b, 1993, 1994a, 1994b, 2000), Norman (1969, 1988, 1988/2002, 2007), and Muller and Kuhn (1993), among others. In this sense, the design of technologies was/is conducted in conjunction with or under the guidance of consumers.

The idea criticized here is the log frame concept of quantified outcomes, at the expense of people's values such as participation, involvement, or empowerment. Despite successes, participatory development is criticized for failing to eliminate inequities among newly empowered populations. The focus of this school of thought is more on participatory empowerment of the concerned than anything else. Other pitfalls of participatory development lie in its classroom format, lab-like session withdrawn from everyday real word of the concerned, intellectualistic endeavor audience, classroom learning, and organization. To describe participatory practice, for example, Beardon and Newman (2011a) spoke of "*writeshop* – or *editshop* [emphasis added]" (p. 20). Such intellectualism tends to exclude illiterate people, the disabled, the sick, and elderly. In addition, participatory development's insistence on organization eliminates the chances of participation of illiterate populations accustomed to and situated in informal groups and activities. Beardon and Newman (2011b) defined the aim of participatory development as the endeavor "to explore how knowledge is conceived and valued within your organization -- and unpack the systems and structures that exist to support information flows [within the organization]" (p. 171).

Critics within and outside participatory practice have mentioned several flaws (Cooke, 2001; Cooke & Khotari, 2001).⁴ Technology-oriented system and its practice of labs, experiments, and

⁴ See also Mockler & Groundwater-Smith (2014) criticism of participatory approach in education.

monitoring results have had an impact, greater than acknowledged, on participatory methods. Despite the noble idea of empowerment behind them, the principles of participatory development continue to revolve around positivistic tenets of transfer, diffusion, evaluation, test, sender-and-receiver system, and distribution, to name a few (E. Rogers, 1962/2003; Shannon & Weaver, 1949; Shannon, 1948; Y. Rogers, 2003; Machlup, 1962, 1979, 1980a, 1980b). Recently, Chamber (2010) acknowledged the need to expand the realm of participatory field, pointing to ideas such as adaptive and participatory pluralism. Chambers (2010) explained,

Thinking and behaving in an *adaptive and participatory pluralism* can help us do better in development... Much that is embedded in the often *high status of professionalism* associated elements of stable conformity and standard procedures has to be reversed. Educational practices, organisational cultures, and personal development have to change radically... Treat linear thinking and standardized procedures as an “opportunity niche” ... to replace *the currently intensifying top down linearity of target and results-oriented procedures* [emphasis added]. (pp. 48-49)

As is now clear, one of the pay-offs of participatory development is the involvement of concerned populations. Participatory development’s weakness resides in its tendency to overstate the role of local participation. The present study employed phenomenology in order to capture the lived experiences of people in rural areas and return to things themselves, not just participation. Curiously enough, Chambers (2010) recuperated the idea of drama in his newly revised model of participatory method aka participatory pluralism. Outlining the recommendations with which to revamp participatory approaches, Chambers (2010) suggested to

systematically explore the potentials and limits of PMs [Participatory Methodologies], including their development and use... Participatory practice is performance and every time is new. PMs and open source interactions are sustained by the creativity brought forth by the uniqueness of each context and time and of each performer and group of performers... The paradigm of adaptive and participatory pluralism cannot be set or static. It must itself, of its nature, continuously evolve and change. (p. 50)

As seen in the above statement, participatory practice is searching and encouraging the uniqueness of contexts such as the one in which the present doctoral study was involved. The goal is to search (Easterly, 2006a, 2006b; Galliers, 2013), and not predetermine or monitor people's lifeworlds. Lifeworlds ought to be lived, not monitored or orchestrated.

The fifth development approach concerns *development revisited*. Development revisited affirms the need for development despite the frequent shortcomings of development projects and organizations. Development revisited has become a rallying point of research among a number of development experts. By re-claiming the significance of the development concept, development revisited has led most major development projects during the late 1990s and onward. One of the leading advocates of development revisited approach is University of East London development expert Ray Kiely (Kiely, 1995, 1999, 2006). As Kiely (1999) attested,

[While] the idea of development ... constitutes a new form of colonialism...not all theories of development can be tarred with the same brush. Post-development theory is guilty of homogenising the idea of development, thereby conflating all theories of development with the outmoded (and long discredited) theory of modernization ... The result is uncritical, romantic celebration of the local which can have reactionary political implications. (p. 30)

The statement suggested that not all development is a flawed endeavor. Proponents of development revisited believe that localized oppression is no better than Western hegemony, and that development forces can be destructive both globally and locally, leading to the conclusion that the more people are free from both local and foreign oppression, the greater is their access to development. The extent to which one has emphasized Western imperialism has also distracted authors from the dangers of internal and local evils in developing countries.

Another branch of revisited development approach can be found in the revised modernization theory recently proposed by Escobar (2010). In his revision of modernization theory, all too often forgotten, Escobar reinstated the concept development. Escobar wrote,

It has been said of the notion of post-development (Escobar 1995) [see 2nd ed., 2012] that it pointed at a pristine future where development would no longer exist. Nothing of the sort was intended with the notion, which intuited the possibility of *visualizing an era where development ceased to be the central organizing principle of social life* [italics in original] and which, even more, visualized such a displacement as already happening in the present. (2010, p. 11)

Development remains a central theme with which to organize and improve social reality. The goal is to allow development endeavors that embrace alternative and plural modernizations in contrast to the Euro-centric modernization. It follows that modernization is essential to people's development. Researchers should not deprive the poor from modernity. Put differently, development means multiple, multidirectional, communicative, and interactive modernization, based on people's needs, situations, cultures, etc. One of the strengths of revisited development is its refocus on development, its weakness resides in the unclear position as to what needs to be taken/enhanced in the West and local institutions.

The sixth development approach refers to livelihoods approach. Livelihoods approach, widely called sustainable livelihoods approach (Carney *et al.*, 1999; De Haan, 2000; De Haan & Zoomers, 2005; Duncombe, 2012a; Ellis, 1998, 2000, 2006; Ellis & Bahiigwa, 2003; Ellis & Mdoe, 2003; Ellis, Kutengule, & Nyasulu, 2003; Kaag *et al.*, 2004; Martin & Abbott, 2011; Zoomers, 2008), emphasizes the struggles of the poor to survive. Livelihoods approach considers livelihood as a central unit of development, around which poor households conduct their daily activities. As Ellis (2000) noted, "livelihood seems to offer a more complete picture of the complexities of survival in low-income countries than terms formerly considered adequate like 'subsistence', 'incomes' and 'employment'" (p. viii). Ellis (2000) explained, "it is crucial to understand and evaluate livelihood strategies, livelihood shifts and in particular the way inputs affect livelihoods for poorer people, as distinct from their impacts on the livelihoods of the already well-off" (p. 2). Livelihoods approach looks at ways in which rural households strive to survive in their daily activities. The advantage of livelihood approach is its focus on the struggles of households. With its focus on household livelihoods, however, livelihood approach gives less

weight to several other important forces of development such as individuals, orphans, widows, seniors, etc.

The seventh development can be called racialized or Westernized development. In part akin to modernization theory of development, racialized development emphasizes the role of White supremacy/Europeans as the platform around which development is to be discussed and implemented. Racialized development asserts that the main cause of underdevelopment is the maneuvers (i.e., aid to poor countries) of White Europeans. Seminal authors of this development trend include, but not limited to: Easterly (2002, 2006a, 2006b), Nisbet (1969, 1970, 1986), and Moyo (2011, 2012). Despite extensive evidence that development is not something inherent to Western societies (Cibangu, 2013a; Needham, 1969; Ravallion, 2009), some authors still find reasons to show the role of White Europeans in development practice and malpractice, so to speak. For example, Easterly's (2006b) book inscribes itself within this line of thought: *The white man's burden: How the West's efforts to aid the rest have done so much ill and so little good*. The central claim of the book is one that makes development dependent on White Europeans. Moyo (2009, 2011) corroborated the same claims (see also McMichael, 2012, pp. 2-3).

As noted earlier about modernization theory, the major question arising here is how aid coming from other countries (i.e., China, see Moyo, 2012) is safer, fairer, more human, and more effective than the one provided by White Europeans. Equally, the actions taken by other countries, such as China, Russia, Japan, Brazil, South Africa, etc. toward developing countries are not as immune against malpractice of development as commonly thought. For example, Carmody (2011) showed the extractive policy of China in Africa to be dishonest and destructive to African economies. It follows that the racialization of development proves to be imbalanced, allowing other countries or leaders to do worse in developing countries than White Europeans did. The argument goes a long way toward showing that the detractors of White Europeans have not been able to propose alternate safe (non-Western) mechanics of development. This doesn't mean that White Europeans are correct in whatever they do in developing countries, but that the chances of ruining/jeopardizing development work(s) are the same regardless of race or a

country's tutelage/location. Not one nation/society/leader has shown to be the *guarantor* of development for all nations to follow. Development is a road in which all can fall or thrive.

The eight development approach embraces basic needs approach. Earliest recorded discussions of basic needs extend as far back as Antiquity where ideas of human condition were developed in ancient Egypt by Amenemope in the 11th century BC (see Simpson, 2003, p. 224, 238, 243) or in ancient Greece by Aristotle (1926, 1933, 1982) in the 4th century BC. However, in development studies, basic needs approach can be traced back to 1978 when a global program was implemented by the World Bank in order to eradicate poverty around the world. As Streeten *et al.* (1981) wrote,

Early in 1978, a World Bank-wide work program was launched to study the operational implications of meeting basic needs within a short period, say, one generation, as a principle objective of national development efforts... The objective of meeting basic needs brings to a development strategy a heightened concern with the satisfaction of some elementary needs of the whole population... The explicit adoption of this objective helps gear production, investment, income, and employment policies to meet the needs of the poor in a cost-effective manner and within a specific time frame. (p. 3)

The objective of basic needs approach was to gear all resources available toward ensuring the satisfaction of minimum needs of populations within a short amount of time.

Many authors (see Stewart, 1985, 2006; Streeten, 1994) have credited the first full-blown exposé of basic needs to psychologist Maslow (1943, 1954, 1969). However, it was observed that Maslow's (1943, 1954, 1969) works were preceded by those of several psychologists – versed in discussions of basic needs -- of whom McDougall (1932/2015) was one of the most vocal (see Gollwitzer & Oettingen, 2001). In essence, Maslow (1943, 1954, 1969) identified a pyramid of five basic needs, namely: (1) self-actualization, (2) esteem, (3) belonging/love, (4) safety, and (5) physiological needs. The physiological needs comprised: air, food, and water. In his later works, Maslow (1969) added self-transcendence as the first and most important basic need. For his part, McDougall (1932/2015) kept a more generic view of basic needs. The main criticism to be raised

against Maslow (1943, 1954, 1969) as well as his predecessors (Gollwitzer & Oettingen, 2001; McDougall (1932/2015) is that of behaviorism, more specifically mentalism also called representationalism or psychologism, a line of thought that Husserl (1913/1983) is most known to have rebutted. Psychologism, also called logical psychologism (see Giorgi, 1981, Kusch, 2011), was premised on the principle of two distinct worlds: the self with its mental structures and reality, which is a replica of the mental structures (of the self). Thus, psychologism, an offspring of positivism (see details in methodology chapter), taught that logical laws derive from and respond to psychological facts/entities, the consequence being that reality depends on the mental states (of the self). In other words, with reality being the manifestation of psychological states, the goal of science was believed to investigate and reproduce these mental structures. The misleading part of psychologism is that basic needs are supplanted by mental states, which the researcher was called to investigate. Psychologism reverberated in development literature, more specifically in ways that colonial powers conceptualized development for developing countries. As Gough, McGregor, and Camfield (2007) wrote,

The concept of human needs has long been a cornerstone of development thinking. The idea that there is a core set of basic needs which must be satisfied if we are to consider development to have taken place stretches back to colonial government policy. (p. 9)

The colonial component laid basic needs approach open to sharp anti-imperialistic criticisms arising from post-colonialist authors. Indeed, although basic needs were thought to be central to development, “by the mid-1980s the basic needs movement was starting to founder... Critics from developing countries regarded the basic needs idea with suspicion, seeing it as a further example of post-imperial patronisation and cultural imperialism” (Gough, McGregor, & Camfield, 2007, p. 9, see also Gasper, 2007, pp. 47-64). As shown above in the post-colonial approach, post-colonial critics also regarded the concept development as an imperialistic agenda. Despite its adoption by the World Bank in 1978, basic needs approach started to founder in large part due to the flaws deriving from psychologism and development malpractice. In fact, the dream of basic needs approach that poverty was to be eradicated by the 2000 did not come true. As Streeten *et al.* (1981) observed,

If resources could be shifted to satisfy the basic needs of poverty groups efficiently, the reallocation of only 2 to 3 percent world income a year would eradicate poverty by the year 2000... Nevertheless, a selective and targeted approach, sharply focused on basic needs and supported by the international community, is in principle capable of eradicating some of the worst aspects of poverty fairly quickly. (p. 4)

In 2000, however, the UN had to adopt a new plan of development, *The Millennium Development Goals* (2000), aiming to eradicate poverty around the world by the year 2015 (Sen, 2013b). Still in 2015, another plan of development called the *Sustainable Development Goals* (2015) was adopted by the UN with the view to implement sustainable development in order to eradicate poverty around the world by the year 2030.

This might very well be why the idea of basic needs has met with little research in the course of years. To explain, Jensen, Ward, and Balsam (2013) noted that critics

routinely take strident positions against so-called “cognitive” or “mentalistic” theories of behavior... Fundamentally, this is a rejection of speculation about internal, unseen causes of behavior, in favor of measuring environmental and contextual features that control behavior. Mentalistic theories are also accused of relying on intervening variables, many of which are psychological constructs. (p. 409, see also Mead, 1934, pp. 10-11; Miller, 2003, pp. 142-143)

Mentalism speaks to psychologism mentioned above. The distribution of commodities or resources on which basic needs approach insisted in the hopes of eradicating hunger or poverty was less productive than planned. Such a distribution was criticized for its focus “on the significance of having an adequate supply of particular food items (e.g., some specific types of meat or fish or pulses) ... the ‘basic needs’ of specified commodities” (Sen, 1992, p. 109). To redress this shortcoming, some authors have suggested the concept food security (Swaminathan, 1996) or “human security” (Haq, 1995, p. xv, see also Pressman & Summerfield, 2009, pp. 75-77), which implies the safety or certainty that people have in supplying needed food commodities. But, for greater clarity, authors of basic needs approach have migrated to Sen’s

capability approach and its central concepts. As Streeten (1994), one of the leading figures of basic needs approach, acknowledged,

Basic needs interpretations have run in terms of commodity bundles or specific needs satisfactions... “Opportunity” is near in meaning to Sen’s... capability... Sen goes beyond the analysis of commodities in terms of their characteristics... We have tried hard to get away from the “detached objects people happen to possess” and to emphasize the end: the opportunity for people to live full lives. (pp. 234-235, see also Streeten, 1995, p. ix; Pressman & Summerfield, 2009, pp. 73)

Indeed, Sen (1984b, 1992, see also Clark, 2006) provided an extensive explanation toward differentiating capability approach from that of basic needs. This study considered the idea of basic needs, not the approach adopted by the World Bank in 1978, as the background proper to rural populations. The goal was for study to investigate the extent of capabilities that enable rural populations to live fuller lives when using mobile phones. Thus, this study was not seeking the distribution of commodities *per se*.

Most importantly, the idea of basic needs, not basic needs approach, has been receiving greater emphasis with the increased rate of inequality within and between developing and developed countries. In effect, inequality proves to be a better indication of people’s inability to obtain, produce, and secure the basic needs of a community. Therefore, the concept basic needs has been gaining greater traction among development analysts. As Heeks (2014a) argued,

Though the basis needs approach is not a dominant force in international development, it still shapes thinking. Indeed, there are signs of some revival with all basic needs-related terms showing greater frequency in the post-2015 compared to MDG [Millennium Development Goals] discourse, and with post-2015 explicitly including the concept of basic needs where the MDGs did not... The foundations must be in place and must... be the first priority that has to be addressed for the world’s most vulnerable citizens before any other. (p. 20)

Basic needs have become the matrix of development, with which to best understand and defend the world's poorest. A development plan that is not susceptible to basic needs is incomplete. Furthermore, basic needs are the theme that threads through Sen's (1999, 2009a) capability approach, an approach used in this study to best focus on rural populations and their uses of mobile phones with regard to development. Examples of how basic needs underlie Sen's capability include ideas such as "basic capabilities" (Sen, 2009a, p. 381, Sen, 1984b, p. 337), "functionings" (Sen, 2009a, p. 233), "basic human freedoms" (Sen, 2009a, p. 281), "basic rights" (Sen, 2009a, p. 355), "basic human abilities" (Sen, 2009a, p. 415), etc. As Clark (2006) put it well, "nevertheless, it is now widely recognised that the CA [capability approach] manages to bring together many of the concerns of basic needs theorists (originally expressed in a rather *ad-hoc* manner) into a single coherent philosophical framework" (p. 33, see also Alkire, 2002, p. 170; Saith, 2001, p. 5; Pressman & Summerfield, 2009, p. 73). As noted earlier, this study drew on capability approach to best inquire into the spectrum of capabilities found among those who live in rural areas of the Congo.

The idea of basic needs has been receiving more consideration in discussions of development than has basic needs approach. As Sen (1984b) stated, "there may be good reason to think that in the future the concept of 'basic needs' will go on becoming more demanding" (p. 191). In fact, the state of affairs regarding basic needs has been posing around the world challenges and questions tougher than can be handled. The main reason might very well be the alarming rates of inequality cropping up between and within developed and developing nations (Chambers, 2012; Grabowski, Self, & Shields, 2015; Heeks, 2014a; Jarrett, 2013; OECD, 2011, 2014; Singer, 2015; World Bank, 2015a). While basic needs approach has fallen in disuse, the concept basic needs has been debated under various themes or headings since in the 1960s and 1970s (Streeten *et al.*, 1981). Themes or headings addressed included, but not limited: the measure of U\$ 1.25 per day to define poverty (see *The Millennium Development Goals*, 2000), *food security* (Swaminathan, 1996), *human security* (Haq, 1995, Pressman & Summerfield, 2009), *lived poverty* (Hofmyer, 2013; Mattes & Bratton, 2009), *inclusive growth* (Manda, 2013), *shared prosperity* (World Bank, 2013), *poverty pockets* (Alkire, Roche, & Summer, 2013), *internal inequality* (Alkire, Roche, & Summer, 2013), and *destitution* (Alkire *et al.*, 2015), and recently the *Sustainable Development Goals* (2015). Another explanation, perhaps more compelling,

concerns freedom. In other words, this study focused on basic needs in order to best capture and remove all “forms of unfreedom” (Sen, 1999, p. 15) that people are faced with when using mobile phones.

The ninth and last development approach concerns human capabilities aka capabilities approach or capability approach. Literature shows Sen to be the founder of capability approach (Clark, 2006; Nussbaum, 2000b, 2003, 2006a, 2006b; Robeyns, 2000, 2005, 2006, 2011; Sen, 1985a, 1985b, 1988, 1998b, 1999, 2000a, 2000b, 2004, 2006a, 2006b). Capability approach advocates the removal of arbitrary factors on humans. According to Sen (1999), “development consists of the removal of various unfreedoms that leave people with little choice and little opportunity of exercising their reasoned agency” (p. xiii). To further explain capability approach, Sen clarified,

In this approach, expansion of freedom is viewed both as the (1) primary end and (2) the principal means of development. They can be called respectively the ‘constitutive role’ and the “instrumental role” of freedom in development... Development, in this view, is the process of expanding human freedoms, and the assessment of development has to be informed by this consideration. (1999, p. 36)

Unfreedoms here refer to deprivations such as hunger, famine, destitution, oppression, domination, racism, genderism, pollution, etc. The role of development is to remove those obstacles to growth. Sen (1999) thus understood development as “the expansion of the ‘capabilities’ of persons to lead the kind of lives they value – and have reason to value” (p. 16). Sen argued that “there are good reasons for seeing poverty as a deprivation of basic capabilities, rather than merely as low income. One can find deprivation of basic capabilities in premature mortality, significant undernourishment ..., persistent morbidity, widespread illiteracy, and other failures” (1999, p. 20). Capability approach contrasts with an income-, good-, outcome-, or money-based perception of development. One of the strengths of capability approach is the flexibility or openness of capabilities, based on spaces and times. Also, capability approach corrects the limitations of income- or GDP-based theories of development. More interestingly, since early on, in the 1960s and 1970s, after his doctoral dissertation in 1959, Sen (1960, 1969, 1970b, 1970c, 1971, 1973, 1974, 1975, 1976a, 1976b, 1976c, 1976d, 1977a, 1977b, 1977c, 1978,

1979d, 1979e) devoted extensive work to debunk the various reductions imposed on human fulfillment by positivism, showing the space of capabilities needed for choice, measurement, equality, justice, freedom, etc. The weakness of capability approach is the lack of a clear plan as to the removal of unfreedoms.

Capability approach extends back to the early works of Sen, but it has come to be mostly known in the 1980s and 1990s (Sen, 1981a, 1981b, 1982, 1983, 1984a, 1984b, 1985a, 1985b, 1987, 1988, 1992, 1993a, 1993b, 1994, 1995a, 1995b, 1997a, 1997b, 1997c, 1998a, 1998b, 1999). It is therefore misleading -- as can be seen in development studies and related literature -- to limit the nature and depth of capability approach to one publication such as *Freedom as Development* (Sen, 1999). For example, Sen's (1997a, 1997b) articles, among others, provide readers with some of the most informative accounts of capability approach. As is now clear, capabilities are freedoms, options, opportunities, and the like that people enjoy to live better and fuller lives. The present doctoral study took capability approach as the platform of research in order to measure the range/extent of capabilities that people have concerning basic needs. The study aimed to capture ways in which people might gain greater capabilities.

In substance, eight major approaches of development were identified. These approaches have led authors to conceive development according to a specific emphasis or practice (see Figure 5).

Map of Development Literature



Figure 5: Development approaches

First, in its most common form, modernization theory posits that development can be implemented according to universal principles or steps. Second, post-colonialism is a development theory that emerged from the rejection of colonization and subsequent social systems. Third, logical frame or cost-benefit analysis takes development to be the implementation of measurable outcomes. Fourth, development revisited is a development theory that redefines development from a non-colonial or non-imperialistic point of view. Fifth, participatory development places an emphasis on the local populations and their involvement in the development agenda. Sixth, livelihoods approach is a theory that defines development in light of the rural households and their activities. Seventh, racialized/Westernized development is a theory that views development as an agenda stemming from and responding to the interests of the West. Eighth, basic needs approach was a development approach that sought to maximize the distribution of commodities in order to eradicate poverty. Ninth and lastly, human capability approach considers development as the expansion of freedoms.

Summary

Development was taken to mean a holistic endeavor to allow people broader capabilities in order to live better and fuller lives. Since their inception in the 1980s, mobile phones were designed for

communication. Coupled with the decline of landline communication in developing countries, the spread of mobile phones has been expanding. Empirical studies of mobile phones have been plagued by anecdotes and media reports. Pursued through the lenses of micro-loans, micro-enterprises, social mobility, market integration, m-banking, GDP, and health informatics, mobile phones can yield developmental outcomes, but holistic development warrants a deeper look into the lives of rural populations. To this end, the present doctoral study sought to enhance the capabilities of rural populations so that worst off individuals in mobile phone penetration are better off. Also, with the advancements of information tools and their access, a broader spectrum of population(s) can receive in-depth, sedimented inquiry. From early on, criticisms were raised against the claims of mobile phone-driven development. Theories defending developmental effects of mobile phones were primarily based on business networks and micro-credits. Development approaches have evolved, and thus debates on the persistence of poverty around the world have been brought into greater light.

Chapter Three: Methodology

Introduction

This chapter reports on the methodological choices made in this study. The chapter discusses the backgrounds of methods and clarifies the terms central to the methods espoused in this study.

The knowledge collected in this study derives from the map of research approach (see Figure 6).

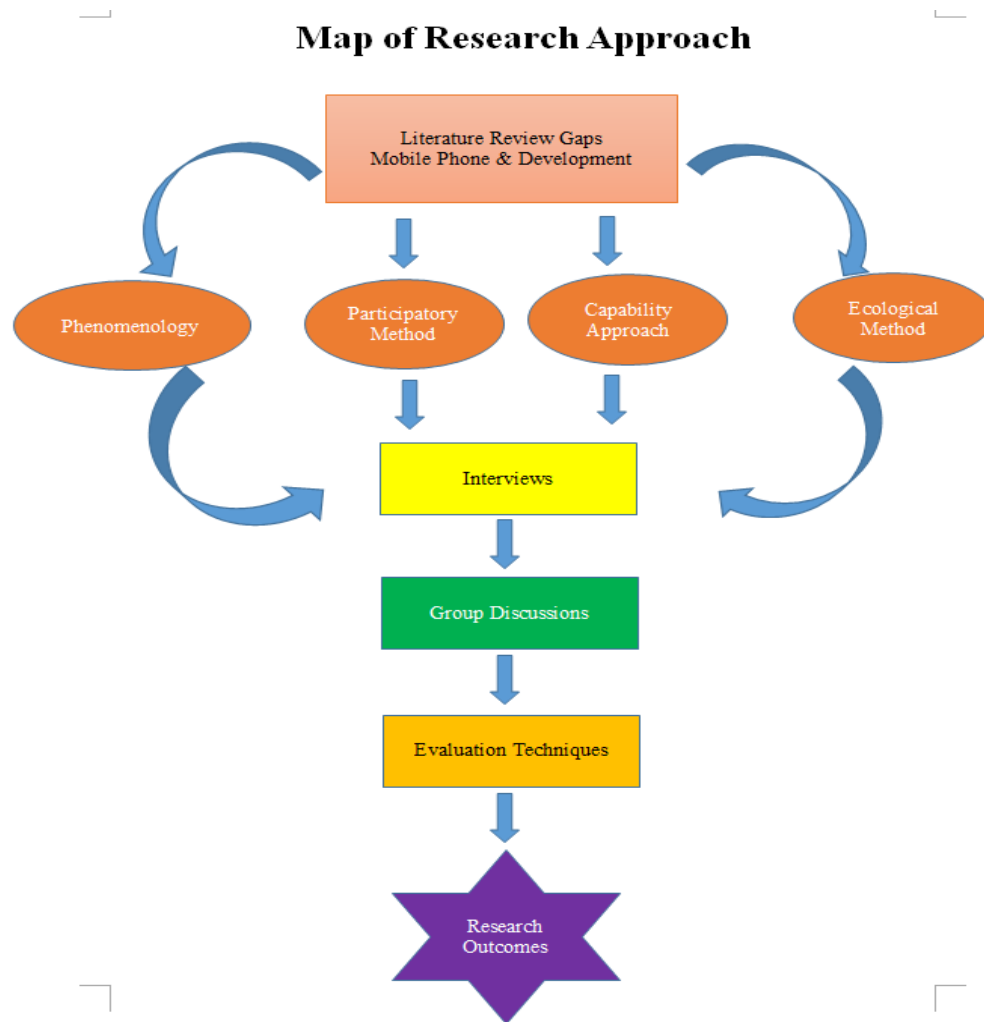


Figure 6: Map of Research Approach

As seen above, in light of the literature review gaps encountered along the lines of mobile phone and development, four methods were used to undertake scheduled interviews and group

discussions. Thus, evaluation techniques helped identify the research outcomes namely the extent to which mobile phones contributed to development among selected informants. As explained below, under the heading techniques, this study used saturation as the sampling technique in data collection and data analysis. Saturation is a technique borrowed from chemistry that states that sampling process is full or completed when there is no newer information or data found in the process and that information starts to be repetitive, thus needs to be stopped.

To this end, the chapter comprises five main headings:

1. Definitional clarification,
2. Overview of methodologies,
3. Choice of methodology, methods, and techniques,
4. Interviews and discussions, and
5. Evaluation and measurement

Definitional clarification

The last few decades have seen a rise in the production of research method materials. Consequently, with revisions and updates nearly every year, textbooks of research methods have become one of the most vibrant markets of our times. However, the mass production of research method materials has resulted in confusing terminologies employed from textbook to textbook and from author to author. Indeed, some terms are used interchangeably by some authors and differently by others. For example, Brady, Collier, and Seawright (2010), Collier, Brady, and Seawright (2010), Denzin (2009, 2010), Denzin and Lincoln (1998, 2003a, 2003b, 2005, 2008a, 2008b, 2008c, 2011a, 2011b), and Lincoln and Denzin (2008a, 2008b) considered methodology and method as interchangeable whereas Easterby-Smith, Thorpe, and Jackson (2012), Mason (2002), Teddlie and Tashakkori (2009), and Tashakkori and Teddlie (2010) took methodology and methods to be different, each author upholding slightly different definition(s). For ease of readability, five methodological concepts central to this study need a definitional clarification:

- (1) Methodology,
- (2) Method,

- (3) Paradigm,
- (4) Quantitative research, and
- (5) Qualitative research.

First, methodology is the umbrella term regarded as a set of methods applied to specific research, which have come to be fundamentally split between positivism and interpretivism (details below). Second, method was taken to be a chosen strategy with which to attend to the research questions posed in a given inquiry. Examples of methods include interview, phenomenology, discourse analysis, narrative, focus group, biography, case study, participant observation, counseling, therapy, group dynamics, ethnography, etc. (see Burck, 2005, Budd, 2006; Creswell, 2012, 2014; De Fina & Johnstone, 2015; Denzin, 1997; 1998, 2009, 2010; Foucault, 1966, 1970; Hammersley, 2013a; Ragin, 1998, 1999, 2004, 2008, 2009, 2014; Lincoln & Denzin, 2003, 2008a, 2008b; Stake, 1995, 2005, 2006; Yin, 2003, 2014; Wildemuth & Perryman, 2009). The third concept that needs clarification after methodology and method is paradigm (see Denzin & Lincoln, 2011b, p. 5; Easterby-Smith, Thorpe, & Jackson, 2012, p. 23; Guba, 1990, pp. 17-28; Guba & Lincoln, 1988; p. 111; Guba & Lincoln, 2005, p. 211-212; Maxwell, 2005, p. 36; Lincoln & Guba, 2003, pp. 165-173; Morgan, 2007, p. 61). A paradigm is simply a philosophy along the lines of which the whole research process unfolds, from the research question and hypothesis to the methods to the data (collection) to the evaluation and to the findings.

A research paradigm has been and can be identified by several appellations, such as worldview, methodology, philosophy, assumption, approach, view, position, orientation, tradition, epistemology, underpinning, ontology, foundation, etc. (Case, 2012; Denzin & Lincoln, 2011a, 2011b; Easterby-Smith, Thorpe, & Jackson, 2012; Hammersley, 2013a, 2013b; Hjørland, 1998a, 1998b, 2000a, 2000b, 2002a, 2002b, 2005b, 2005c, 2006, 2011a, 2011b; Patton, 2015; Goodson & Phillimore, 2004; Guba & Lincoln, 2005; Phillimore & Goodson, 2004a, 2004b). The idea being that, based on the researcher's preferences, the appellation given to a paradigm depends on whether the emphasis is being placed on the philosophy implied, knowledge propelled (hence the term epistemology), approach taken, assumption held, worldview espoused, position defended, orientation followed, tradition committed to, reality considered (hence the term ontology), etc.

In other words, a paradigm is the worldview in light of which the researcher makes sense of the world and of the topic(s) being looked into (Benton & Craib, 2001; Cibangu, 2012b, 2013b; Kincaid, 1996; Rosenberg, 2012). As Guba explained, “there are many paradigms that we use in guiding our actions... Our concern here, however, is with *those paradigms that guide disciplined inquiry* [emphasis in original]” (1990, p. 18, see also Denzin & Lincoln, 2011b, p. 5; Teddlie & Tashakkori, 2009, p. 21). The term paradigm is generally believed to be brought to fame among methodologists by American physicist Kuhn (1962/1996), but it was also, in fact fully, developed by Austrian physicist Feyerabend (1962, 1970). Interestingly enough, research terms such as methodology, epistemology, and ontology (Case, 2012; Denzin & Lincoln, 2011b; Phillimore & Goodson, 2004a, 2004b) revolve each around the Greek word λόγος [logos], which denotes the logic, view, story, or philosophy (Liddell & Scott, 1843/1996) undergirding specific research. It follows that, as mentioned earlier, the researcher’s philosophy is the overarching view from which the method(s) chosen, knowledge pursued, assumptions implied, and the selected reality derive their meaning(s). As shown below (see section on overview of methodologies), a paradigm deeply affects ways in which research is conceptualized and implemented.

One thing worth mentioning here is the German word *Methodik* (see Husserl, 1919/2002b, p. 6), literally translated by the English word methodology, which designates the logic or philosophy that knits together a series of methods. As Patton (2015) contended, “I shall displease those who prefer to separate paradigms from philosophies from theoretical orientations from design strategies [methodologies]” (p. 80). Indeed, as noted earlier, several authors have been using these terms interchangeably, depending on where the emphasis is being placed (see Denzin & Lincoln, 2011b, p. 5; Easterby-Smith, Thorpe, & Jackson, 2012, pp. 25-28; Hammersley, 2013b, p. 21; Phillimore & Goodson, 2004a, pp. 30-45; Phillimore & Goodson, 2004b, pp. 3-29; Goodson & Phillimore, 2004, pp. 185-194). As much as readers can get confused, it bears noting that the terms used designate the same phenomenon, that is, the philosophy underlying the research. In slightly different terms, Maxwell (2005) wrote,

This use of the term “paradigm,” which derives from the work of the historian of science Thomas Kuhn, refers to a set of very general philosophical assumptions about the nature of

the world (*ontology*) and how we can understand it (*epistemology*), assumptions that tend to be shared by researchers working in a specific field or tradition. (p. 36)

As can be seen in the comment stated above, the word paradigm is believed to mean epistemology, ontology, and philosophical assumptions – based on the author’s preference or emphasis. It is worthwhile for researchers to familiarize themselves with, at least be exposed to, the differing usage of methodological terms in order to best capture the basic features of research process.

The fourth concept to clarify is quantitative research. The catching phrase that can best encapsulate quantitative research is statistics and the accompanying representativeness of the selected population (Babbie, 2013; Creswell, 2012, 2013, 2014; Howell, 2014; Silverman, 2012). Quantitative research comes into play when researchers concern themselves particularly with statistical measurements and tools. Statistics uses numbers and samples representative of a given population to predict general assumptions about the larger population. Therefore, representativeness of the targeted population is indispensable. For statistical analysis, numbers constitute the privileged tools of measurement and interpretation, with the goal to speak to the larger population. However, this study could not pursue quantitative research simply because there was no such thing as a census or official data of the selected populations in the rural area of the Congo. In fact, those populations have never been registered by the state. The main reason for this is the lack of infrastructures or roads leading to them (see details in discussion chapter, section on rural areas).

The fifth and last concept that needs clarification is qualitative research. Qualitative research seeks in-depth, or thick some would prefer, information and attendant patterns (Babbie, 2013; Cibangu, 2012b, 2013b; Creswell, 2012, 2013, 2014; Patton, 2015; Tracy, 2012, 2013). This implies that qualitative research is a non-statistical type of research. Quantity and numbers are not the best proxy with which to identify and evaluate qualitative research. While quantitative research concerns itself with general and large-N statistical studies, qualitative research deals with small-n, or n=1, studies (Babbie, 2013; Creswell, 2012, 2013, 2014; Crotty, 1998; Hammersley, 2013a, 2013b; Jessor, Colby, & Shweder, 1996; Patton, 2015; H. Rubin & I.

Rubin, 2012; Silverman, 2012; Teddlie & Tashakkori, 2009; Phillimore & Goodson, 2004; Tracy, 2013). In other words, quantitative research establishes verifiable, predictable, and generalizable assumptions from a sample to the larger population whereas qualitative research allows in-depth analysis of context-centric and thick knowledge of that which is being investigated. As H. Rubin and I. Rubin (2012) noted,

Quantitative social researchers experiment – that is, watch how an intentionally introduced change affects outcomes... Qualitative researchers observe individuals in social settings or examine the content of documents, while many combine in their research a variety of observational, documentary, and interviewing tools. Qualitative researchers focus on depth rather breadth, they care less about finding averages and more about understanding specific situations, individuals, groups, or moments in time that are important or revealing. (p. 2)

Put differently, quantitative research privileges numbers and their relations applied from a sample to the larger population whereas qualitative research looks at thick understanding of the selected phenomenon.

While quantitative researchers seek to reflect or describe the larger population from the sample taken or lab experiment undertaken, qualitative research (Creswell, 2013; Denzin, 2006, 2009, 2010; Denzin & Lincoln, 2011a, 2011b; Hammersley, 2013b; Harding, 2013; Lincoln & Guba, 1985; Patton, 2015; Silverman, 2012; Tracy, 2010, 2012, 2013), in turn, requires researchers to be as inclusive of the selected participants as possible to ensure an in-depth inquiry.

Consequently, the present study undertook an in-depth qualitative research of eight case studies in order to provide readers with *detailed, nuanced*, and -- as Husserl (1913/2002a) would put it (see details below, section on phenomenology) -- *sedimented* information about the contexts, experiences, and views of the key players involved in mobile phone uses and development in a selected rural area of the Congo. The goal was not to gloss over the larger population of the Congo, but rather to *give voice* to specific groups by providing *richer* and *thicker* information on them. It follows that the measurement of this study had nothing to do with the larger population, but rather it depicted the spectrum of capabilities that people enjoyed in everyday lives. Mobile phone research has much to gain from qualitative research.

As Vincent and Cull (2013) argued, “using a qualitative methodology [in mobile phone research], it is possible to show evidence for development in broader terms than simply economic growth and other quantitative indicators typically prioritized in development monitoring and evaluation frameworks” (p. 37). The present study went beyond the large-scale statistical metrics of economic growth, quantitative indicators, and evaluation frameworks by looking deeper into ways in which individuals in rural areas preoccupied themselves with mobile phones and development. In so doing, the study came as a testimony against, to use a pertinent phrase of McDonald *et al.* (2015), “the dominance of quantitative methods” (p. 303, see also Sparkes, 2015, p. 55; Wells, Kolek, Williams, & Saunders, 2015, p. 192; Paul & Marfo, 2001, p. 543) or, as De Fina and Johnstone (2015) put it, the “hegemony of quantitative research” (p. 160, see also Cosgrove, Wheeler, & Kosterina, 2015, p. 15; Paul & Marfo, 2001, p. 525). In effect, “despite the gradual acceptance of qualitative *methods* [emphasis in original] most reviewers and editors still expect grounded, interpretive, or iterative research articles to proceed in roughly the same format as quantitative and postpositive empirical analyses” (Tracy, 2012, p. 112). For example, the idea of multidimensionality regarding development, and in fact poverty, has been gaining broad-based acceptance among analysts. However, the dominance of quantitative tradition persists in this areas of research. As Alkire *et al.* (2015) indicated,

In consequence, multidimensional poverty measurement and analysis are evolving rapidly. The field is being carried forward by activists and advocates, by political leaders, firms, and international assemblies, and by works across many disciplines, including *quantitative social scientists* working in both research and policy. As a contribution to this polycephalous endeavour, this book provides a systematic conceptual, theoretical, and methodological introduction to *quantitative multidimensional poverty* measurement and analysis [emphasis added]. (p. 2)

As is clear from the statement above, sustained attention to qualitative research about poverty and development, although not mentioned, is also needed to enrich the understanding of modern day societies and their prosperity. Indeed, the title of the book aforementioned can be misleading since it did not specify -- nor did the chapters -- that the work is a quantitative analysis. The same

is no less true of mobile phone literature (see Aker & Blumenstock, 2015, pp. 365-366; James, 2014, p. 363). As Aker and Blumenstock (2015) argued, “the majority of empirical studies [on mobile phones] have relied on randomized evaluations, instrumental variables, or quasi-experiments” (p. 365). At the same time, it bears noting that on no account was this study, as seen below, devaluing quantitative research.

One of the main reasons why the research undertaken was a qualitative research (see details below) was that since this study’s aim was to give voice to selected rural populations or *let them talk* in order to capture their lived experiences regarding the relationships between mobile phone uses and development, quantitative research – although often informative – did not prove to be as specially equipped as qualitative research was. Indeed, qualitative research is noted for its ability to listen to participants and thus supply deep and thick information on them and their real world lives (Babbie, 2013; Creswell, 2013; Patton, 2015). As shown below (see section on techniques, thick description), quantitative research can and should very well supply valuable information on mobile phones, but the information supplied was *thin*, and thus could not amount to the multifaceted or *multi-sedimented* type of knowledge needed in this study for people to enjoy greater capabilities to live fuller and better lives.

Another reason why qualitative research was used in this study was to answer a research question regarding the living conditions of the concerned populations, of which only qualitative research could provide “*information-rich cases*” [emphasis in original] (Patton, 2015, p. 53) like the selected eight case studies. The idea boils down to that “of testability, or falsifiability, or refutability” (Popper, 1963/2002, p. 51) of existing theories or propositions. An Indian story might be worth mentioning here. In fact, Popper (1963/2002) related that “there is a touching story of an Indian community which disappeared because of its belief in the holiness of life, including that of tigers” (p. 69). The point being, not all methodologies (quantitative vs qualitative) are a good fit for or answer to the questions asked, with no guilt implied against one methodology or another. It bears noting in passing that in this study methodology was understood as the overarching philosophy with which research was being conducted.

Overview of methodologies

The overview of methodologies seeks to take the pulse of the research arena in order to best locate and attend to the methodological necessities of the present doctoral research. To this end, a little background will add flavor to the understanding of methodologies. In effect, the steady increase of research centers in academia and industry has raised research methods to levels of required subjects across scholarly disciplines. While research methods have been occupying the agenda of modern day disciplines the last several years, they trace back to Antiquity, and their history has been carrying specific characteristics. These characteristics constitute an important piece in the understanding and undertaking of any research. Indeed, in the course of centuries, two major methodologies have crystallized around the concepts interpretivism and positivism, centered respectively on qualitative research and quantitative research. For better or worse, these methodologies have evolved into entrenched paradigms (see discussion above, for other appellations of paradigm).

Background of methodology

For several centuries, Aristotle's (1926, 1933, 1938, 1950, 1960, 1982) works constituted the masterpiece of research methods among methodologists of various persuasions. Aristotle professed the acquisition and validity of scientific knowledge in both broad- and deep-based forms, involving and empowering different human expressions and experiences. The same is true of the English word epistemology -- also understood as the underlying philosophy of research. Epistemology comes from the Greek ἐπιστήμη [episteme], a word used by Aristotle, for example, to indicate scientific knowledge (see Aristotle, 1960, *Topics*, 128b 35). Episteme has two particles ἐπι-στήμη (epi-histeme). *Epi* means toward, in direction of, in respect of, etc. *Histeme*, which comes from the Greek verb ἵστημι [histemi] signifies to weigh, place on scale so as to weigh, stand still, to be situated/placed, make to stand, to halt, to check, etc. (Liddell & Scott, 1843/1996). The key idea is that of checking, weighing, being situated, etc., and nothing like absolute truths or assumptions.

Scientific knowledge was thus a context-situated knowledge. In the 1700s onward, however, discussions arose as to the validity of scientific knowledge. Bacon (1620/1889) wrote the *New Organon* in the hopes of overriding Aristotle's works. Bacon propounded that human feelings, expressions, sentiments, opinions, and the like posed a threat to scientific knowledge. The school of thought emerging from this rejection of human feelings and expressions is called positivism, and the school of thought that defends the place of human feelings, expressions, and the like as integral to research is called interpretivism. Research has come to be implemented and judged according to the paradigms involved. In the case of the present doctoral study, the effects of mobile phones on people's development can be shown to yield different results depending on the paradigms through the lenses of which authors engage the topic under investigation.

As information scientist Bates (1999) explained,

We [information scientists] need to become more fully conscious of the research and practice paradigm from which we operate. A field's paradigm, in Thomas Kuhn's (1970) sense, consists of the core body of theory and methodology of a field, along with an associated world view regarding the phenomena of interest to the field... The explicit paradigm of information science has been very well described before. However, a field's paradigm is much more than the explicit theoretical model it works from... Much of the paradigm of any field lurks below the water line, largely unconscious and unarticulated, even by its practitioners... Information scientists need to become more conscious of the thought world we are operating out of, so that we can communicate it more rapidly and effectively to large numbers of new people, and so that we can continue to influence the future of information science in the 21st century. (p. 1043, see also Hjørland, 2005b, p. 6)

As rightly noted above, researchers need to be aware of the paradigms involved in the research process and its conceptual tools. The reason being, the paradigms can and still do lead to stereotypes. Pointing to the risks involved, Easterby-Smith, Thorpe, and Jackson (2012) cautioned,

Each of these positions [research paradigms] has to some extent been elevated into a stereotype, often by the opposing side... There is no single philosopher who ascribes to all aspects of one particular view. Indeed, occasionally an author from one side produces ideas that belong more neatly to those of the other side. (p. 22)

The slippery part of a stereotype and of any entrenched position is that authors might not be aware of the orientations and worldviews at work when they swing from one paradigm to another. Such an understandably *skewed* view of research and its processes can affect the understanding and implementation of a given research topic.

The best example of skewed views is with the famous image called Rubin Vase (see Figure 7) -- developed by Danish psychologist Edgar Rubin in 1915, at the University of Copenhagen, Denmark, in his doctoral dissertation entitled *Synsoplevede Figurer* [Visual Figures] (see Rubin, 1915, pp. 30-31).

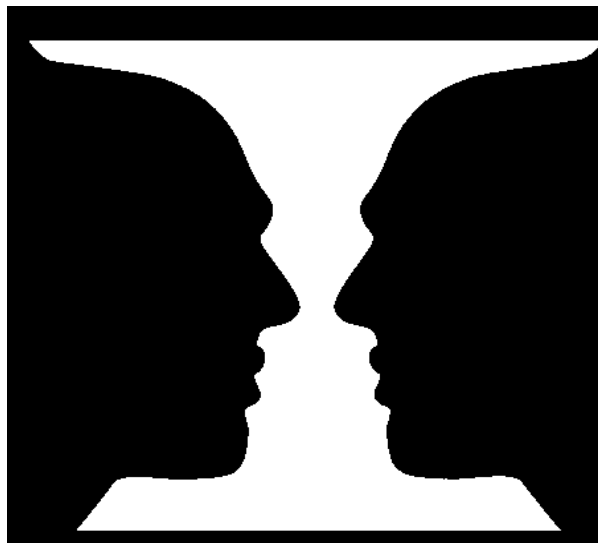


Figure 7: Rubin Vase: Two faces or A cup

The meaning and interpretation of this image depends on the view taken by researchers. The image appears to convey the idea of two persons facing each other on the one hand or the idea of a vase or cup on the other. What it bears noting here is that both views cannot be held at the same time; they are somewhat mutually exclusive, lest the researcher is made aware of either view.

The view does not change simply because there are two faces or objects put alongside each other, but even an object as simple as one that is stand-alone can convey different meanings for different people. The classical example of this is with the duck-rabbit picture (see Figure 8) vulgarized by Wittgenstein (*Welche Thiere gleichen*, 1892, p. 147; see also Wittgenstein, 1953/1958, p. 194; Jastrow, 1901, pp. 283-295).

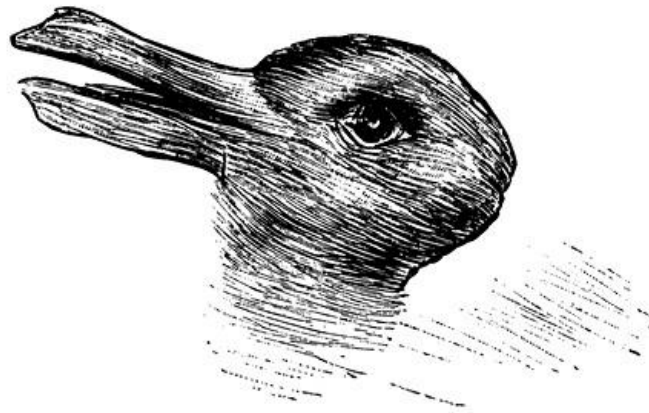


Figure 8: Duck-Rabbit Picture

Although the picture shows one distinct object, it conveys two different realities, depending on the researcher's view. The picture shows either a duck or a rabbit. Both realities cannot be viewed at the same time. This can happen also with research when the phenomenon under study can be viewed differently from one author to another. The key is to be aware of the views underlying a given topic of research.

One would assume that a three-dimension picture would help avoid the optical illusions referred to in the pictures seen above since a three-dimension picture is closer to reality than a still picture is. That is not the case, however, since the reality that humans see is *inevitably* shaped by the vision from which humans approach that reality and undertake research (see Figure 9).

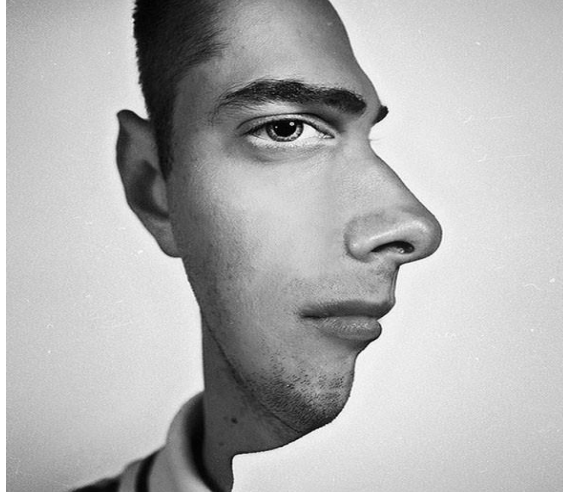


Figure 9: Two Faces (from <http://imgur.com/M6zdh>)

As can be seen, the three-dimension picture conveys different realities, depending on the vision of the researcher. One view shows the eye facing sideway to the right and the other shows the eye facing upfront in a face-to-face position. The bottom line being, reality is humanly constructed (see details below, on social constructionism). Rather than being stereotypical and conflictual, researchers are urged to take into consideration the specificity of each research philosophy or paradigm (positivism vs interpretivism). Such a tolerant attitude is key to a better understanding of either side.

It is particularly important to underline the differences between positivism and interpretivism. The reason is, in recent years, the back-and-forth trade between quantitative and qualitative research has led to some no small methodological confusion. As Guba and Lincoln (2005) propounded,

Some time ago we expressed our hope that practitioners of both positivist and new-paradigm forms of inquiry [interpretivism] find some way of resolving their differences, such that all social scientists could work within a common discourse – and perhaps even several traditions – once again. In retrospect, *such a resolution appears highly unlikely and would probably even be less than useful* [emphasis added]. This is not, however, because neither positivists nor phenomenologists will budge an inch... Rather, it is because... there will be no single “conventional” paradigm to which all social scientists

might ascribe in some common terms and with mutual understanding... Rather, we stand at the threshold of a history marked by multivocality, contested meanings, paradigmatic controversies, and new textual forms. (pp. 211-212, see also Denzin & Lincoln, 2011b; Hammersley, 2013a, 2013b; Lincoln & Guba, 2003; Guba & Lincoln, 1998)

Note how Guba and Lincoln (2005) demarcated positivism from the rest of paradigms. This is not to say that paradigms are shrinking or disappearing. Conversely, “the flowering of multiple paradigms and methods has been accompanied, to some extent, by a flowering of possibilities for the human spirit” (Lincoln & Denzin, 2003, p. 1060). Multiplicity, however, does not signify lack of distinction.

In another work, Guba and Lincoln (1988) used the concept of water and oil to illustrate the duality between positivism and interpretivism, saying,

Like water and oil, they do not mix; indeed, to put them together is to adulterate each with the other. Like similar magnetic poles, they repel one another; to hold them in contact requires force, and when the force is released, the methodologies fly apart. (p. 111)

There are areas of overlap between the two philosophies, depending on the research, but overlap does not mean the philosophies are all the same. As claimed earlier, although Denzin and Lincoln (2003a, 2003b, 2011a, 2011b) acknowledged that interpretivism, which characterizes qualitative research, encompasses quite a diverse set of methods (hence the word, *bricoleur*, montage, or quilt-making for qualitative researchers) they did not include positivism in interpretivism. The best example of this distinction is with gender. While there is and can be complementarity between males and females, there are irreplaceable and distinct specifics of each gender. There exist a variety of women (i.e., race, age, profession, height, weight, health, dress, etc.), but their variety does not make their nature confusable with and identical to that of men. For example, men and women can have the same name, but their nature remains different.

In fact, one of the fundamental lessons to be found in this study was that every case study added flavor to, or more precisely, offered a *unique* facet of the phenomenon being studied such that no facet was better than another. Even more importantly, one could not, and should not, disregard all facets of this study's findings and their subtleties based on an *either-or* entrenched position (see Easterby-Smith, Thorpe, & Jackson, 2012, p. 22).

Thus, it was imperative and indeed helpful for researchers to be aware of the philosophy from which they thought and operated in order for them to be open-minded and sensitive to the flavors or facets found in others' works. For example, the idea of dominance or hegemony of a given research paradigm (i.e., quantitative tradition as discussed earlier) was an idea in reference to which the Rubin Vase image shown earlier can come into play to help researchers realize that seeing or showing a phenomenon from one angle was by no means to be taken as a dismissal of the value proper to other angle(s) (see Rubin, 1915, pp. 30-31, see also *Welche Thiere gleichen*, 1892, p. 147; Wittgenstein, 1953/1958, p. 194; Jastrow, 1901, pp. 283-295). Another reason to mention was that the case studies of this research and the views expressed, especially those of marginalized groups (see findings chapter) could also be brought to the table of scholarly research just like any other case studies from around the world. The goal was to enhance the understanding of modern day development issues by broadening the diversity of views. With this background, as is now clear, one can best assess the trails that have developed under the umbrella of positivism and interpretivism, respectively.

Trails of positivism

To bring into greater focus the trails of positivism, a few preliminary points need consideration. Followers of positivism (Habermas, 1968/1971)⁵ teach that scientific method imparts knowledge through observation and experiment, irrespective of concerned contexts, feelings, opinions, values, etc. The concept positivism rose to fame with the work of French sociologist Auguste Comte (1798-1857) published in 1848 about positivism (see Comte, 1848/1998). With this work, social research was based on *positive* facts in the manner of natural sciences. The work was later popularized by Durkheim (1895/1982) with his idea of considering sociology as social physics.

⁵ Habermas is not a positivist, but provides one of the best accounts of the positivistic school, see (1968/1971, pp. 65-186). It should be noted that post-positivism is not synonymous with positivism, see Morgan (2007, p. 61).

The English term positive signifies certain, universal, replicable, indubitable, exact, etc. Indeed, the knowledge sought by positivists was one that was claimed to be indubitable. The goal of science was thus believed to be that of digging into and replicating indubitable principles. Since they were indubitable, these principles and the knowledge that came from them could be applied from one context to another, regardless of spaces and times.

Authors have employed seven chief trails of positivism (Budd, 2005; Friedman, 1999; Hjørland, 2003a, 2004a, 2004b, 2005a; Marrou, 2015; Rosenberg, 2014a, 2014b; Sen, 1979a, Sen & Williams, 1982; Suppe, 1977, 1999), not mutually exclusive, namely:

1. Logical positivism,
2. Empiricism,
3. Rationalism,
4. Psychologism,
5. Solipsism,
6. Cartesianism, and
7. Welfarism

First, logical positivism considers propositions or logical sentences to be the sole condition of research since they are viewed as a reflection of nature and its laws. Second, empiricism, realism, or as some would call it logical empiricism, insists on the idea of experiment, and primarily lab, in order to provide context-independent and replicable truths and conclusions. The English word empiricism comes from the Greek word ἐμπειρία (empeiria), which is composed of two parts ἐμ-πειρία (em-peiria). The prefix *em* means all around and comprehensive. The Greek verb *πειράζω* (peirazô) means to show, try, test, prove, etc. (Liddell & Scott, 1843/1996). As can be imagined, the primary meaning of empiricism has nothing to do with absolute and accurate knowledge, as is often claimed (see details below, section on misunderstandings), but simply conveys the idea of showing, proving, or trying something. Third, rationalism cherishes reason as the required conduit of knowledge exempted from human feelings, opinions, idols, and emotions. Fourth, psychologism also called logical psychologism regards the mental states as the primary explanation of human behavior and reality (see Giorgi, 1981; Kusch, 2011).

Psychologism holds that logical laws derive from psychological entities, the consequence being that reality depends on the mental states (of the self).

Fifth, solipsism takes the self or mind to be the sole center of reason and infallible knowledge. Solipsism professes that the self is all that exists, irrespective of the reality around it. Solipsism is a term composed of the two Latin words *solus* and *ipse*. *Solus* (*sola, solum*) means sole, lonely, solitary, alone, single, and *ipse* (*ipsa, ipsum*) signifies himself, herself, itself, in and by itself (Lewis & Short, 1879). Sixth, Cartesianism is a variant of rationalism stemming from Descartes' (1637/1987) view of reason as the infallible tool with which to acquire knowledge replicable across contexts and times. Seventh and last, welfarism, also called by lack of the right word outcome utilitarianism, is a theory that was developed in neo-classical economics (see Pressman & Summerfield, 2009, pp. 69-72). The theory "sees persons as locations as their respective utilities [outcomes/numbers] ... Persons do not count as individuals in this any more than individual petrol tanks do in the analysis of national consumption of petroleum" (Sen & Williams, 1982, p. 4). The insistence is on outcomes and their numbers, not on individuals and their respective freedoms and contexts.

Positivism is premised on the belief of duality in that there exist two worlds: the internal world (the self, soul) and the external (reality, body). In the Enlightenment era, it was believed that the external world was impure, unsure, and chaotic, therefore true knowledge had to be independent from it. This meant that authentic knowledge or logical truth proceeds from and resides in the self or soul. The internal world was believed to be the siege of knowledge. The external world was thus seen as the manifestation or extension of the internal/ideal world. Since mobile phone research is an interdisciplinary domain, positivism comes to it under different guises, and the trails outlined above help best undertake research on mobile phones in the Congo. One stark indication of positivism is the disregard of context and of the struggles of those who live in it. In essence, positivism is the philosophical trend that teaches the universality, measurability, and replicability of research and its assumptions across spaces and times. For example, positivism sees mobile phones as yielding the same developmental effects across spaces and times. But, in-depth research seeks to unearth the forces under which mobile phones are used in a specific locale.

Misunderstandings about positivism

Although positivism has an immense impact on scholarly research, it is surrounded by growing misunderstandings, of which three most dominant instances are identified here. First, one very common misunderstanding related to positivism comes from the belief that positivistic knowledge is exact or certain. This is not to say that a well done research cannot yield valuable and informative knowledge, but that relativity lies at the core of any knowledge. To explain, Einstein (1916/1920, 1949) found relativity to be typical of physics, a field readily believed to be the linchpin of exact sciences. For example, Einstein (1916/1920) warned, “we shall see that this “truth” [of geometrical propositions] is limited, and we shall consider the extent of its limitation” (p. 5). It is thus questionable that methodology authors have tended to think of the social sciences as the sole province of relativity, with physics being considered as the benchmark of certainty. To bring the idea of relativity into greater light, the word uncertainty -- used in the English translation of Heisenberg’s (1927) paper is helpful. By and large, the English word uncertainty, with which Heisenberg’s (1927) paper about quantum mechanics -- presented in Copenhagen, Denmark -- was translated was not the best rendition of Heisenberg’s paper.

In fact, the original German word used by Heisenberg, which dominated the paper – was *Ungeauigkeit* (see *Duden*, <http://www.duden.de/>), meaning inexactness, inaccuracy, indeterminacy, flaw, falsehood, imprecision, etc. Even three years later, when the word uncertainty [*Unsicherheit*] appeared in Heisenberg’s (1930/2001) book devoted to quantum theory, it was presented within the confines of the Einsteinian theory of relativity, and, more significantly, it enjoyed much less usage in Heisenberg’s (1930/2001) book than *Ungeauigkeit* and imprecision [*Unbestimmtheit*], another word used by Heisenberg (1930/2001). Put in simpler terms, physics is an inexact, inaccurate, or imprecise science, just like any form of knowledge. This does not mean that all knowledge is no good, but that knowledge is characterized by self-reflexivity which provides greater depth to it (see detail below, section on characteristics of phenomenology).

Furthermore, Heisenberg ascribed inexactness to statistical relations. He wrote, “*Diese Ungeauigkeit is der eigentlichen Grund für das Auftreten statistischer Zusammenhänge in der Quantenmechanik*” [This inexactness is the actual basis on which the statistical relations of

quantum mechanics are built] (1930/2001, p. 172). An important point methodology authors have tended to forget is that Heisenberg mentioned statistical equations/explanations as being affected or characterized by inexactness. Without doubt, the remark of inexactness concerns both physics and statistics. As Wallach (2015) recently maintained, “physicists talk in terms of probabilities and uncertainties, *not absolutes* [emphasis added]” (p. 4). This aspect of physics defies the widespread idea of strong or exact sciences (see Hammersley, 2013a; Smith, 2003), on the one hand, and weak and inexact sciences, on the other. Inexactness does not mean lack of knowledge, rather it underlies the context and methods within which the phenomenon under study is being approached. All research is relative, based on the methods, contexts, and worldviews dealt with.

Second, another common misunderstanding attached to positivism is one that overstates the universality of positivistic knowledge. While positivism, just like interpretivism (see detail below, section on misunderstandings about interpretivism), can impart universal knowledge, the purported knowledge remains contingent on the lab and/or context from which it has been extracted. This all comes down to the idea of incommensurability. Incommensurability is a theory that proclaims that knowledge yields its fullest meaning within the paradigm or worldview in which it is rooted. The English word incommensurable simply means that which has no common measure. Incommensurability was extensively developed in physics in the 1900s (Einstein, 1916/1920, 1949; Feyerabend, 1951, 1962, 1970; Kuhn, 1962/1996; Oberheim & Hoyningen-Huene, 2013). A case in point is, for example, that a ruler can indicate the length of a room, but it cannot tell us anything about the temperature of that room for the simple reason that a ruler is meaningful *exclusively* within a specific paradigm/worldview. This holds true of the knowledge obtained in any research paradigm.

One common error found in works of quantitative research -- arising from the belief of universal positivistic knowledge -- is that of endogeneity, also known as error of sampling. Simply stated, endogeneity is a social science theory (see Bascle, 2008; Luiz, 2015; Menaldo, 2011; Reeb, Sakakibara, & Mahmood, 2012; Wintoki, Linck, & Netter, 2012) that professes that the factors or variables *internal* (hence the word endogenous) to the phenomenon being studied ought to be *fully controlled* by the researcher. In other words, the conclusions drawn from a sample ought to

reflect the *variability* of the larger population from which the sample has been taken. One reason that the relations of the selected population to the larger population tended not to be explained or justified in a number of studies related to mobile phones and development might be that quantitative researchers tended to focus on the comparisons made or patterns found about the selected population, and thus drew conclusions. While such an endeavor was understandable, it plunged the study into the pitfall of endogeneity. As Aker and Mbiti (2010b) rightly warned, “but while these studies provide some evidence of the positive relationship between mobile phones and economic growth, they are plagued by endogeneity problems. Mobile phone penetration rates are subject to significant measurement error” (p. 225).

Pertinently, the English word endogenous, from which comes the word endogeneity, originates in the Greek word ἐνδογενής [éndogenês] which, in turn, derives from two particles: the adverb ἐνδοθεν [éndothen], meaning: from within, from inside, in, etc. and the verb γεννάω [gennaô], meaning: to grow, beget, engender, produce from oneself, bring forth, bear, etc. (Liddell & Scott, 1843/1996). As can be seen, the word endogenous means: growing or producing from inside. This is done by researchers preferably in a lab environment in order to arrive at valid conclusions on and accurate measures of the phenomenon being treated. So, by choosing a sample that is unrepresentative of the larger population, quantitative researchers are most likely to miss important variables proper or endogenous to the phenomenon under study, and thus make skewed assumptions about the phenomenon. Endogeneity is a theory that also plagues much of the comparative method literature (see Azarian, 2011; Kocka, 2003), a method not followed in the present study for the same reason. As mentioned earlier, endogeneity can also be described as “*sample representativeness* [emphasis in original], meaning that when the process of selecting the sample has been performed properly, the sample will often have characteristics similar to those of the population” (Sotos, Vanhoof, Van den Noortgate, & Onghena, 2007, p. 101). Thus, the variability of the larger population needs to be the same as that of the sample(s) taken.

Endogeneity can be referred to as statistical vs practical significance or as the law of large numbers. Indeed, “people confuse the sample and the population distributions, believing that any sample must be very similar to the population, regardless of its size, and therefore extrapolating the *law of large numbers* [emphasis in original]” (Sotos, Vanhoof, Van den Noortgate, &

Onghena, 2007, p. 101) or proportions seen in the sample. Most importantly, the variability of the larger population has to be reflected in the conclusions arrived at. Thus, the size of the sample taken is not a guarantee that the variability of the sample is the same as that of the larger population. In other words, depending on the researcher's position(s), endogeneity is mentioned to emphasize the extent to which the *factors endogenous* to the phenomenon affect the variability of the larger population. Sample representativeness is mentioned to emphasize the extent to which the *sampling process* affects variability and statistical significance is mentioned to indicate the extent to which the *test or experiment done* affects variability. The law of large numbers is mentioned when the emphasis is placed on the proportions used, for example: the majority, more than half, virtually all, etc. At each of these levels, variability is affected when confusion is not avoided.

However, endogeneity was easily forgotten by authors, which led to misunderstandings about the research undertaken and the results obtained. The reason for this might be the advanced statistical knowledge needed to interpret and understand statistical tests or experiments and their weaknesses and strengths. For the most part, the average reader was/is unable to distinguish the characteristics limited to a sample from those proper to the larger population. Perhaps to complicate this confusion further, the law of large numbers or proportions found in and limited to a sample tended to be generalized or extrapolated to the larger population or to different samples of that population. One potent reason behind (the law of large) numbers being etched on the confusion held concerning the larger population is that numbers are symbols or visuals, and “*we humans are visual animals* [emphasis added]” (Yeshurun *et al.*, 2009, p. 321, see also Lu & Doshier, 2014, p. 3; Peoppel & Overath, 2012, p. 2; Koch, 2004, p. 1108). As Sotos, Vanhoof, Van den Noortgate, and Onghena (2007) stated,

As a consequence of the representativeness misconception described above, which provokes the confusion of a specific *sample* distribution and the corresponding *population* distribution, two severe misconceptions can arise... As a result of the combination of the representativeness misconception and the confusion of population and sampling distributions, a student might not be able to detect the difference between the distribution of a sample and the sampling distribution of a statistic [emphasis in original]. (p. 102)

As indicated in the statements seen above, a clear distinction between the sample taken and the population referred to ought to be central to any work pertaining to quantitative research paradigm.

The third and last misunderstanding about positivism resides in the belief that positivism produces rational knowledge. A great number of authors have rejected the claims of absolute truth ascribed to rational knowledge or rationality. To name a few, Freud (1899/1978) demonstrated that rationality is governed by irrationality, Marx (1867/1977) found rationality to be the manifestation of the exploitation of the poor by those in power, Pascal (1669/2010) argued that the heart has its own reason(s), Whitehead (1929) described reality as processual, and not analytically linear/rational, and Horkheimer and Adorno (1947) spoke of instrumental reason, showing the failures of reason and its claims of enlightenment. A contemporary critic of methodology, Lakoff (1987), refuted the Enlightenment-propelled idea of reason as transcendental. As Lakoff (1987) claimed,

On the traditional view, reason is abstract and disembodied... The traditional view sees reason as literal, as primarily about propositions that can be objectively either true or false [logical positivism] ... The traditional account claims that the capacity for meaningful thought and for reason is abstract and not necessarily embodied in any organism. Thus, meaningful concepts and rationality are *transcendental*, in the sense that they transcend, or go beyond, the physical limitations of any organism... In the new view, meaning is a matter of what is meaningful to thinking, functioning beings. The nature of the thinking organism and the way it functions in its environment are of central concern to the study of reason. (p. xi, see also Küng, 2005/2007, p. 35 or the works of Marcuse, 1941a, 1941b, 1960, 1964, 1966, 1969, 1972)

The statement implies that natural phenomena too -- not just social -- are characterized by relativity, uncertainty, or, to use the correct word, inexactness. A potent phrase used by Husserl (1919/2002b) to indicate the lures of positivism is that of “*die Gefahr der Mechanisierung der Methode*” (p. 6), meaning: the danger involved in the mechanization of (research) method. Quite pertinently, critics of development practice have lamented the “obsessively planned results-based

approaches” (Quarry & Ramírez, 2009, p. 2). The point is that positivism tends to reduce or mechanize the *full* life, vitality, or expression of people’s experiences and their lives to automated outcomes.

More interestingly, the English word rationality comes from the Latin word *ratio*, which stands for the Greek word λόγος [lógos] (Lewis & Short, 1879; Liddell & Scott, 1843/1996). Logos just like ratio is not as rational as usually thought, although it was considered infallible and sublime in the Enlightenment era. Besides the notion of reason, logos means speech, discourse, conversation (chitchat), expression, opinion, tale, story, fable, and prose. Enlightenment proponents deemed those concepts uncondusive to rational knowledge (see Bacon, 1620/1889). In the same manner, the Latin word ratio betokens a meaning more mundane than rational. Ratio also indicates business, affairs, interests, and matters. Evidently, fables and interests exemplify some of the most irrational human entities. It is worth noting that logos -- a word largely known for its connection with rationality or ratio -- would imply irrational definitions in its primary meanings.

Trails of interpretivism

The second foundational research philosophy after positivism is interpretivism aka interpretativism, or interpretationism, from the adjective interpretative (Collier & Elman, 2008; Eberle, 1999, 2010, 2012a, 2012b, 2014; Embree, 2014; Strydom, 2011) or interpretive (Gubrium & Holstein, 2003; Holstein & Gubrium, 2005; Lincoln & Denzin, 2003). For consistency sake, the present doctoral work employed the words interpretivism and its correlates, such as interpretive, interpretivist, and interpretivistic. Before delving into the concept interpretivism, a quick preview is needed. Interpretivism came into use with the word interpretive, which was suggested in the English translation of the German concept *verstehende Soziologie*, a concept central to the writings of German sociologists and thinkers Max Weber (1864-1920) and George Simmel (1858-1918) to suggest a sociology that understands others from their own local perspectives (Simmel, 1908; Weber, 1949, 1921/2002). The German word *verstehende* (see Duden, <http://www.duden.de/>) has been translated in English sometimes as interpretative whereas German has the word *interpretativ* (see Eberle, 1999). The reason might be the idea of understanding, or more precisely interpreting, which underlies *verstehende*. The

author who first used the concept *verstehende Soziologie* is not clearly known since both Weber and Simmel used the concept simultaneously (Simmel, 1908; Weber, 1921/2002).

Austrian philosopher Alfred Schütz (1899-1959) made an extensive application of *verstehende Soziologie* to the social sciences (Eberle, 1999, 2010, 2012a, 2012b, 2014; Embree, 2014; Endress, 2014; Schütz, 1932/2004; Schütz & Luckmann, 2003; Waldenfels, 2014). A literal translation of *verstehende Soziologie* could simply say understanding sociology from the perspective(s) or world(s) of those concerned. Understanding sociology means to understand others and allow others to be understood. As Simmel (1908) put it well, “*Durch Verstehen Anderer und Verstandenwerden*” (p. 674). Understanding sociology or social research was proposed in lieu of traditional top-down sociology.

Interpretivism can be identified by any variant of its components described below, depending on the author(s)/preference(s). For example, Easterby-Smith, Thorpe, and Jackson (2012) presented/understood interpretivism as social constructionism (see also Hammersley, 2013a, pp. 79-80). Part of what this entails is that, Easterby-Smith, Thorpe, and Jackson (2012) argued,

The new paradigm that has been developed by philosophers during the last half-century, largely in reaction to the application of positivism to the social sciences, stems from the view that “reality” is not objective and exterior, but is socially constructed and *given meaning* by people... Social constructionism is one of a group of approaches that Habermas... has referred to as *interpretive methods* [emphasis added]. (p. 23)

Notice the word meaning given by people and interpretive methods, all of which are the features of interpretivism, let alone Habermas is one of the leaders of interpretivism. Just as terminology varies from author to author, some researchers prefer the appellation constructivism to that of interpretivism since they emphasize more the processes by which phenomena are constituted or constructed than the meanings and understandings that the phenomena under study are embedded in. It is helpful to be aware of the variance in terminologies and trails and, at the same time, of the similarity of the methodological dynamics and focuses being described by these trails.

Largely due to the criticisms aimed, for better or worse, at its scientific validity, qualitative research has evolved into nine foremost variants or trails of interpretivism, namely:

1. Hermeneutics,
2. Naturalism⁶,
3. Historicism,
4. Constructivism⁷ or constructionism,
5. Symbolic interactionism,
6. Ethnomethodology,
7. Phenomenology,
8. Dramaturgical analysis, and
9. Ethnography

First, hermeneutics (Eco, 1976, 1984, 1992, 1996; Ernesti, 1761/1832; Forster, 2012, n.d.; Hjørland, 2003b; Ricoeur, 1969, 1972, 1986b, 1995; Schleiermacher, 1838/1998; Thompson, 1981) is an approach with the goal to interpret, capture, and relive the meaning of the reality of that which is being investigated. As explained below, the most common variant of interpretivism is hermeneutics because of its primary focus on interpretation. Proponents of interpretivism (Geertz, 1973/2000; Gubrium & Holstein, 2003; Holstein & Gubrium, 2005; Lincoln & Denzin, 2003; Prasad, 2002; Ricoeur, 1950, 1960, 1969, 1971, 1972, 1986b, 1995; Schwandt, 2003, 2007; Sherratt, 2006) seek to understand the real world life, inner experience, meaning, emotionality, intentionality, and the like. Interpretivism draws significantly on the philosophical trend of hermeneutics (Ricoeur, 1969, 1972, 1986b, 1995; Schleiermacher, 1838/1998). One of the benefits of hermeneutics is its attention paid to the world of meaning (s) undergirding human expressions, its weakness lies in its inability to provide a meaning for the unknowns of human existence.

⁶ Not to confuse with, at least as understood in this present doctoral study, naturism, which proposes that one knows phenomena according to the laws of nature.

⁷ This doctoral study took constructivism and constructionism to be interchangeable (see Ratner, 2006, Berger & Luckmann, 1967; Burr, 2003; Kukla, 2000; Searle, 1995), the difference suggested between these terms (see Crotty, 1998; Patton, 2002, p. 97) does not affect the goal or the focus of the present doctoral research.

Hermeneutics was not espoused in this study since the study did not investigate so much the meaning given to mobile phones, as it did the link between the uses of mobile phones and development. Also, the textual orientation of hermeneutics (see Ernesti, 1761/1832; Forster, 2012, n.d.) does not render hermeneutics the best candidate for the methodology of this study since the selected participants are illiterate. A school of thought closely related to hermeneutics is discourse analysis. Discourse analysis (Burk, 2005; De Fina & Johnstone, 2015; Foucault, 1966, 1970; Hammersley, 2013a; Wildemuth & Perryman, 2009) cannot be considered since the populations being studied are not educated in order to produce texts on which a discourse analysis can be based. For example, “discourse analysis ... insists that the data must be presented to readers so that they can assess directly the validity of the inferences made, and also *require that inference must not range beyond what is ‘observable’ in the data* [emphasis added]” (Hammersley, 2013a, p. 79) or discourse. The present doctoral study sought to go past the data/discourse to drill deeper in the real world of corn growers.

The second trail of interpretivism, after hermeneutics, encompasses naturalism⁸ or naturalistic research (Hammersley & Atkinson, 2007; Hellström, 2008; Lincoln & Guba, 1985). Naturalism insists on the fact that knowledge is acquired in natural settings, not in a lab, without the interference or manipulation of reality by humans. The thing with naturalism is that while some areas of social reality present significant advantages for naturalistic research (e.g., classroom, store, stadium, hotel, etc.) others do not (e.g., hospital, prison, war, street gangs, etc.). This study did not seek a naturalistic research because the selected research question was not about the design of mobile phones in a naturalistic setting nor was the study aimed at the relation or question naturalistic vs lab-made mobile phones.

Third, historicism⁹ (Dilthey, 1988, 2002; Marwick, 2001, 2002; Windelband, 1894/1980) teaches that knowledge depends on the particular situations and events embedded in history. Historicism supplies researchers with a firmer understanding of that which is being studied by laying bare the implications of the past (i.e., cultural, social, political, linguistic, economic, biological, etc.).

⁸ Not to confuse with Husserl’s (1913/1983) conception of naturalism, which means naturism in the sense used in the present doctoral research.

⁹ This definition differs from that of Popper (1975/1991), according to which historicism simply means evolutionism.

Historicists can simply focus on historical method to trace developments over time and shed light on the selected topic (see for example: Burke, 1992, 2001a, 2001b; Carr, 1961/1987; Evans, 1999; Ferguson, 1999; Hamilton, 2003; Hobsbawm, 1997; Marwick, 1995, 2001, 2002; Rickert, 1896/1913, 1899/1910; Sarkar, 1997; Thompson, 1976), but it does not inquire into the present circumstances of the phenomenon in question, for example mobile phone uses. Historicism derives historical patterns in text, reality, institutions, culture, social phenomena, etc. In essence, “historicism,” Hamilton (2003) noted, “should identify an underlying pattern [or patterns] of historical explanation recurring at different times in different forms” (p. 2). Nonetheless, as is clear from the passage above, historicism also tends to bypass the uniqueness and specificity of the phenomenon at hand. This study sought the specificities of mobile phone uses among the selected participants, hence another reason why historicism was not applicable.

The fourth trail of interpretivism is connected with constructivism or constructionism (Babbie, 2013; Easterby-Smith, Thorpe, & Jackson, 2012; Hammersley, 2013a; Lakoff, 1987; Lincoln & Denzin, 2003; Ratner, 2006; H. Rubin & I. Rubin, 2012; Talja, Tuominen, & Savolainen, 2005; Teddlie & Tashakkori, 2009). Constructionism has carried various versions, based on authors’ preferences (see below). For that reason, constructionism is also one of the most known trails of interpretivism. As Hammersley (2013a) remarked, “it is worth emphasising that it is not just the realist/constructionist [positivist/interpretivist] divide that generates divergences here in how research is assessed. There are important differences in orientation *within* [emphasis in original] constructionism” (p. 80). Constructionism professes that knowledge is shaped by cultural, social, human, and political situations of people and their societies. Constructionism is chosen when efforts are made toward investigating the circumstances in which the selected phenomenon or topic unfolded. As shown below, this was not the focus of the present study. It is imperative, and indeed helpful, to bear in mind the variety of constructionistic paths in order to avoid simplistic/reductionistic views. It is not uncommon to confuse constructionism with one trail of its domain, while leaving aside the rest of the domain. While, for example, Charmaz (2006) used the word social constructionism to define constructionism, she listed symbolic interaction as constructionism. But, symbolic interactionism can be considered as a stand-alone movement with its emphasis on symbols and their meanings in society (see below, the fifth trail of interpretivism).

Although constructionism can be traced to ancient Greece and Egypt -- wherein material conditions were reflected in the behaviors and knowledge acquired by humans, and vice-versa (see εὐδαιμονία [*eudaimonia*], Aristotle, 1926, 1982; *The Eloquent Peasant*, Parkinson, 1991) -- it has taken seven major focuses from the 1700s onward. First, transcendental constructionism, defended by Kant (1724-1804), assumes the interplay between knowledge and experience(s) (see Kant, 1781/1965). Kant (1781/1965) endeavored to reconcile rationalism and empiricism, stating that although knowledge is grounded in experience, it is the mind that gives meaning to reality/experience. For Kant, experience is shaped by the mind just as knowledge is shaped by experience. Second, socio-economic constructionism privileges the interaction between societal transformations and modes of production owned by social classes (see Marx, 1844/1959, 1847/1955, 1867/1977). Marx (1844/1959, 1847/1955, 1867/1977) stated that historical transformations entail the transformations of behavior and consciousness through history, all of which are understandable in the context of economic and social class relations. Third, cognitive constructionism encourages the acquisition of learning and the making of sense through the relation between experiences and consciousness (see Piaget, 1923, 1937, 1946, 1968, 1970a, 1970b). Observing his own three children, Piaget (1923, 1937, 1946, 1968, 1970a, 1970b) propounded that the child (man) constructs the world through learning and society.

Fourth, behavioral constructionism -- started by Vygotsky (1930, 1934, 1960, 1968, 1978, 1981, 1986) along the lines of Marx' and Piaget's works -- looks at the mediation between activity, tools, and ideas, and is mostly known as Activity Theory (see Bedney & Meister, 1997; Bedny & Karwowski, 2011; Bedny, Seglin, & Meister, 2000; Bedny, Karwowski, & Jeng, 2004; Leont'ev, 1932, 1972, 1977, 1978, 1981). Fifth, structurational constructionism -- put forth by Giddens (1984) -- emphasizes the interplay between structures and the real world and the resultant meanings and experiences. Sixth, sociological or social constructionism aims to apply phenomenology to social sciences (Berger & Luckmann, 1967). Berger and Luckmann (1967) clarified "that reality is socially constructed and that the sociology of knowledge must analyze the processes in which this occurs" (p. 1). Furthermore, Berger and Luckmann explained, "we contend that the *sociology of knowledge is concerned with the analysis of the social construction of reality* [emphasis in original]" (p. 3). In the sociological move of constructionism, the goal is to apply a phenomenology-based model of sociology or *verstehende Soziologie* to the social

sciences (see Schütz, 2004; Schütz & Luckmann, 2003). The reason being, positivism denied the scientific status of the social sciences. Seventh and lastly, critical constructionism also called critical realism seeks to combine universal and local construction(s) of experience (Bhaskar, 1993/2008, 2010; Searle, 1995, 2010; Wikgren, 2005). As is clear from the list, by no means exhaustive, each focus of constructionism has a twist to bring forth in the efforts toward elucidating the *shaping circumstances* of knowledge.

It also bears pointing out that information science authors have been exposed to constructionism through information management or systems, especially the works of Burrell and Morgan (1979/2005), Orlikowski (1992, 1996, 2000, 2007), Orlikowski and Baroudi (1991), Avgerou and Madon (2004), and Avgerou and Walsham (2000), among others. These works advance the social focus of constructionism since information systems -- and to a larger degree organization science -- are sciences that study corporates or businesses. A classical example is with the definition of interpretivism offered by Orlikowski and Baroudi (1991), namely:

A fundamental distinction between the interpretive and positivist world views is the former's primary presumption of social constructionism... The aim of all interpretive research is to understand how members of a social group, through their participation in social processes, enact their particular realities and endow them with meaning, and to show how these meanings, beliefs and intentions of the members help to constitute their social action. (p. 13, see also Burrell & Morgan, 1979/2005, p. 31)

It is clear from the passage seen above that constructionism and interpretivism are being identified as social constructionism due to the corporate focus taken by information systems. Essentially, the underlying doctrine of constructionism asserts that there is a positivism-inherited duality (i.e., soul/body, consciousness/behavior, subject/world, etc.) to be reversed or absorbed in the construction and interpretation of reality through the mediation between experience, the world, and the mind or subject. This mediation allows people to assign meaning(s) to reality, depending on where the focus of this constructional process is placed, such as behavior, mind, society, history, corporate, structure, etc.

One reason why this study did not adopt constructionism was that while constructionism offered some potentials with regard to socially constructed structures of mobile phones, it was not the best tool of in-depth and holistic research into mobile phones and development. The focal point of the versions of constructionism sketched above is about how knowledge is shaped by or shapes the phenomenon at hand, for example mind (transcendental), class conflicts (socio-economic), behavior (behavioral), society (social), learning (cognitive), structure (structural), realism (critical), corporate (business/management), etc. Although important the shaping circumstances of knowledge were not the focus of this study. Indeed, the study went past the shaping circumstances of knowledge in order to seek an in-depth, nuanced, and sedimented understanding of participants' lived experiences of mobile phone uses with regard to basic needs and the range of capabilities.

The fifth trail of interpretivism, after constructionism, relates to symbolic interactionism (Blumer, 1969; Mead, 1934). Mead (1934) defended the idea of interaction(ism) and its symbols or signs through which human beings construct meaning(s). Symbolic interactionism extracts knowledge from the meaning(s) embedded in the symbols shared by individuals through their interaction(s). One of the benefits of symbolic interactionism is its focus on the interactions of humans and ensuing meanings and symbols, but one of its downsides is its tendency to reduce reality to the interaction(s) of humans. This doctoral study gave weight not just to people's interactions, but most importantly to the lived experiences of individuals regardless of their interactions with others. Symbolic interactionism paved the way for grounded theory (Charmaz, 2003; Glaser & Strauss, 1967; Seldén, 2005; Strauss, 1987; Strauss & Corbin, 1990; Tan, 2010). It is helpful to note that Strauss was a student of Blumer (1969). Therefore, grounded theory was devised in the aftermath of the Chicago School, with the researcher being close to the informants' site as it was the case with the suburban areas in the vicinity of the University of Chicago. As has now become clear, grounded theory is a comparative method. This study, however, could not undertake grounded theory since the back-and-forth trade between the researcher and the researched was impossible due to security concerns. Nor could comparative method be followed since comparative method leads to a form of decontextualization by comparing different entities.

It was in large part the impact of comparative method – apparent in development literature (see Azarian, 2011, p. 115; Kocka, 2003, p. 40) wherein authors propounded universal stages of development by comparing different nations of the world -- that led this study not to consider comparative method. As seen in literature review chapter, development was presented as a step-by-step formula to be followed by all developing nations. However, this study sought to ask the concerned participants in rural areas of the Congo about how mobile phones generated development in their community. Also another reason why comparative method was not adopted in this study was the selectivity, arbitrariness of comparability, or more exactly, the difficulty of “establishing equivalent measures [of comparison]” (Smelser, 2013, p. 2, see also Azarian, 2011, p. 121). In other words, comparative method forgoes the detailed particularities needed in this study to provide rich information regarding mobile phones. Thus, this study considered the selected case studies as totalities (of their own) from which to gain a specific understanding of mobile phone uses. The reason being, the key purpose of interpretivism, on which the present study was built, is to avoid the misrepresentation of the *Other* by others (see Guba & Lincoln, 2005, pp. 211-212; Lincoln & Denzin, 2003, p. 1060; Lincoln & Guba, 2003, p. 185). The idea is to allow a greater polyvocality, as opposed to one or a few voices expressed, claiming to represent all voices. Consequently, the cross-cutting themes proposed in this study are to be understood as a genre with which to increase – by no means to overshadow -- the in-depth understanding of the participants and their lifeworlds. In this study, case studies were exposed as totalities, and not partialities of others or of someone else. The goal was to have the voice of selected participants aired to the fullest. In this sense, case studies are to be published separately, and not as subsections of another case study.

The sixth trail of interpretivism represents ethnomethodology (Garfinkel, 1967, 2002, 2008) also called conversation analysis. Ethnomethodology investigates the meanings shared by groups of individuals through everyday conversation. While ethnomethodology brings into focus the meanings garnered from and embedded in everyday conversation, it leaves aside the disabled who cannot fully enjoy the benefits of conversation. The present study went past the confines of conversational abilities to see the broader spectrum of lifeworlds, which includes disabled and able-bodied people. Furthermore, some individuals are excellent conversation actors whereas some are not. Also, the setting of communication, for example on a one-on-one basis vs in-group

basis, may be a factor in order for certain individuals to best participate into a conversation or interview (see Hasson, 2012).

Seventh, phenomenology or phenomenism (Budd, 2011, 2012; Husserl, 1939, 1973, 1900/1975, 1901/2005, 2001, 1913/2002a, 1919/2002b, 1936/2012a, 2012b, 2014; Ricoeur, 1971, 1986a/2004, 1995) – which comes from the Greek verb φαίνω [phainô], meaning to manifest, reveal, or show (Liddell & Scott, 1843/1996) – is based on the belief that knowledge stems from reality manifested, lived, or experienced by humans in everyday conditions. While phenomenology traces back to Aristotle and ancient wisdom (Lusthaus, 2002; Moran, 2000), it was founded by German mathematician and social thinker Husserl (1839-1938) through a series of writings stretching over the late 1800s and the first half of the 20th century. Phenomenology seeks to uncover a given phenomenon through people’s lived experiences. The goal is for researchers to *return to things themselves* (Husserl, 1901/2005, p. 6). One of the best ways of understanding phenomenology is with the idea of Cartesianism (explained earlier, see section on overview of methodologies) which phenomenology dismisses at lengths (Husserl, 1929/1991). To recap, Cartesianism maintains that there are two worlds, soul and body, of which reason is the absolute source of knowledge. Literature (De Boer, 1966/1978; Embree & Mohanty, 1997; Finlay, 2012; Giorgi, 2009, 2012; Miettinen, 2013; Lewis & Staehler, 2010; Moran, 2000, 2012a, 2012b, 2013; Moran & Mooney, 2002; Sokolowski, 2000; Sousa, 2014; Zahavi, 2003) recognizes three most important concepts that characterize phenomenology: (1) intentionality, (2) intersubjectivity, and (3) reduction or bracketing.

First, intentionality represents one of the biggest contributions of phenomenology to research methodology (Husserl, 1929/1991, 2001, 1913/2002a, 1919/2002b). Although Husserl was not the first to use the term intentionality, he expanded on it more distinctly than previous authors did (e.g., Brentano). Intentionality, or relationality, to borrow an expression of Giorgi (2012, p. 9), is the idea that there is no such thing as solipsistic or isolated consciousness. Along similar lines, it needs to be noted that the notion of intentionality developed by Husserl is not the same as intention, intentional, or intending, which, for example, Searle (1983, pp. 1-26) took to be integral to intentionality. As Searle (1983) wrote, “any explanation of intentionality, therefore, takes place within the circle of intentional concepts” (p. 26). Intentionality comes from the Latin

verb *in-tendere*, meaning to move toward, direct toward, etc. Intentionality therefore entails *directedness, drivenness, extendedness*, etc., as opposed to isolation, fixity, reclusion, etc. As is now clear, with intentionality phenomenology seeks to eliminate the Cartesian bubble wherein the self holds the monopoly of certainty and knowledge, and replace it with consciousness that is open-ended, contextualized, and connected. For example, with regard to this research, intentionality helps see a mobile phone not only as a technology in and of itself, but also as a person-, community-, and neighborhood-directed technology – which resonates with shared ownership encountered among rural communities (Aker & Mbiti, 2010b; Burrell, 2010; de Souza e Silva *et al.*, 2011; James & Versteeg, 2007; Porter, 2012, 2015; Porter *et al.*, 2012).

The second concept characteristic of phenomenology, closely related to the first, involves intersubjectivity (Husserl, 1913/2002a, 1936/2012a, 2008, 2012b). Intersubjectivity is a theme to which Husserl consecrated more than three decades of thought and writing. Phenomenology reminds us that intersubjectivity stands as the milieu in which humans achieve their actualization in tandem with other beings. Intersubjectivity has emerged under the banner of an array of modern day issues, the most pressing of which being: multiplicity, pluralism, diversity, minority, unity, community, organization, negotiation, dialog, etc. A variant terminology used by phenomenology to point to intersubjectivity is the German concept *Lebenswelt* (see Duden, <http://www.duden.de/>) – transliterated by the English word lifeworld -- a concept cherished by Husserl to remind us the communal texture in which intersubjectivity knits people, the world, and things together. Here too, intersubjectivity meshes well with the centrality of community found in African cultures (Bongmba, 2005; Diagne, 2005; Esongi, 2011; Eze, 1997; Gambembo, 1995; Gyekye, 1996, 2003; Kanyamachumbi, 1995; Mabe, 2005; Maquet, 1967; Nyerere, 1977; Ramose, 2003a, 2003b; Tempels, 1945; Tshiamalenga, 1975, 1985; Wiredu, 2005). Intersubjectivity denotes the *interactive* nature or *sharedness* of lifeworlds whereas intentionality indicates the *active* nature or *directedness* of the self (ego) and its objects.

The third and last concept characteristic of phenomenology, perhaps the most important for our discussion, concerns reduction, also called reductive or bracketing phenomenology. Reduction is the process by which the person or researcher brings into question their taken-for-granted presuppositions, misconceptions, and biases that preclude the fuller acquisition and actualization

of knowledge. Reduction is a practice that originated in ancient Greece where skeptic philosophers used to suspend judgment in order to best assess a (legal) case at hand. But, Husserl (1913/2002a, 1936/2012a) expanded it to the wider context of human existence and research. The practice used to be called ἐποχή (*epochê*), which stood for pause, check, cessation, suspension, etc., and derived from the Greek verb ἐπέχω (*épéchô*), which meant: to pause, stop, hold upon, cease, contain, keep in check, hold back, etc. (Liddell & Scott, 1843/1996). This is why another technical terminology used for reduction is *epochal phenomenology* or *transcendental phenomenology*. Since people live in the world just like fish in water, everyday relationships with the world tend to be taken for granted. Epochal phenomenology seeks to transcend or keep in check the taken-for-granted relationships in order to see deeper and broader through people's lifeworlds.

Reduction causes researchers to go beyond any bias and familiarity to see the world, research, and reality as a paradox, wonder, or rupture by which to experience the breadth and depth of knowledge. This means that there is no such thing as, at least from a phenomenological perspective, research assumption(s) and endeavor(s) without epochal reduction or self-reflexivity. Epochal reduction was key in keeping this study free from, among others, pre-determined Western influences or agendas, something that attracted significant criticism in development studies and post-colonial movements (Chambers, 1983/2013b, 1997; Escobar, 1987, 1992, 2005, 2008, 2009, 2012; Easterly, 2001, 2002, 2003, 2006a, 2006b; Esteva, 1987; Esteva & Prakash, 1998a, 1998b; Melkote & Steeves, 2001, Mignolo & Escobar, 2010; Kiely, 1999; Servaes, 2008).

Literature (De Boer, 1966/1978; Embree & Mohanty, 1997; Finlay, 2012; Giorgi, 2009, 2012; Miettinen, 2013; Lewis & Staehler, 2010; Moran, 2000, 2012a, 2012b; 2013; Moran & Mooney, 2002; Sokolowski, 2000; Sousa, 2014) shows that phenomenology has aggregated in six main paths that make it a holistic tool of research into lifeworld or real world. As Patton (2015) specified, "phenomenological analysis involves and emphasizes different elements depending on which type of phenomenology you are using as a framework" (p. 574). First, realistic phenomenology is the approach that requires the researcher to look at the real issues affecting people's lifeworld(s). This approach believes that people are not just beings of freedom able to

decide about their lives, but they are also, and too often, *lived* or *impacted* by societal phenomena/things around them (see Embree & Mohanty, 1997, pp. 2-3).

The second main path of phenomenology is constitutive phenomenology. Perhaps the most frequently used and known in the social sciences, constitutive phenomenology emphasizes the idea that lifeworld and consciousness interact with and influence one another, and are thus mutually and originally constituted through a variety of forces or factors (e.g., culture, organization, economy, person, technology, art, etc.). Constitutive phenomenology has led to the school of thought called constructionism, the social aspect of which phenomenologist Schütz (1932/2004) developed (see details above, section on trails of interpretivism). The third main path of phenomenology, existential phenomenology, teaches that there is an interplay between lifeworld (Husserl, 1913/2002a, 2008, 1936/2012a) and human choice, action, freedom, and accomplishment. Existential phenomenology focuses on what is missing (e.g., freedom, fulfillment, enjoyment, etc.) in order for individuals to achieve or pursue happiness in their world-embedded lives.

The fourth main path of phenomenology, hermeneutic phenomenology (Embree & Mohanty, 1997), insists on the meaningfulness of people's interaction with the world around them. Hermeneutic phenomenology studies the patterns of meaning found in a given phenomenon or topic. The difference with hermeneutics, seen above (see section on trails of interpretivism), is that hermeneutic phenomenology focuses on people's lived experiences whereas hermeneutics looks at text or meaning. Fifth, historical phenomenology is the main path of phenomenology that privileges meaning in people's lived experiences, with the emphasis being placed on the implications and ramifications of meaning through the history of the selected aspects of the phenomenon (e.g., concept, culture, community, individual, tradition, custom, etc.). Meanings are built up over time through sedimentation, to use a term preferred by Husserl (1913/2002a). Therefore, lived experiences are traversed by various threads of sedimentation or networked meanings. The goal of a phenomenologist is thus to unbundle the sedimented and multilayered experiences of humans. The English word sediment comes from the Latin noun *sedes*, *sedis*, meaning seat, foundation, ground, base, bottom, etc. Sediment comes from the Latin verb *sedere*, (*sedeo*, *sedis*, *sessum*), which signifies: to sit, remain, sink, settle down, subside, hold firm, etc.

(Lewis & Short, 1879). It follows that sedimentation denotes things that have been deposited in the course of time and have accumulated into layers and patterns to form the foundations of human experiences and history.

The best example regarding sedimentation is with the idea of a building. In order for a constructor to ensure a better understanding, design, and erection of a building, an excavation is needed to unearth and manage the deposits laid, upon which the building is to rest. The history, combination, variation, and formation of the deposits are part of the excavation or inquiry. Deposits form, bind, evolve, and calcify into in a variety of shapes: alongside one another, atop one another, in line with one another, in circle with one another, in curve with one another, in tangle with one another, etc. Phenomenology (Husserl, 1913/2002a) reminds researchers that research is the endeavor to excavate or drill deep into the sediments of that which is under study. Deposits are also foundations upon which research is being built. The deeper and broader is the understanding of the building, the safer and firmer are the edifice and its research. The reason being, the varied shapes of deposits are needed to best understand the deposits stacked and the phenomenon standing on them.

The edifice can be the topic of development and mobile phones as the one being looked at in this study. The sediments are the context-embedded realities, undertakings made, methods applied, etc. in the course of time. While positivists seek recipes and predictions about the phenomenon being studied, phenomenologists (interpretivists) drill deep into the deposits or sediments on which that phenomenon rests to provide an in-depth sedimented understanding of it. Consequently, one key tenet of phenomenology defines reality as a process of sedimentation that the phenomenologist ought to peer deep into to unearth the layers and patterns amassed. Sixth and lastly, embodied or bodily phenomenology (Husserl, 1936/2012a, 1973) is the phenomenology that puts the body and its moves at the center stage of people's lifeworld(s). The idea being, the manifestations and determinations of the body represent a central piece in the understanding of a given phenomenon.

The sketch of the phenomenological paths gives a broad view of the phenomenological agenda -- allowing for a holistic discussion of mobile phone uses and development. In fact, the

phenomenological paths include areas of lifeworld as diverse as realistic, constitutive, existential, hermeneutic, historical, and bodily. An important point of phenomenology to bear in mind is one that describes human experience as sedimented, the layers and patterns of which the researcher is called to unpack. The phenomenological agenda helped design and conduct the interviews and group discussions (see Appendix III) in order to garner as much sedimented, multilayered, and multifaceted knowledge from participants as possible. Also worth pointing out is that this study was not interested in phenomenography, a subject closely related to phenomenology, since phenomenography preoccupies itself particularly with conceptual variations. To highlight this point, Marton and Pang (2013) argued,

The research specialization of phenomenography... is the study of categories of description depicting appearances, experiences, and meanings... *Hence, phenomenography does not tell you what individuals' ways of seeing something are. It tells you how their ways of seeing something vary* (between people under the same circumstances and/or within people under different circumstances) [emphasis added]. (p. 31, see also Åkerlind, McKenzie, & Lupton, 2014; Bruce, 1994, 1999; Ko & Marton, 2004; Limberg, 2000, 2005; Lo, Marton, & Pang, 2004; Marton, 1981, 1986, 1988a, 1988b, 1992, 1994a, 1994b, 1994c, 2015)

As implied in the statement above, the focus of phenomenography is placed not on the phenomenon under study, but on how conceptions about the phenomenon vary among people. Even more clearly, phenomenography does not care how context matters in a study. As Marton (2015) wrote, “we promote an understanding that the world talked about in school and the world surrounding them [students] is the same world” (p. 12). For phenomenography, the conceptions talked about in a lab or school are claimed to be more important than the real world in which students live. However, equipped with phenomenology, the present study considered reality to be sedimented, and thus was keen on drilling deep into the real world experiences of selected participants and their range of capabilities.

The eighth trail of interpretivism, after phenomenology, is dramaturgical analysis (Goffman, 1959). Dramaturgical analysis looks at life as social interaction based on the principles of

theatrical performance, wherein people have roles in light of which they behave and/or present themselves. One of the major advantages offered by dramaturgical analysis is its focus on humans as actors or players of social reality, but one disadvantage of dramaturgical analysis is that dramaturgical analysis does not show how established roles ensure to protect the vulnerable, the poor, or any victim in society. Also an important version of dramaturgical analysis can be found in performative art (see Denzin, 1997). Indeed, perhaps one of the most powerful illustrations of interpretive research, yet often forgotten, is with the words *ethnodrama* or *ethnoperformance* -- proposed by Denzin (1997) -- all of which go beyond the simple pursuit of meaning, with a view on the visual and dramaturgical enactment(s) of others' lifeworlds. To perform a drama is to re-live the life of others. Ethnodrama is not dictating, controlling, or manipulating, but en-acting, *acting*, or *living reality within* the world of others. Ethnodrama is a way of participating in or watching the real world life (of others) being unfolded or played out. But, this study was a study of real world experiences about mobile phones and development, not a theatrical study of dramas played out. Therefore, ethnodrama was not conducted in this study, although plays were performed during discussion breaks to incite participation, nothing more.

Ninth and lastly, ethnography (see Gottlieb, 2006; Hammersley, 1980, 1983, 1984, 1985a, 1985b, 1986, 1987a, 1987b, 1987c, 1990a, 1990b, 1990c, 1991, 1992a, 1992b, 1992c, 1992d, 1992e, 1993, 1994a, 1994b, 1994c, 1994d, 1999a, 1999b, 1999c, 2002, 2004a, 2004b, 2005a, 2005b, 2005c, 2006, 2007, 2011; Hammersley & Atkinson, 2007; Hillyard, 2010a, 2010b, 2010c, 2010d, 2011; Learmonth, 2009; Reeves, Peller, Goldman, & Kitto, 2013) is a research that examines a phenomenon, individual, or group of individuals within the natural context, during a more or less long period of time, and from the perspective of those involved. To define ethnography, the American Anthropological Association (2004) specified,

Ethnography involves the researcher's study of human behavior in the natural settings in which people live. Specifically, ethnography refers to the description of cultural systems or an aspect of culture based on fieldwork in which the investigator is immersed in the ongoing everyday activities of the designated community for the purpose of describing the social context, relationships and processes relevant to the topic under consideration...

Ethnographic analysis is inductive and builds upon the perspectives of the people studied.

Ethnography emphasizes the study of persons and communities, in both international and domestic arenas, and involves short or long-term relationships between the researcher and research participants. Multiple methods are used in ethnographic research [emphasis added].

It is clear from the definition advanced above that ethnography is a prominently anthropological enterprise. Notwithstanding, recent years have seen an increase of ethnographic work undertaken outside the anthropological arena. In the same vein, Hammersley (2006) stated,

By contrast, much of what is referred to as ethnography in the other social sciences today, including educational research, does not meet one or more of the criteria built into this anthropological definition [of years spent among people]. Most ethnographers do not actually live with the people they study, for example, residing in the same place and spending time with them most of the day, most of the week, month in and month out. Instead, many sociological ethnographers focus on what happens in a particular work locale or social institution when it is in operation, so that in this sense their participant observation is part-time. This is true even of some Western anthropologists, where they study ‘at home’ or in other large complex societies... Equally important, the fieldwork carried out by many ethnographers today is, at best, likely to last months rather than years. (pp. 4-5, see also Hammersley, 2005, pp. 5-6)

Ethnographic work can very well be achieved without a trained background of anthropology. For parties versed in business or management-related fields, Humphreys, Brown, and Hatch (2003), Humphreys and Watson, (2009), and Learmonth (2009), among others, presented invaluable accounts of ethnographic work in non-anthropological settings. Nonetheless, for clarity purposes, this doctoral study did not seek to be an ethnographic inquiry because anthropological skills and credentials were not obtained in order for the research to be reliable with an established background and for the wider specialized scientific audience. Another reason behind the rejection of ethnography as the method of this study was that the research question was not about the extent of time spent with and among rural populations using mobile phones, but the contributions of a specific technology (i.e., mobile phones) to development, regardless of the

time spent with the concerned populations. Indeed, the length of time spent with participants is not an end in and of itself (see also Hammersley, 2005, 2006). This is not saying that the length of time spent with participants is not valuable, but rather the amount of in-depth information arrived at is the key to a better understanding of the phenomenon being researched.

Misunderstandings about interpretivism

Interpretivism has been gaining tremendous recognition among academic and industry circles (Denzin, 2010). Granted that such a recognition is an indication of progress, it attracts three most frequent misunderstandings. The first most frequent misunderstanding to be addressed about interpretivism hinges on the subjective/objective divide, with interpretivism being seen as subjective and positivism as objective. While interpretivism seeks to dig into subjective dimensions of the phenomenon being investigated, it cannot and should not be reduced to subjectivism. On the contrary, the goal of interpretivism is to dig out the patterns underlying the lived experiences of a phenomenon. It is increasingly shown that the schism/gap objective-subjective, realism-irrealism, inductive-deductive, facts-senses, and the like is an inconclusive and misleading characterization of both positivism and interpretivism (see Babbie, 2013; Burrell & Morgan, 1979/2005; Easterby-Smith, Thorpe, & Jackson, 2012; Creswell, 2012, 2013, 2014). Perhaps the most powerful characterization of this discussion comes from French anthropologist Lévi-Strauss (1978/1995). Lévi-Strauss (1978/1995) remarked,

The real gap, the real separation between science and what we might as well call mythical [subjective] thought for the sake of finding a convenient name... occurred in the seventeenth and eighteenth centuries. At that time, with Bacon, Descartes, Newton, and the others... it was thought that science could only exist by turning its back upon the world of senses, the world we see, smell, taste, and perceive; the sensory was a delusive world, whereas the real world was a world of mathematical properties which could only be grasped by the intellect and which was entirely at odds with the false testimony of the senses. This was probably a necessary move, for experience shows us that thanks to this separation – this schism if you like, scientific thought was able to constitute itself... Now... contemporary science is tending to overcome this gap and that more and more the sense [subjective] data are being reintegrated into scientific explanation... Take, for

instance, the world of smells. We were accustomed to think that this was entirely subjective, outside the world of science. Now the chemists are able to tell us that each smell or each taste has a certain chemical composition and to give us the reasons why subjectively some smells or some tastes feel to us as having something in common and some others seem widely different. (pp. 5-7, see also Popper, 1994/1996b, pp. 72-73)

Note how sensory experiences are said to have certain traits/characteristics in common that are entirely scientific or can find scientific explanation or formulation. It follows that (defending) interpretivism is not incompatible with objective truths, facts, and hard results. Nor does it mean that positivism has the monopoly of objectivity. Truths or facts are too complex to be reduced to or fully displayed by one view of reality. In a powerful explanation of social sciences, Popper (1994/1996b) rejected the idea of social science being seen as merely a matter of subjective realities and lack of realism. Popper (1994/1996b) noted,

It is completely erroneous to believe that the attitude of the natural scientist is more objective than that of the social scientist... The objectivity of science is not a matter for the individual scientist, but rather the social result of mutual criticism, of the friendly-hostile division of labour among scientists, of their co-operation and also of their competition... Objectivity can only be explained in terms of social ideas such as competition (both of individual scientists and of various schools of thoughts); tradition (that is the critical tradition); social institutions (for instance, publications in various competing journals and by various competing publishers; discussions at congresses); the power of the state (that is, its political tolerance of free discussion). (pp. 72-73)

Objectivity, then, is not a goal in and by itself, nor the achievement of an individual scientist, but a nest of autonomous, objective, and physical entities, namely: communities, groups, institutions, bodies of knowledge, and venues that criticize or contribute to the researcher's proposed theories.

Furthermore, as discussed earlier (see section on misunderstanding about positivism), there is no rhyme or reason that facts and effects – important indicators of objectivity -- are limited to or

synonymous with positivism (Einstein, 1916/1920, 1949; Feyerabend, 1951, 1962, 1972; Heisenberg, 1927, 2001). In other words, interpretivism does not amount to pure sensationalism or subjectivism. As several authors have shown (Husserl, 2001, 1919/2002b, 2008, 2012a, 2012b, 2014; Popper, 1940, 1934/1959, 1950/1971a, 1950/1971b, 1972, 1956/1983, 1956/1988, 1963/2002, 1990, 1975/1991, 1994/1996a, 1994/1996b, 2008; Searle, 1995, 2010) human and social phenomena are not a function of hallucination, but rather they are objective and have substance to them. Even more pertinently, the English word objective comes from the Latin word *obicere*, which has two parts: *ob*, meaning: alongside, by, with, and *jacere*, meaning to throw, expose, bring forth, present, etc. (Lewis & Short, 1879). Object has the idea of being exposed for others to see, it has nothing to do with positivistic and absolute presumptions. Equally, the English word subjective comes from the same radical (*jacere*), with the prefix *sub*, which means before, in front, there, etc. Subject has the same connotation of putting before, exposing, presenting, putting forth, etc. The etymology reveals no idea of positivistic absolutism or monopoly of truth.

The second misunderstanding about interpretivism, after the subjective/objective divide, holds that interpretivistic research cannot yield generalizable findings. The belief comes from the widespread idea that qualitative research cannot generalize. Underlining the necessity of generalizability in qualitative research, Yin (2014), a leading figure of qualitative research, clarified,

Besides making it easier to design your case study, having some theory or theoretical propositions will later play a critical role in helping you to generalize the lessons learned from your case study. This role of theory has been characterized throughout this book as *analytic generalization* and has been contrasted with another way of generalizing the results from empirical studies, known as *statistical generalization* [emphasis in original]... Rather than thinking about your case as a sample, you should think of it as the opportunity to shed empirical light about some theoretical concepts or principles, not unlike the motive of a laboratory investigator in conceiving of and then conducting a new experiment... Both kinds of studies are likely to strive for generalizable findings or lessons learned... that go beyond the setting for the specific case or specific experiment that has been studied. (p. 40)

With analytic generalization, interpretivists aim to shed light on the theory and principle(s) at hand. In so doing, they go beyond the original case (context) to inspire research situated in other contexts. Furthermore, Yin (2014) elaborated,

Note that the aim of an analytic generalization is still to generalize to these other concrete situations and not just to contribute to abstract theory building [in the literature]. Also note that the generalizations, principles, or lessons learned from a case study may potentially apply to a variety of situations, far beyond any strict definition of the hypothetical population of “like-cases” represented by the original case. (p. 41)

One suggestive expression used in the above statement for generalizability is that of lessons learned. Interpretivistic findings can very well yield a number of lessons learned to illuminate future research. In the same vein, Hellström (2008) proposed the concept *transferability*, and Tracy (2010) used the term *resonance* to designate the ability of interpretivistic researchers to generalize. Perhaps a more convincing terminology is that of *wider resonance* or significance. As Mason (2002) maintained,

There is a variety of ways in which generalizations can be made in qualitative research... You may well wish to derive cross-contextual generalities from strategically focused local/contextual studies. You may wish to make claims that have a *wider theoretical resonance* [emphasis added]. (p. 39)

Wider resonance presupposes that applicability can be carried and shared across contextual settings and individualities. This means that the research can yield the findings that readers and other researchers can resonate with in their own particular contexts and experiences. Some authors spoke of *portable* generalizability, moving from one context of study to another. In their description of qualitative research, for example, Roy *et al.* (2015) wrote,

We can understand cases outside of a specific qualitative study when we construct a theoretical insight or framework that is *portable*, moving from families in one specific

context out toward other families in a range of other contexts. *We do not argue that it is impossible to generalize with a qualitative approach* [emphasis added]. (p. 255)

As demonstrated in the statement above, there is an increasing consensus among empirical researchers that qualitative research can definitely yield generalizable findings. From a relatively different angle, Seddon and Scheepers (2015) recently asserted, “interpretive researchers also make inductive generalizations” (p. 37). The point being, it is becoming markedly apparent among various critics of methodology that interpretivists can very well generalize from and beyond their work. Generalizability for qualitative researchers represents a set of assumptions or insights tested or gained within a specific context, and which is thus portable or transferable to other contexts to provide some “lessons learned” (Yin, 2014, p. 40) in those contexts. What this means is

one very simple theme – the thesis that *we can learn from our mistakes* [emphasis in original] ... By bringing out our mistakes it makes us understand the difficulties of the problem which we are trying to solve. This is how we become better acquainted with our problem, and able to propose more mature solutions... And this is how we can learn from our mistakes. As we learn from our mistakes, our knowledge grows, even though we may never know -- that is, know for certain. Since our knowledge can grow, there can be no reason here for despair of reason. (Popper, 1963/2002, pp. xi-xii)

As seen in the above statements, the idea is that, for qualitative inquirers, research produced in one specific or limited context constitutes a source of learning, expertise, or knowledge growth in order to avoid the mistakes made or faced by others, and perhaps enhance or improve the success encountered by others in their contexts. Thus, it is intended that *rather than representing the larger population*, this study’s qualitative findings serve as a source for others to learn, grow in knowledge, and become better equipped with or informed in matters of mobile phones and development.

The third and last misunderstanding that undermines interpretivism is the idea that numbers, tables, and graphs are unsuitable for interpretivistic research since they are particularly designed

for quantitative data. For example, Guijt (2014) wrote, “descriptive [qualitative] data [is that] which can be observed, but not measured. It can include text, images, sound, etc. but not numerical/quantitative values” (p. i). For the most part, numbers, tables, and graphs are employed by quantitative analysts to determine the validity or degree of generalization toward the larger population. As seen earlier in the overview of methodologies, quantitative researchers follow a paradigm/worldview different from that of qualitative or interpretive researchers. In their endeavor to drill deep into the topic at hand, “qualitative research use semiotics, narrative, content, discourse, archival, and phonemic analysis – *even statistics, tables, graphs, and numbers* [emphasis added]” (Denzin & Lincoln, 2011b, p. 6, see also Miles, Huberman, & Saldaña, 2014, p. 282).

Most importantly, for interpretive research, the use of visuals does not aim to generalize, as it does with quantitative data, but simply “reflects an attempt to ensure an in-depth understanding of the phenomenon in question” (Denzin & Lincoln, 2011b, p. 5, see also Sandelowski, Voils, & Knafl, 2009, p. 210). Put differently, quantitative researchers use visuals to display the extent to which their findings represent the larger population whereas qualitative researchers use visuals to deepen the understanding of that which is being investigated. As Guest, MacQueen, and Namey (2012) elucidated,

One of the reasons some people believe that qualitative data cannot be analyzed quantitatively is because they assume that all quantitative analyses are statistical... But they can help you summarize and describe the patterning in the data in an unambiguous way. (p. 132, see also Sandelowski, Voils, & Knafl, 2009, p. 220; Miles, Huberman, & Saldaña, 2014, pp. 279-280)

Visuals are simply one of the many genres just like “metaphors or analogies,” to borrow Miles’, Huberman’s, and Saldaña’s (2014, p. 281) pertinent illustration, that interpretivists bring to the table in order to convey as deepest and closest as possible the world of the topic in question.

As is now clear, depending on whether the researcher approaches their research question(s) from a positivistic or interpretivistic perspective, they conceive and theorize the research questions,

choices, and priorities differently. For example, a positivist considers the contributions of mobile phones to development as variables and figures generalizable across the globe -- irrespective of the people involved and their contexts -- whereas an interpretivist looks at mobile phones and accompanying lived experiences of people as socially, individually, historically, culturally, and spatially constructed or *sedimented*, to use a phenomenological term (Husserl, 1913/2002a). For interpretivists, it is within the context of lived experiences that development can be best captured and implemented. For positivists, it is within top-down established data that development can be found and distributed around the world.

Choice of methodology, methods, and techniques

This section exposes the justification of methodologies (i.e., qualitative research vs quantitative research), methods (i.e., ethnomethodology, phenomenology, discourse analysis, conversation analysis, etc.), and techniques (i.e., survey, saturation, triangulation, phone call, email, post office mail, etc.). One of the compelling reasons that might justify the methodology, methods, and techniques chosen for a study of mobile phones is the increasing headways made by these technologies among the world's poorest (Aker, 2010, 2011, 2013; Aker & Mbiti, 2010a; Bailard, 2009; ITU, 2013) as well as the extent of responses obtained from concerned participants regarding mobile phones. To that effect, the methodology, methods, and techniques were designed to obtain a higher or richer amount of needed information from the poor themselves. As Mansell (2012), at the London School of Economics, UK, warned,

Diffusion studies [of mobile phones], including those focusing on the 'bottom-of-the-pyramid,' can tell us about the rise of mobile phones and some of the characteristics of use and of users, but *they cannot tell us whether access to mobiles is contributing to poverty alleviation in developing countries* [emphasis added].

The statement indicates that the poor themselves constitute an invaluable source of information with regard to mobile phone uses and development.

Qualitative research paradigm or methodology

Three key reasons were identified to justify the qualitative research methodology or paradigm chosen in this doctoral study (Babbie, 2013; Cibangu, 2012b, 2013b; Creswell, 2012, 2014; Patton, 2015; Silverman, 2012; Tracy, 2010, 2012, 2013):

- (1) Quantitative research,
- (2) Rural populations, and
- (3) Private ownership.

The first justification for the choice of methodology has to do with quantitative research and its positivistic principles (discussed earlier, see section on positivism) in global development plans. While quantitative research is the most common, publicized, and indeed often informative source of knowledge about mobile phone research and development studies (Alkire *et al.*, 2015; Deaton, 2005, 2010a, 2010b), it was not found to be suitable to this doctoral study, on account of six practical situations. First, with participants being illiterate written questionnaires -- composed of identical questions to be asked to all participants, as per quantitative research standards (Babbie, 2013; Cibangu, 2012b, 2013b; Creswell, 2012, 2014; Patton, 2015; Silverman, 2012; Tracy, 2010, 2012, 2013) -- were impractical to circulate among them. Second, the idea (of carrying) a paper with a list of questions to be read out loud to participants was reminiscent of lists that circulated at the time of genocides and ethnic conflicts whereby hundreds of people were pursued and executed from village to village. Third, recording questions and/or answers and videotaping participants were rejected by chiefs and sages to ensure the safety of respondents lest video tapes and recorded answers and comments are confiscated by state officials.

The fourth practical situation why quantitative research was not chosen stems from various reviews of methodology concerning mobile phone research and development studies, pointing out a need of in-depth understanding and micro-level studies. This is not saying that the work done by quantitative research about mobile phones so far is not valuable -- indeed international donors such as OECD, UN, IMF, UTI, and World Bank are staunchest sponsors of quantitative research -- but that the circumstances faced with in this study required an approach different from that of quantitative research. Perhaps interestingly enough, information science or

information-related field(s) also is shown to be faced with circumstances wherein positivistic quantitative research inherited from computer science (see Hjørland, 2014, p. 213; Wegner, 1983, p. 163) was implemented. The goal is for researchers to complement each other about the same topic by bringing to the table the findings collected in different circumstances and from different paradigms. Thus, this study was a contribution (see discussion chapter, section on contribution to prior bodies of works) to extant research on mobile phones by bringing to the table specific views taken under specific circumstances. For example, placing a greater emphasis on qualitative research for mobile phone research, Duncombe and Boateng (2009) suggested,

More detailed qualitative data may help map the complexity of causal chains of impact, with greater emphasis placed on understanding and theorising the micro-processes that cause the poor user to interact with a mobile device or to make use of a service delivered. (p. 25)

The statement cited above shows that efforts toward understanding and theorizing the poor have been coming mostly from macro-studies. The reason being, micro-studies have been seen as having a weak power of generalization as they fail to represent the larger population (Babbie, 2013; Cibangu, 2012b, 2013b; Creswell, 2012, 2014; Patton, 2015; Silverman, 2012; Tracy, 2010, 2012, 2013). In other words, it is difficult to draw valid conclusions about the general population when the study is based on a few individuals of that population. Therefore, since this study was undertaken at a micro-level in order to capture the lived experiences of the selected groups of individuals, and thus produce an in-depth understanding of these groups, quantitative research was not specially equipped to provide the sought *in-depth* information.

The fifth practical situation leading to the dismissal of quantitative research concerns poverty and the ongoing challenging attempts to measure it. Indeed, poverty and ways to overcome it have become a daunting issue among policy makers and academicians the last several decades. Every year, however, the UN has not been able to come up with a convincing human index of development with which to tackle poverty around the world. For decades, human indexes have been *unsuccessfully* revised every year by the UN and its renowned bodies and allied schools and research centers, one of the most publishing entities being the Oxford Poverty and Human

Development Initiative (<http://www.ophi.org.uk/>). To illustrate, in 1978 (Gasper, 2007; Gough, McGregor, & Camfield, 2007; Streeten *et al.*, 1981), the World Bank put forth a worldwide plan with a view to providing for the basic needs of the poor around the world. However, the plan was found to be abstract, reductionistic, and inefficient for the world's poorest (see basic needs approach in literature review). In 2000, the declaration of *The Millennium Development Goals* (2000) attempted anew to eradicate poverty around the world, with resolute plans made by world leaders to reach the stated goals by the year 2015.

The hopes engendered by *The Millennium Development Goals* (2000) started to founder as inequalities within and between nations became inescapably pronounced. In 2013, Oxford University world famous development experts Alkire and Santos proposed one of, if not, the most robust poverty indexes, called multidimensional poverty index [MPI], in an attempt to best assess and thwart poverty around the world. Alkire and Santos (2013) claimed, "The MPI constitutes the first implementation of the direct method to measure poverty in an internationally comparable way, having wide coverage of developing countries" (p. 6). No sooner than a few months after the publication of the MPI, however, Alkire, Roche, and Sumner (2013) criticized the recently released human development index, with the trenchant remark that "country analytical categories are disconnected from the geographic location of poverty... The nature of the global poverty 'problem' is changing to one of 'poverty pockets'" (p. 20). The scenario of unsatisfactory and unrepresentative development indexes has been being replicated for several decades.

In 2015 (Alkire *et al.*, 2015), the MPI was supplemented with the idea of destitute or destitution in the hopes of representing the world's poorest better than previous development parameters. To show the inefficiency of poverty measurements for which a number of scholars have been famous (Alkire, Roche, & Sumner, 2013; Alkire & Santos, 2013), the Oxford MPI has been keyed to the capability approach-driven notion of basic needs (Sen, 1999) such as health, primary education, sanitation, drinking safe water, child mortality, cooking fuel, etc. Therefore, in lieu of the traditional \$1.25-per-day category, the concept destitution/destitute has been proposed as a situation where basic needs are lacking (Alkire *et al.*, 2015). Most interestingly, the category of destitute proposed in place of the revised MPI (see Alkire & Housseini, 2014, p.

7; also Alkire, Conconi, & Seth, 2014) indicates the poorest people in rural areas who do not have assets such as mobile phone, radio, car, bank account, etc.

To make things even worse, the *Sustainable Development Goals* (2015) designed to end poverty by the year 2030 did not redress nor consider the mistakes cumulated and repeated since the first development program was implemented in 1978 onward, and the proposals made have been ignored massively -- to the discontentment of most analysts (see Lange & Klasen, 2015; Sen, 2013b; Streeten *et al.*, 1981). One of the mistakes bewailed is the lack of accountability and justice regarding the plans adopted, coupled with continual positivistic principles affecting international donors and their views and data regarding the poor. For example, critics wondered how

to achieve this objective [of global development], will it not be necessary to establish enforceable standards of performance to ensure that the benefits actually reach the poverty groups? The new emphasis on basic needs does not resolve these old dilemmas in the field of international economic cooperation. It may even accentuate them. (Streeten *et al.*, 1981, pp. 6-7, see also Chambers, 1983/2013b, pp. 2-3; Chambers, 1997, p. 1)

More than two decades after the remark stated above, *The Millennium Development Goals* (2000) were proclaimed without any correction proposed, and the new *Sustainable Development Goals* (2015) did not remedy the issues flagged, either. Consequently, Lange and Klasen (2015) bemoaned,

Recent proposals for the Sustainable Development Goals (SDGs)... are likely to be similar [to those of *The Millennium Development Goals*] ... Claims that the new goal is feasible... have been backed sometimes by costing studies [positivistic or probabilistic] ... It is widely understood that these studies [which support both the old and new development goals] are very crude, abstract from institutional constraints in developing countries, and are easily misinterpreted and sometimes misused. (pp. 1-2)

While very understandable, the pursuit of positivistic research among international donors, as seen in the statement above, comes at a cost.

The sixth and last practical situation accounting for the disregard of quantitative research is statistics/numbers prominent in the literature produced about mobile phones. Extensive studies concerned with mobile phones are works of statistics and big numbers (Aker, 2010, 2011, 2013; Aker, Collier, & Vicente, 2013; Aker & Blumenstock, 2015; Aker & Fafchamps, 2013; Aker & Mbiti, 2010a; Aker & Ksoll, 2012; Aker, Ksoll & Lybbert, 2012; Andrianaivo & Kpodar, 2011, 2012; Asongu, 2013; Chavula, 2013; Graham & Nikolova, 2013; Ling *et al.*, 2012; Rohman, 2012). This is not saying that statistics and related aggregates are not valuable, but that they are not suitable to the questions posed and aims and objectives set in this study. The objective of this study was to give voice to concerned populations in order to obtain their own accounts of mobile phone uses and development. Therefore, statistics and its numbers were not as well equipped to listen and give voice to people as qualitative research was.

One of the major reasons why mobile phone authors undertake statistics is that statistical studies are easy to fund and tabulate since they present reality in the form of outcomes and numbers. While statistics has its merits, it is misleading to reduce a social phenomenon and its understanding to statistics and its computer-generated numbers. Numbers can also be aggravated or facilitated by anecdotal evidence that mobile phones are surrounded with (see Buys, Dasgupta, Thomas, & Wheeler, 2009; Aker & Mbiti, 2010a; Malony, 2008b; Aker & Fafchamps, 2013; Heeks, 2009; Gough, 2005; Coyle, 2007; Futch & McIntosh, 2009; DeMaagd, 2008; Rashid & Elder, 2009; Smith, Spence, & Rashid, 2011; Tobbin, 2012). It bears noting that statistics was meant to be undertaken in a small-scale, lab-like, and *controllable* environment (Babbie, 2013; Cibangu, 2012b, 2013b; Creswell, 2012, 2014; Howell, 2014; Oakshott, 2012; Patton, 2015; Silverman, 2012), but not for realities as complex as the world in which we live.

Consequently, statistics is based on the principle that the smaller is the targeted population the easier it is to control and manipulate the lab or setting of the phenomenon under study (Babbie, 2013; Cibangu, 2012b, 2013b; Creswell, 2012, 2014; Howell, 2014; Oakshott, 2012; Patton, 2015; Silverman, 2012). Yet, the bigger is the sample -- of course representative of the larger

population -- the more likely it is to best reflect the larger population. Worse still, a sample as big as the world is just as impractical as a sample unrepresentative of it. As Oakshott (2012) noted, “the purpose of a survey is to obtain information about a population. All things being equal, the accuracy of the sample results will depend on the sample size, the larger the sample, the more accurate the results” (p. 36). The intervening factors involved in a survey of the world’s or a nation’s population are countless and therefore are most likely to compromise the statistics produced about global population.

A typical case that needs mention in relation to statistics concerns *survey slavery*, to use one of Chambers’ (2008) preferred words. Chambers remarked,

Thousands, perhaps tens of thousands of researchers have surrendered their freedom to surveys; if field workers are helots, their masters can also be slaves... Commitment to surveys is all too easily and willingly accepted... Research institutions and universities need to obtain funds; once they have conducted some surveys... and funding sponsors are prepared to pay for surveys because they feel that they will get at least something; an identifiable and justifiable product, for money... There is also a “because it’s there” element, a sense that until social scientists have conducted their surveys and struggled with their computers, they have not climbed their Everests... *The pathology of rural surveys follows common paths... It is easy and tempting to expand the geographical area to be covered, the numbers in the sample, and the questions to be asked... Under [the] pressure of the immediate need to keep the survey running, its objectives slide out of sight, the means – the collection of information – become the end [emphasis added].* There is neither time, energy, nor resources to explore new questions or to notice the unexpected... As data collection is completed, processing begins. (2008, pp. 6-7, see also Deaton, 2010a, p. 14)

The statement shown above does not imply that surveys are not important, but that there are circumstances under which -- as those of the populations targeted in this doctoral study -- research grounded in the real lives of individuals with local or immersed researchers delivers invaluable information.

Closely related to surveys is the challenge stemming from the data used for statistical analysis. Despite decades-long growing concerns among specialized experts regarding international and national statistics (Blades, 1980; Deaton, 2005, 2010a, 2010b, 2010c; Jerven, 2010a, 2010b, 2010c, 2010d, 2011, 2013a, 2013b, 2013c, 2014; Kroll, 2011, 2013, Srinivasan, 1994), international statisticians continue to rely on and refer to national- or government-collected databases, without questioning the conceptual and methodological errors involved. This methodological challenge has greater consequences in developing countries, whose governments typically lack the needed physical and ethical infrastructure to secure reliable and verifiable data. In a way “it would appear that researchers either are not aware of or, worse still, have chosen to ignore the fact that the published data, national and international,” Srinivasan (1994) noted, “suffer from serious conceptual problems, measurement biases and errors, and lack of comparability over time within countries and across countries at a point in time” (p. 4). These concerns continue to plague official statistics. In his recent study, Jerven (2010a) remarked,

Errors [of national and international database] have already been subject to scholarly misunderstanding... Very few researchers consult the actual publications of the statistical offices. Database data are frequently treated as primary evidence, but they are not. The main problem is the inability to directly check the source and the method used to obtain the data. Srinivasan (1992: 24–25) requested better documentation in the international databases in the interest of ‘truth in data retailing’... This call has not been heard, but perhaps it is also fair to call upon scholars to be more cautious data consumers... It follows literally that since such care has not been taken, most academic work on economic growth in Africa has been unintelligent. (pp. 291-293)

Independent research with polling agencies such as Gallup Organization (<http://www.gallup.com/home.aspx>), Harris Poll (<http://www.harrispollonline.com/>), or Pew Research Center (<http://pewresearch.org/>), do not exist in the Congo (and most developing countries) to allow the criticism and traceability of supplied data.

In 2013a, Jerven wrote, “African [national] statistics are of dubious quality” (p. xiii). Efforts toward repairing the flaws arising from statistical data prove to be minimal, and the conceptualization of development becomes inaccurate. As Salehi-Isfahani (2013) affirmed, “much of the discussion about human development is conducted on the basis of national averages, such as GDP per capita, but, as with income, there are inequalities in various dimensions of human development that make comparison based on averages inaccurate” (p. 363). National averages derive from statistically drawn generalizations. The credibility of national data in developing countries has been called into question for several years (Delhey & Kroll, 2012; Jerven, 2010a, 2010b, 2010c, 2010d, 2011, 2013a, 2013b, 2013c, 2014; Kroll, 2011, 2013). The present doctoral study aimed to address the phenomenon of the poor from the perspectives, experiences, and real lives of the poor, not from pre-established numbers and data.

The second key reason, after quantitative research, that justifies the methodology taken in this study regards rural populations and their living conditions. It was observed, as noted earlier, that there was not an official list or database comprising the rural populations dealt with in this study, from which a standard sample representative of the larger population could be drawn to allow valid generalizable findings (see Creswell, 2012, 2014; Howell, 2014; Sotos, Vanhoof, Van den Noortgate, & Onghena, 2007). One reason why there was/is no official database about rural populations might be that “few countries in Africa compile official data on the number of villages because government administration does not reach that deep [in remotest areas]” (ITU, 2007b, p. 1). Another reason might be that little to no attention was paid to rural populations and their living conditions (see Adera *et al.*, 2014; Alkire, Roche, & Sumner, 2013; Camfield, Masae, McGregor, & Promphaking, 2012; Diga, 2013a, 2013b; Kabeer, 2013; Salehi-Isfahani, 2013; Smith, 2013) since there were no infrastructures (i.e., roads, railroads, airports, etc.) leading to these populations.

The third and last key reason with which to justify the methodology of the present doctoral study comes from the notion of private ownership or subscription of mobile phone consumers, which pervades the literature concerning mobile phone dissemination. In 2007, James and Versteeg wrote,

In the African context, the Western idea that only those who own a phone can use one is not at all accurate, since the phenomenon of ‘sharing’ is of particular importance. Many phone owners in poor communities share their mobile phones. (p. 121)

As is clear from the statement seen above, data collectors avid of clear-cut numbers and categories are more likely to misrepresent the situation of mobile phones in this specific context. Along the same lines, Aker and Mbiti (2010b) asserted, “*mobile phone adoption data are often limited or inaccurate* [emphasis added], as they report subscriptions rather than individual handset or subscriber identity module (SIM) ownership, which can result in serious measurement error” (p. 212). As errors threaten the data of mobile phones, the remark stated above still needs the attention of authors. Zanello (2012) noted, “we also emphasise that the *most significant factor is how ICTs are used, rather than their ownership* [emphasis added]” (p. 694). Only in living and talking with the concerned populations can the phenomenon of sharing mobile phones be fully addressed. Indeed, “sharing mobile phones is a common practice in Africa” (Aker & Mbiti, 2010b, p. 210, see also Gough, 2005, p. 2). Context-embedded inquiry such as the present doctoral study can best capture the uses of mobile phones among rural populations. Cost-sharing is another factor that leads to common ownership. As Aker and Mbiti (2010b) stated,

At the same time, such patterns could also reflect cost-sharing, especially among poorer rural households for whom the cost of handsets and services is still prohibitively expensive... Reported data on mobile phone subscriptions could significantly underestimate the number of mobile phone users. (p. 212)

In the Congo, a usable/decent mobile phone handset is worth US \$80, at least, and with the added features on mobile phones the cost reaches several hundred dollars.

Methods

This study was conducted with the belief that “methodological pluralism has been and has to remain the way forward... Monocultures of methods misfit much of our complex, diverse and dynamic world” (Chambers, 2008, p. xvi). Just to recap, it needs to be said that method was understood in this study as a strategy with which to attend to the research questions posed

whereas methodology is the overarching philosophy that undergirds the whole research process (see details above, section on definitional clarification). Four methods were employed in undertaking the present study: (1) phenomenology, (2) Sen's capability approach (Sen, 1979b, 1985b, 1987, 1999, 2009a, 2009b), (3) participatory method (Chambers, 2002/2011), and (4) ecological method (Krebs, 1999; Manly & Navarro, 2015; Navarro & Díaz-Gamboa, 2015; Nomani, Oli, & Carthy, 2012). First, phenomenology (Budd, 2011, 2012; Husserl, 1939, 1973, 1900/1975, 2001, 1913/2002a, 1919/2002b, 1936/2012a, 2012b, 2014; Ricoeur, 1971, 1986a/2004, 1995), as explained above (see overview of methodologies), was chosen for its holistic view held on realistic, constitutive, hermeneutic, existential, historical, and bodily areas of people's lifeworlds. Thus, phenomenology allows the researcher to dig deep into the sedimented human experiences to bring to light the patterns and layers formed in the course of time. One key motivation was also that "information is an intrinsic part of [all] the human condition where information behavior is embedded within everyday social and life processes" (Spink & Heinström, 2012, p. xv, see also Brookes, 1980, p. 126; Wilson, 2000b, p. 49). Consequently, the developmental effects of mobile phones demand a fuller view of development arising out of a deeper inquiry into the human condition/reality of those concerned.

Second, Sen's capability approach (Sen, 1979b, 1985b, 1987, 1999, 2000a, 2004a, 2004b, 2005, 2006a, 2006b, 2006c, 2009a, 2009b, 2013b) has as its chief principle the expansion of capabilities surrounding the basic needs of individuals. At one extreme, capability approach is an antidote to positivism, allowing researchers to look at ways to improve the quality of life in society. The reason is that positivism holds far-reaching effects on the science of economics (Sen, 1960, 1970a, 1970b, 1970c, 1971, 1974, 1976a, 1976b, 1976c, 1976d, 1977a, 1977b, 1977c, 1978, 1979d, 1979e, 1981b, 1994, 1995a, 1997a, 1997b, 1997c, 2000b, 2000c, 2000d). At another extreme, capability approach teaches to go beyond the reductionistic and manipulative accounts of development (Sen, 1973, 1975, 1979a, 1979b, 1979c, 1981a, 1982, 1983, 1984a, 1984b, 1985a, 1985b, 1987, 1988, 1992, 1993a, 1993b, 1998b, 1999, 2000a). To a great extent, Sen is a philosopher of methodology and of wellbeing. Indeed, ideas of justice, human rights, human agency, and the like have been etching on Sen's thinking for a long time (Sen, 2002a, 2002b, 2002c, 2003a, 2003b, 2004a, 2004b, 2005, 2006a, 2006c, 2007a, 2008a, 2008b, 2009a, 2009b, 2012, 2013a, 2013b, 2013c). This is the context in which capability approach and its

concepts are rooted. For example, mobile phone uses without rights and justice might be incomplete. Capability approach helped provide emphasis and creativity in asking questions to participants (see Appendix II & Appendix III).

Third, participatory method is a method that emphasizes the centrality of local populations in the conceptualization and implementation of development (Chambers, 1983/2013b, 1987, 1997). As Chambers (1983/2013b) noted,

So it seems all the more right to concentrate attention on the “last”, on the hundreds of *millions of largely unseen people in rural areas* who are poor, weak, isolated, vulnerable and powerless. Whatever one’s ideology it seems right to reverse the forces which exploit these people and keep them physically and socially wretched [emphasis added]. (p. viii)

It is clear from the statement above that development metrics, however accurate, tend to obscure the efforts toward the eradication of poverty and its underlying forces or factors. Perhaps the word participatory method might not fully translate Chambers’ thrust on development since his idea also includes development that puts the poorest people and their realities at the center stage (see Chambers, 1983/2013b, pp. 2-3, Chambers, 1997, p. 1). Thus, participatory method matched well the focus of this study, namely: the uses of mobile phones and development among unseen and un-reported rural populations in the Congo. To say the least, on no official database were these rural populations registered, nor did they have contact with government authorities and international sponsors. Armed with participatory method, the present doctoral study aimed to put the selected rural populations in the driver’s seat, so to speak, by allowing a greater involvement of them in the interviews and discussions engaged.

The fourth and last method applied in this study comprises transect sampling, also called line transect sampling, ecological sampling method, or ecological method (Krebs, 1999; Manly & Navarro, 2015; Navarro & Díaz-Gamboa, 2015; Nomani, Oli, & Carthy, 2012). Ecological method was specifically designed for research circumstances like those of rural remote areas in the Congo “in which the *only sampling* strategy available is *nonexperimental, observational approach* [emphasis added]” (Manly & Navarro, 2015, p. 1). Observational sampling is also

called “purposive sampling,” “purposeful sampling,” or “nonprobability sampling” (Merriam & Tisdell, 2016, p. 96, see also Patton, 2015, p. 53). In other words, despite its well-known and in fact needed benefits, quantitative research was not *a good fit* for the research questions posed, the methods espoused, and the aims and objectives set forth. Thus, ecological method is used in situations where the standard sampling method is impractical. The most common area of academic research confronted with this type of situation is ecology. As ecologists Navarro and Díaz-Gamboa (2015) explained,

Line transect sampling is intended not only for the estimation of the abundance per unit area of rare, mobile, difficult-to-detect animals but also is of value for the study of rare, difficult-to-detect plants, intertidal organisms, and so on... With line transect sampling, the basic idea is that an observer moves along a line through a study area, looking to the left and right for the animal or plant of interest. Line transects are walked, flown, or otherwise traversed, and the perpendicular distances to all detected items of interest are recorded... This is one of the specialized ways that ecologists can use to estimate the density or the total number of animals or plants in a study area when it is not possible to simply count all the individuals and the standard sampling methods... are for some reason not practical. (p. 47, see also Manly & Navarro, 2015, p. 1)

With ecological method, ecologists are able to obtain a sample that represents as close as possible the population of plants or animals in a given area. Thus, ecological method has been increasingly imported into the social sciences. At heart, ecological method is an observational and non-experimental method since it takes place in a naturalistic and non-manipulated context. Ecological method was key in detecting the participants of this study, locations of meetings and participants, facilities, toys, etc. (see for example Case Study II: Mast Guards).

An important clarification to make here is that although recent years have seen a surge in cases of mixed methodologies, depending on the research questions and researchers (Bryman, 2007; Creswell, 2012, 2014; Tashakkori & Teddlie, 2003, 2010; Teddlie & Tashakkori, 2009), the present doctoral study did not necessitate mixed methods because, as explained earlier, quantitative research was not suitable to derive the lived experiences of the rural populations

regarding the contributions of mobile phones in their daily lives. Moreover, due to the lack of education, the populations dealt with could not allow a quantitative research. The main reason was, as mentioned earlier, the lack of available data and list spanning rural populations in the remotest areas. Also it bears clarifying that mixed methods or mixed methodologies (Bryman, 2007; Creswell, 2012, 2014; Tashakkori & Teddlie, 2003, 2010; Teddlie & Tashakkori, 2009) presuppose the mixture of quantitative and qualitative research.

Techniques

A technique was understood here as a procedure with which to perform a specific task in the research process. Three techniques were employed in this study: (1) saturation, (2) crystallization formerly called triangulation, and (3) thick or in-depth description. First, saturation, also called redundancy (see Patton, 2015, p. 300) or informational redundancy (Lincoln & Guba, 1985, p. 189), is a technique of collecting information till there is no further information in the search process. What it means is that when information is saturated the researcher starts to see a repetition of the information sought (see Glaser & Strauss, 1967, p. 61; Bowen, 2008, p. 140; Roy *et al.*, 2015, p. 253, Rebar, Gersch, Macnee, & McCabe, 2011, pp. 70-71, p. 111; Lincoln & Guba, 1985, p. 265; O'Reilly & Parker, 2013, p. 192; Saumure & Given, 2008, p. 195). Technically, saturation is a chemical procedure that happens when no more substance can be absorbed, and the substance is thus considered *saturated*. In research methodology, saturation happens when no newer information is found, and thus the process (i.e., categorization, interview, interpretation, data collection, etc.) is saturated.

Some of the earliest applications of saturation in research methodology took place with Glaser and Strauss (1967). It needs to be mentioned that saturation can be applied to data, theory, theme, category, interview, response, source, or any selected construct of the study, depending on the researcher's choices. One of the best ways of thinking about saturation is with the idea of conversation. Imagine that a person has a conversation with a friend about a specific subject till the point where there is no more learning or new information coming out of the conversation, and the information starts being repetitive. Thus, the conversation needs to be halted, since it is *saturated*. Saturation is "not a statistical confidence" (Lincoln & Guba, 1985, p. 189), it simply

means that the collection process needs to stop as there is no additional information found, and analysis can start. The idea is to seek newer nuances, details, aspects, etc.

Second, crystallization also called triangulation is a technique of using several methods in order to increase the depth of the information collected (Denzin, 1970/2006; Denzin & Lincoln, 2011b; Flick, 1992, 2004; Miles, Huberman, & Saldaña, 2014; Patton, 2015). Triangulation is a concept derived from the English word triangle. In geometry, with the dimensions of two sides of a triangle, one can determine the length of the third side of the triangle. The technique was extended to research methodology with the idea that a researcher can obtain and increase the knowledge on a given subject by combining three different methods. The technique was popularized in research methodology by Denzin (1970/2006) in the 1970s. As Miles, Huberman, and Saldaña (2014) elaborated,

Stripped to its basics, triangulation is supposed to support a finding by showing that at least three independent measures of it agree with it, or, at least, do not contradict it... Triangulation is similar to the *modus operandi* approach used by detectives, mechanics, and primary care physicians. When the detective amasses fingerprints, hair samples, alibis, and eyewitness accounts, a case is being made that presumably fits one suspect far better than others; the strategy is pattern matching, using *several sources* [emphasis added]. (p. 299)

As explained in the comment above, with the emphasis being increasingly placed on several and not three methods, triangulation is becoming the technique of *multiple* methods. In their review of mobile phone literature, Duncombe and Boateng (2009) advocated for a “more effective *use of triangulation of research methods* sources of data [emphasis added]” (p. 25). To that effect, the preferred word for triangulation is crystallization (see Denzin & Lincoln, 2011b, p. 5), with the idea of a crystal being brought into greater light by its myriad prisms. The metaphor of crystallization was borrowed from literary writing.

As Denzin and Lincoln (2011b) noted, “in the crystallization process, the writer tells the same tale from different points of view” (p. 5). With its multiple prisms shedding light on the

phenomenon under study, crystallization increases the validity or depth of the knowledge obtained about that phenomenon. In applying crystallization, this study involved four methods (see details above, section on methods): phenomenology, participatory method, capability approach, and ecological method. Indeed, one of the bonuses of an approach is that it gives the researcher more *maneuverability* than a recipe does. The more appropriate approaches are involved or mixed in a research the more hands-on findings are likely to be collected.

The third and last technique used in this study pertains to thick description. Thick description was popularized by anthropologist Geertz (1973/2000), who borrowed the idea from British philosopher Ryle (1971/2009). Notwithstanding, it can be said that thick description finds an inspiring echo in Husserl's position on lifeworlds, which presents reality as sedimented and multilayered (Husserl, 1901/2005, 2008; Moran, 2012b), with the task of the phenomenologist being that of untangling the patterns and layers deposited. Indeed, phenomenology aims to provide a description of the selected topic as fullest as possible in order to return to things themselves (Husserl, 1901/2005). Plainly put, the idea of deep description to unbundle the sedimented and multilayered reality sets phenomenology apart from other approaches.

A significant difference to point out here is that the idea of thin and thick description purported by Ryle (1971/2009) is one of speech interpretation, not of the *things themselves* per phenomenological standards. As Ryle (1971/2009) clarified,

In short, I suggest that at least part of the thick description of what *le Penseur* is trying to do in saying things to himself is that he is trying, by success/failure tests, to find out whether or not the things that he is saying would or would not be utilisable as leads or pointers. (p. 508, see also Tanney, 2009, p. viii)

Reality or the things themselves is more than the mere relations between propositions uttered and facial expressions with which Ryle preoccupied himself. In other words, a thick researcher in the phenomenological sense of the word does not just look at the meaning of the speech and facial expressions exchanged in a conversation or writing as seen in Ryle's (1971/2009) story, but rather he drills deep into the sediments and patterns piled up in lifeworlds. This study drilled

deep into the lived experiences of mobile phones and development to unmask the views and patterns held (see Appendix III). An important note to highlight here has to do with sedimented knowledge or description advocated by Husserl (1901/2005, 2008). What distinguishes sedimented description from merely thick description is the idea that (see details above, section on trails of interpretivism, phenomenology) the former seeks to provide more ingredients of information than the latter does. In effect, the concept thick involves layers whereas the concept sedimented goes further than layers. In other words, sediments include spots, traces, bundles, curves, lines, etc. In this sense, it can be said that the information provided by quantitative research/statistics on mobile phones is certainly valuable, but *thin*, since it represents only a layer out of the many ingredients of sediments underlying the phenomenon of mobile phone uses and development.

Interviews and discussions

Armed with the methodology, methods, and techniques depicted above, this study undertook a series of interviews and discussions with participants who were sorted in eight different case studies:

1. Parents, 32 people
2. Mast guards, 14 people
3. Kiosk vendors, 18 people
4. Group Discussion Session One, 52 people divided in 8 random groups
5. Group Discussion Session Two, 52 people divided in 8 profession groups
6. Mobile phone posters, 12 items
7. Chiefs, 16 people, and
8. Youths, 18 boys and 20 girls

It bears specifying that in light of the literature associated with case study specialists pertaining to various schools of thoughts (Aaltio & Heilmann, 2010; Eidlin, 2010; George & Bennett, 2005; Gerring, 2007a, 2007b, 2011; Hammersley, 2012; Mills, Durepos, & Wiebe, 2010; Piekkari & Welch, 2011; Ragin, 1998, 1999, 2004, 2008, 2009, 2014; Stake, 1995, 2005, 2006; Thomas, 2011; Yin, 2003, 2014) a case study is defined as a study focused on specific idea(s),

phenomenon or phenomena related to thing(s), individual(s), group(s), organization(s), nation(s), etc. In this doctoral research, a case study was a study of a small of group of individuals. Just like the information collected, the number of individuals in each case study was determined by virtue of saturation (see explanation above, section on techniques, saturation). Indeed, the goal of a case study is to add depth, nuance, detail, relevance, etc. to the information collected. In this study, the information was collected from the interviews and discussions held.

Interviews were not statistical, but semi-structured interviews (Kvale & Brinkmann, 2009; Roulston, 2010; H. Rubin & I. Rubin, 2012; Patton, 2015). Statistical interviews are those based on a questionnaire (Lavrakas, 2004) sent or asked *identically* to all selected interviewees whereas qualitative research interviews involve open-ended questions revolving around certain themes in order to collect richer and deeper responses from the interviewees. Interviews took place at the village plaza or at a cultural/social gathering called *deuil* in French, and *matanga*, *kiliyo*, and *madilu* in the three official dialects of the Congo: Lingala, Swahili, and Ciluba, respectively, depending on the availability of the interviewee. More than a funeral gathering, *deuil* is a social gathering that takes place upon the death of a family member. It is a seven-day opportunity for the village and surrounding villages and communities to visit, chat, sing, drink, eat, etc. with a community's members. People come and go to *deuil* as they see fit. The seventh day is the day of celebration and closure. At *deuil* gathering, people engage in conversations of various topics and scopes, according to their interests. Just like any conversation, the interview could be initiated, interrupted, or pursued according to the interviewer's and interviewee's availability and choice(s). Participants were primarily corn growers, with corn being the staple (Kalinda *et al.*, 2014; Kankonde & Tollens, 2001), although they were involved also in other activities in order to survive.

Interviews and discussions were conducted roughly during a 4-month period from July till October 2014. Two discussion sessions were held each the whole day from 8am till 6pm: one randomly formed by counting from 1 to 8 and having people sit according to their stated number (see Chambers 2002/2011), and the other -- held a different day -- was sorted per profession since it was noted that people were bonding together per profession during break times at the previous discussion session. People were debriefed about the nature and scope of the session before the

session started. Eight discussion groups were formed: (1) mid-wives, (2) artists/craftsmen, (3) healers, (4) builders, (5) gardeners, (6) traders, (7) teachers/sages, and (8) storytellers. Local games, plays, and songs were incorporated into both sessions to allow a higher local participation (see Chambers, 2002/2011). Specifics and demographics of language, education, location, name, custom, address, and time were withheld for the safety of those involved. For the same reason, tape-recording, video-shooting, and picture-taking were not allowed.

The present study did not undertake a focus group in the strict sense of the word. A focus group is a research method that seeks to address power imbalances within a specific organization. In particular, “focus groups can bring into a research project either those who are reluctant to participate... They [focus groups] have the potential to redress power imbalances” (Harding, 2013, p. 23). However, the present study did not seek to investigate power disparities since it is not the power disparities within rural societies that lead to the underdevelopment of rural populations (Sen, 1979b, 1985b, 1987, 1999, 2009a, 2009b), but rather the lack of capabilities that keeps people in grinding poverty. Another reason why the present study was not a focus group research was that focus group is particularly appropriate for cross-cultural research whereas the population targeted in this study is not a cross-cultural or multi-cultural population, let alone the participants were not a corporate or organization. So, “focus groups may be particularly relevant in cross-cultural research because of their ability to elicit the collective voices of relatively powerless groups” (Harding, 2013, p. 23). However, African societies, more particularly the population here studied -- see for example, Case Study I Parents, Case Study IV: Group Discussion Session I, Case Study V: Group Discussion Session II -- displayed a high sense of cohesion or community (see also Bongmba, 2005; Diagne, 2005; Esongi, 2011; Eze, 1997; Gambembo, 1995; Gyekye, 1996, 2003; Kanyamachumbi, 1995; Mabe, 2005; Maquet, 1967; Nyerere, 1977; Ramose, 2003a, 2003b; Tempels, 1945; Tshiamalenga, 1975, 1985; Wiredu, 2005).

Also worth mentioning about the key players interviewed during this study were mobile phone providers and state officials, both of which groups were integral to the relationships between mobile phones and development investigated in this study. The reason these two groups were not included in the interviews conducted was that the groups did not have a record on and knowledge

of rural populations, from which they could provide valid answers to the research questions posed. This practical situation confirmed the remark noted earlier (see key reasons, section on rural populations) that rural populations in Africa were not known or reported. Another reason, perhaps most relevant to this study, was the lack of standard mobile phone subscriptions as seen in developed countries or urban areas – with detailed and upgraded information saved on the identities of mobile phone owners or users. Such saved information could have helped mobile phone providers and state officials to testify about rural mobile phone customers.

Evaluation and measurement

Evaluation is the process in which the validity or quality of a study is determined (see Tracy, 2010; Patton, 2015). Validity is that which sets a scholarly study apart from other types of study, such as media report, police investigation, business auditing, documentary, autobiography, etc. Since this study was one of qualitative research it had as its criteria of validity the eight items proposed by Tracy (2010, p. 839) for a better implementation of qualitative case studies. Indeed, Tracy (2010, pp. 839-840) listed eight criteria, which she called the eight big tents:

1. Relevance, which ensures the research is significant or interesting
2. Rigor, which shows the study has traceable data collection and analysis
3. Sincerity, which means self-reflexivity about values and biases involved
4. Credibility, which indicates thick and in-depth knowledge using crystallization (see above)
5. Resonance, which provides transferable or generalizable findings (see discussion above)
6. Contribution, which can be conceptual, theoretical, practical, and/or methodological
7. Ethics, which protects vulnerable subjects (consent was oral as participants are illiterate, signed written document was seen as a threat for security reasons), and
8. Coherence, connection between research questions, findings, and conclusions.

These criteria were, and will be, used also for papers gradually published (see author's publications) out of this doctoral study since the findings gathered, the discussions held, and the

bodies of work reviewed cannot all be conveyed within the confines of a single journal or conference paper.

Next to evaluation is measurement. As is now clear, this study could not use GDP or related metrics to measure development. It was acknowledged that because of rampant shared ownership -- relayed by the communitarian culture proper to Africans (Bongmba, 2005; Diagne, 2005; Esongi, 2011; Eze, 1997; Gambembo, 1995; Gyekye, 1996, 2003; Kanyamachumbi, 1995; Mabe, 2005; Maquet, 1967; Nyerere, 1977; Ramose, 2003a, 2003b; Tempels, 1945; Tshiamalenga, 1975, 1985; Wiredu, 2005) -- mobile phone uses could not be measured according to private subscriptions. It was thus posited that development be measured according to the spectrum of capabilities (Sen, 1999, 2008b, 2009a, 2009b) that people have regarding basic needs (i.e., shelter, water, food, health, and clothing). What the proposed measurement means is that the larger is the spectrum of capabilities concerning basic needs, the more developed is the person or the community. To take one example, imagine that a person owns a house. The spectrum of capabilities is the extent of options, regarding housing, that the person (along with her children, grand-children, relatives, etc.) has if she were to lose her house for a myriad reasons such as divorce, earthquake, fire, flooding, job loss, relocation, retirement, health, etc. The more options the person enjoys the more developed that person is, concerning shelter. As one can see, this measurement can be applied and indeed generalized to rich as well as poor individuals and societies.

Summary

After a clarification of the methodological terms used, the overview of methodologies provided an informative background needed to best peruse the major schools of thoughts upheld under the banners of positivism and interpretivism, respectively. Thus, among others, the widespread misunderstanding that positivistic research is exact science and that work done by interpretivists cannot be generalized were disproved. It was shown, for example, that interpretivistic findings, as was the case of this study, supply analytic or portable generalizations, which can be applied across research settings. The methodology adopted in the present doctoral research was qualitative research, with the methods espoused being phenomenology, participatory method, ecological method, and capability approach. With phenomenology, reductive bracketing was

implemented to reduce the researcher's biases. Participatory method put the rural participants at the center stage, with an emphasis being placed on a greater participation of them. The key was to provide sedimented, in-depth, and context-embedded knowledge about mobile phones and development in the rural areas of the Congo. Ecological method helped ensure a higher inclusion of the concerned players. Saturation, crystallization, and thick description were the techniques used to fine-tune data analysis. The spectrum of capabilities around basic needs was proposed to measure development.

Chapter Four: Findings

Introduction

As explained in methodology chapter, the findings were obtained due to the four methods adopted in this doctoral research: (1) phenomenology (Husserl, 1901/2005, 1913/2002a) which aimed to cater to the experiences and meanings of mobile phone uses, (2) Sen's capability approach (Sen, 1979b, 1985b, 1987, 1999, 2009a, 2009b) which allowed the interviews to be focused on the basic needs of the poor, (3) participatory method (Chambers, 2002/2011) which provided a greater participation of the respondents in discussion groups, and (4) transect sampling, also called ecological method (Krebs, 1999; Manly & Navarro, 2015; Navarro & Díaz-Gamboa, 2015; Nomani, Oli, & Carthy, 2012), which achieved a higher inclusion of groups and/or individuals in a targeted place. As part of the qualitative research methodology employed in this doctoral study, this chapter presents the findings gathered from eight case studies: (1) Parents, (2) Mast guards, (3) Kiosk vendors, (4) Group Discussion Session One, (5) Group Discussion Session Two, (6) Mobile phone posters, (7) Chiefs, and (8) Youths (see Figure 10).

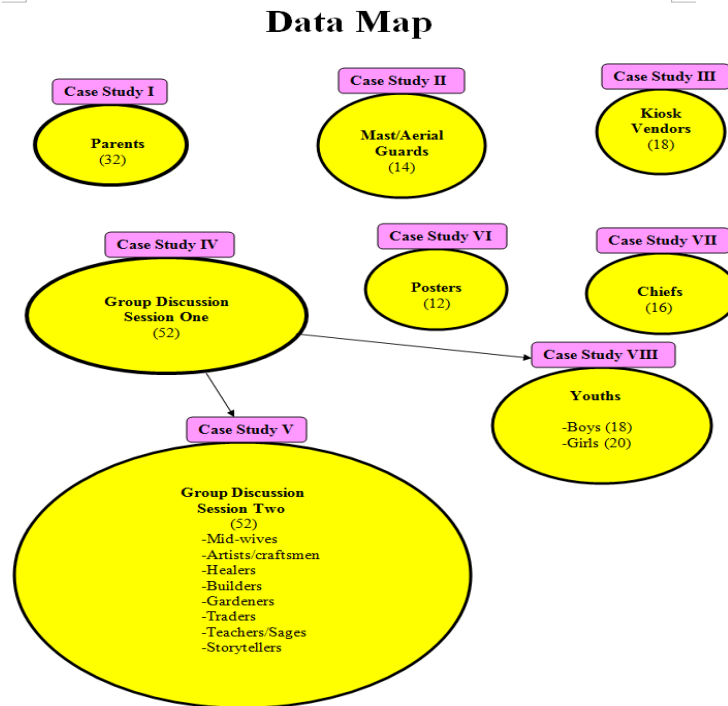


Figure 10: Map of Case Studies

As clarified in methodology chapter, despite varying positions on ways of doing a case study among the leading proponents of case study method (Aaltio & Heilmann, 2010; Eidlin, 2010; Gerring, 2007a, 2007b, 2011; Hammersley, 2012; Mills, Durepos, & Wiebe, 2010; Piekkari & Welch, 2011; Ragin, 1998, 1999, 2004, 2008, 2009, 2014; Stake, 1995, 2005, 2006; Thomas, 2011; Yin, 2003, 2014) it is generally agreed that a case study entails an in-depth inquiry of a phenomenon or phenomena related to group(s), organization(s), person(s), thing(s), etc. depending on the researcher's choices. This study sought an in-depth understanding of specific groups who were key players in the uses of mobile phones and development in rural areas of the Congo. As Yin (2014) explained,

As a research method, the case study is used in many situations, to contribute to our knowledge of individual, group, organizational, social, political, and related phenomena... In brief, a case study allows investigators to focus on a "case" and retain a holistic and real-world perspective. (p. 4, see also Gerring, 2011, p. 194, 2007a, p. 1, 2007b, p. 94; Ragin, 2014, p. ix)

The case study method enabled to capture the real world perspectives of concerned groups with regard to mobile phones and development. For consistence sake, as noted in literature review chapter, the word development is employed in this study in place of socio-economic or social development (see detail below, section on explanation of central concepts).

As is clear from the findings, an added contribution of case study method, also in tune with the phenomenological method employed in this study, is the various angles it brings to the phenomenon of mobile phone uses and development. As Thomas (2011) noted, "a case study is about seeing something in its completeness, looking at it from many angles. This is good science. In fact, it is the *essence* of good science [emphasis in original]" (p. 23, see also Gerring, 2011, p. 193, 2007a, p. 19, 2007b, p. 94; Yin, 2014, p. 17). People were interviewed and listened to, saturation (details below) was reached, and eight case studies were identified. The eight case studies were treated in NVivo (Bazeley, 2007; Bazeley & Jackson, 2013) to allow a deeper analysis (see Figure 11).

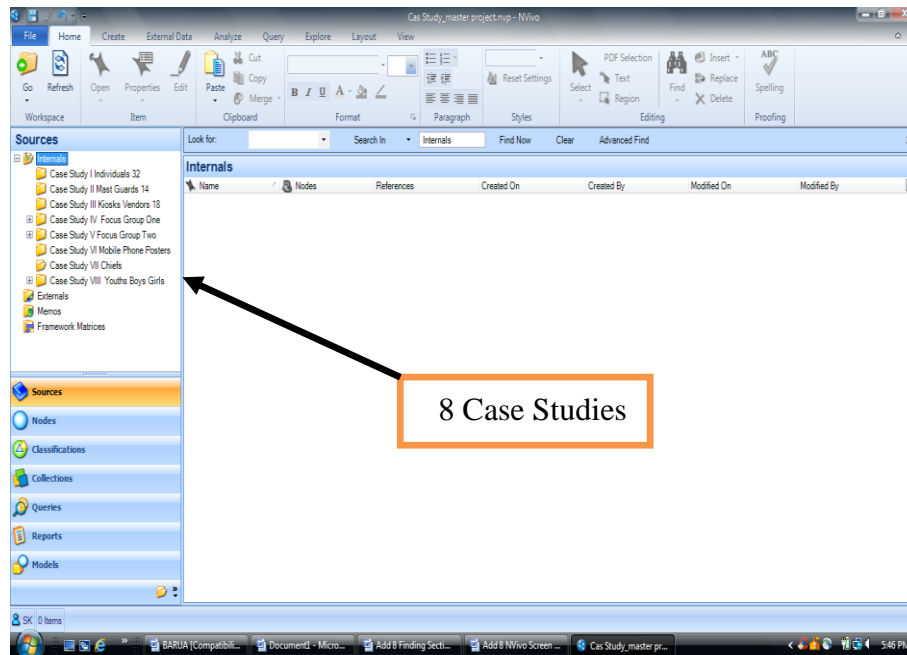


Figure 11: Eight Case Studies in NVivo

To ensure a fuller inclusion of the concerned population, respondents were recruited on four most commonly frequented places or occasions: (1) market, (2) shore, (3) village social gathering, and (4) house-to-house visit. As noted in methodology chapter, an important aspect to bear in mind concerning the people being investigated in this study is that this is an illiterate population/society. This is one of the reasons why qualitative research proved to be relevant for the present study. To give a quick reminder, qualitative research recommends the use of open-ended or semi-structured interviews instead of rigid/written questionnaires that uneducated people would be unable to handle. As explained in methodology chapter, questions were asked to respondents of each case study, based on the same research questions (see Appendix II) with a view on basic needs for the community's survival.

Clarification of the techniques central to data analysis

As detailed in methodology chapter, qualitative data analysis has a style of its own. Therefore, a clarification of the techniques central to data analysis is likely to ensure a better communication of the findings. The English word technique (Liddell & Scott, 1843/1996) comes from the Greek word τέχνη [tékhne], which means craft, handiwork, skill, etc. Technique was understood in this

study as the strategy with which to apply a specific task in a research process, for example, data classification, data visualization, interview recording, etc. Three techniques of qualitative research need mention here. First, an important technique employed in qualitative data analysis is that of saturation, more precisely category or theme saturation (details below). As with the eight case studies, data analysis identified chunks or categories of information when saturation was completed. While saturation is believed to have started with Glaser and Strauss (1967) in their research of grounded theory, it traces as far back as Antiquity in fishing.

In fishing, saturation is the state at which there is no more species in the net to fill the bags of the identified species, for example, fish, crab, lobster, etc. The identification of species has no statistical significance or value judgment in that one species is no better than another, but each has a specific nature or “nuance,” to use a preferred term of methodologist Stake (1995, p. xi). Saturation has been applied to social science research to include data saturation, theoretical saturation, category saturation, etc. Saturation is reached when no newer information is found about a data, theory, or category; hence another word for saturation is *informational redundancy* (see Lincoln & Guba, 1985). While statistical significance seeks to make inferences to the larger population, distribution, figure, coverage, etc. saturation has to do with detail, nuance, relevance, depth, etc. Since this study did not engage grounded theory, theoretical saturation was not considered because the focus was on data saturation, more specifically “saturation of categories” (Lincoln & Guba, 1985, p. 344, p. 350) also called “saturation of themes” (Saumure & Given, 2008, p. 195). Theoretical saturation implies testing and confirming a theory by confronting the collected data and participants alongside grounded theory, which is not the point of this study. The point being,

The themes or categories derived from qualitative data analysis are usually reported in the results sections of qualitative research reports...The themes or categories are described, often using specific examples from actual data to help make the implicit ideas within the themes clearer. (Rebar, Gersch, Macnee, & McCabe, 2011, p. 71)

The idea is to make the themes clearer in order to bring into sharper relief the statements of participants.

Also, as noted earlier, saturation in this study was not seeking to represent the values or attributes of the larger population or distribution. As Stake (1995) specified, “I do not pay as much attention to quantitative case studies that emphasize the battery of measurements of the case... The qualitative researcher emphasizes episodes of nuance” (pp. xi-xii, see also Bazeley, 2007, p. 2; Patton, 2015, p. 68; J. Neal, Z. Neal, VanDyke, & Kornbluh, 2015, p. 129). The direct consequence is that it is not the number of instances, namely frequency or prevalence within the data that makes a category, rubric, heading, or theme important, but the relevance, nuance, richness, or uniqueness of the information provided. As Braun and Clarke (2006) cautioned, “more instances [of a theme] do not *necessarily* [emphasis in original] mean that the theme is more crucial... Nor is it the case that a theme is only something that many data items give considerable attention to” (p. 10). To give one example, imagine that a person classifies potatoes by *size*, *weight*, and *color* in a qualitative data set. These three categories are categories of nuance, relevance, or detail, which are helpful in dealing with potatoes. In other words, these categories are not categories of intensity, frequency, or density in the distribution of the larger population of potatoes, but they are categories of detail since they bring detailed or nuanced information about potatoes. So, size is no better than weight or color, but it brings some specific and detailed information on potatoes.

Perhaps a glaring example was with the chiefs’ case study and the youths’ case study (see details in the sections of Chiefs and Youths). While the data set of chiefs displays 305 instances of the concept community including related/synonymous words, the data set of the youths has only 5 instances. And yet, during the session, the youths manifested a high sense of community in all their games, plays, activities, and discussions. Unlike chiefs, no youth could be seen or met alone at discussion sessions. So, community was just as relevant to chiefs as it was to the youths. Qualitative research does not seek the *statistical* intensity, percentage, or significance of themes, but their relevance or nuance. The reason is, qualitative research seeks to bring rich, thick, in-depth, or detailed information about that which is investigated (see Babbie, 2013; Bazeley, 2007; Cibangu, 2012b, 2013b; Creswell, 2013; Flick, 2014; Hammersley, 2013a, 2013b; Patton, 2015; Silverman, 2012; Tracy, 2010, 2013). As explained earlier, data saturation was completed when the eight case studies were undertaken. In much the same way, when no more information is received, or information starts being redundant, the categories of that data set are saturated. In

other words, categories are deemed *saturated*, as is clear below, when there are no emergent or new information, nuance, or pattern. This means that, Glaser and Strauss (1967) elaborated,

as he sees similar instances [information] over and over again, the researcher becomes empirically confident that a category is saturated... When one category is saturated, nothing remains but to go on to new groups for data on other categories, and attempt to saturate these categories also. (p. 61, see also Bowen, 2008, p. 140; Roy *et al.*, 2015, p. 253; Rebar, Gersch, Macnee, & McCabe, 2011, pp. 70-71, p. 111; Lincoln & Guba, 1985, p. 265; O'Reilly & Parker, 2013, p. 192; Saumure & Given, 2008, p. 195)

Categories serve as buckets or bags suited to classify and better deal with information within a data set. Categories are found through close examination of the data set, by listening to the data and capturing the new, rich information. Glaser and Strauss (1967) clarified,

When saturation occurs, the analyst [of data] will usually find that some gap [of new information] in his theory, especially in his major categories, is almost, if not completely filled. In trying to reach saturation he maximizes differences [particularities/lenses] in his groups... What is gained by studying one group is at most the discovery of some basic categories and a few of their properties. (pp. 61-62, see also Bowen, 2008, p. 147)

It bears noting that categories, or themes as Braun and Clarke (2006), Rebar, Gersch, Macnee, and McCabe (2011), and Miles, Huberman, and Saldaña (2014) would call them, were defined in this study as that which represents shared properties or aspects of a group or set of data. To clarify, the English word category comes from the Greek verb κατηγορέω [kategoréō], which means to state that which is proper to something or someone (Liddell & Scott, 1843/1996). The second technique, after theme saturation, is triangulation, now called crystallization (as explained in methodology chapter). In essence, Denzin and Lincoln (2011b) articulated,

The use of multiple methods, or triangulation, reflects an attempt to ensure an in-depth understanding of the phenomenon in question... Triangulation as a form of, or alternative to, validity... is the display of multiple, refracted realities simultaneously. Each of the

metaphors “works” to create simultaneity rather the sequential, linear. Each of the metaphors [methods] “works” to create simultaneity rather the sequential, linear... It [crystallization] asserts that the central image for qualitative inquiry is the crystal – multiple lenses – not the triangle... Crystals are prisms that reflect externalities and refract within themselves, creating different colors, patterns, arrays, casting off in different directions. (p. 5, see also Denzin, 1970/2006; Ellingson, 2009, 2011; Miles, Huberman, & Saldaña, 2014; Tracy, 2010; Reeves, Peller, Goldman, & Kitto, 2013)

As mentioned above, this study used four methods to best capture the phenomenon in question, namely: phenomenology (Husserl, 1901/2005, 1913/2002a, 2014), Sen’s (1979b, 1985b, 1987, 1999, 2009a, 2009b) capability approach, participatory method (Chambers, 2002/2011), and ecological method (Krebs, 1999; Manly & Navarro, 2015; Navarro & Díaz-Gamboa, 2015; Nomani, Oli, & Carthy, 2012). A quick recap in passing, triangulation goes back to Antiquity in ancient Greece where sailors used to imagine a triangle to determine a distance by considering the angles of the opposite sides. Triangulation (see Patton, 2015, pp. 661-676; Miles, Huberman, & Saldaña, 2014, p. 299-300) has been receiving widespread acceptance across disciplines partly because multiple methods expand the approaches to the phenomenon being studied. The goal is to see the findings from multiple sources or angles.

The third and last technique of qualitative research, after theme or category saturation, is thick description. The word thick refers to something with several layers (detail below), which allows to see deep. As methodologist Creswell (2013) reminded qualitative researchers, “give thick and rich narrative description about the people and events under observation” (p. 168, see also Patton, 2015, pp. 533-534). The reason being, Creswell (2013) went on, “to make sure that the findings are transferable [interchangeable] between the researcher and those being studied, thick description is necessary” (p. 246). As explained in methodology chapter (see section on phenomenology), although the concept thick description, popularized by anthropologist Geertz (1973/2000), has come to be one of the key features of qualitative research (Babbie, 2013; Cibangu, 2012b, 2013b; Collier & Elman, 2008; Coppedge, 1999, 2007; Creswell, 2013; Patton, 2015; Tracy, 2012, 2013), it is deeply rooted in Husserl’s phenomenology. Indeed, one of the most forgotten or least known contributions of Husserl is his idea that reality is made of layers,

which he called sediments (Husserl, 1901/2005, 1913/2002a; Moran, 2012b). Hence, he recommended that phenomenologists go deeper than the surface-level of the topic or phenomenon by exploring as many *sediments* as possible. For Husserl, as Moran (2012b) wrote,

The life-world is a world of “living tradition”. These traditions are sedimented and layered into the context of the world itself... The life-world is similarly textured and layered and laid over or “sedimented” with tradition in a labyrinthine manner which phenomenology must untangle and document. (p. 192)

As is clear from the statement above, the sediments of lifeworlds have become a tradition or something taken-for-granted. Evidently, sediments are deposits that have accumulated and settled at the base of something, due to mud, debris, water, wind, slope, ice, etc. It follows that, according to phenomenology, reality carries sediments, due to various circumstances or factors. Therefore, in line with its phenomenological focus, this study went deeper than the surface-level of mobile phone uses, which is the text/message exchanges, by looking into the underlying sediments/levels. The goal was to gain an in-depth understanding of that which was being investigated. To this effect, data was analyzed, saturation was reached, and four levels were identified: (1) characteristics, (2) context, (3) experiences, and (4) interpretations (see explanation below).

Explanation of the concepts central to data analysis

For clarity purposes, an explanation of the concepts central to data analysis is helpful. This section starts with the four layers/sediments of understanding. The concept characteristic was understood in this study as the mark, nature, sign, or property as Glaser and Strauss (1967, p. 62) would say, that defines something or someone. The English word characteristic comes from the Greek verb *χαρακτώ* [kharaktō], which means (Liddell & Scott, 1843/1996) to mark, stamp, brand, seal, engrave, carve, scratch, draw, etc. A characteristic is a mark engraved or sealed to indicate the nature of someone or something. A context was understood as the environment, or “milieu” to use an expression of Stake (1995, p. 1), in which something or someone is embedded. The reason is, unlike quantitative/positivistic case study, qualitative case study method seeks to investigate or involve the context in which the topic/phenomenon in question

occurred. As Miles, Huberman, and Saldaña (2014) elaborated, “we can define a case as a phenomenon of some sort occurring in a bounded context” (p. 28, see also Gerring, 2011, p. 194, 2007a, p. 19, 2007b, 95; Yin, 2014, p. 16, 2003, p. 4; Stake, 1995, p. xi; Simons, 2009, p. 21; Piekkari & Welch, 2011, p. 4). Context is essential for a better understanding of a phenomenon. The English word context derives from the Latin verb *con-texere*, *textum*, which means to weave, join, braid, etc. with something or someone (Lewis & Short, 1879). A context is that which is woven with something or someone, and not separated from it or him. Lab experiment tends to separate a phenomenon from its (natural) context. As Yin (2014) warned,

An experiment, for example, deliberately separates a phenomenon from its context, attending only to the phenomenon of interest and only as represented by a few variables (typically, the context is entirely ignored because it is “controlled” by the laboratory environment). (p. 16, see also Patton, 2015, pp. 68-69; Ragin, 2014, p. xxi)

This study was not an experiment, but a set of qualitative case studies to allow a deeper understanding of mobile phone uses in the rural context. Experience, in this study, refers to the degree to which a person has been impacted or affected by a phenomenon. The English word experience comes from the combination of the Greek particles ἐξ-περία (ex-peiria), which is composed of the preposition ἐξ [eks], meaning: from within, out of, from, etc., and the verb περάζω (peirazō), meaning: to show, try, test, prove, etc. (Liddell & Scott, 1843/1996). Experience entails the things shown from within, namely: the perceptions, feelings, affections, emotions, etc. that people have in relation to a given phenomenon. The English word interpretation is a transliteration of the French word *interprétation* (see *Larousse*, <http://www.larousse.fr/>) which comes from the two-particle verb *inter-prêter*, meaning: to share, loan, show, etc. between or within. Interpretation was taken to indicate the meanings, reflections, lessons learned, worldviews, or perspectives held on a specific topic or phenomenon. As Yin (2014) specified, “a case study may very well concern the way that you will capture the perspectives of different participants, and how and why you believe their different meanings will illuminate your topic of study” (p. 17). This allows a fuller and deeper understanding of the phenomenon being studied by giving voice to different players involved and their role in mobile

uses and development – as was the case in this study. To this end, the present doctoral study did not undertake a comparative method research.

As explained in methodology chapter, to no small degree, comparative method has taken its toll on development literature (see Azarian, 2011; Kocka, 2003). Indeed, authors have conceived development stages by comparing nations and lumping together the history of nations' achievements. This endeavor has led to an arbitrary presentation of cases. As Azarian (2011) deplored,

Every comparative study begins with certain, tacit or outspoken, assumptions about comparability of the chosen units... Crucial questions to be addressed seriously are: in what respect and to what extent these given units are really comparable; what conditions are required to make any comparison among them meaningful; how we are to safeguard ourselves against the *pitfalls in comparing incomparable units belonging to different contexts* [emphasis added]. (p. 121)

The statement above underlines the fact that comparability is neither the reason nor the focus of the present research. The underlying issue is not so much about comparison – which is definitely an excellent tool of discourse presentation – as it is about the comparability, more precisely the identity of the *comparables*. The tendency to compare societies overshadows the particularities of concerned societies. On this note, Azarian (2011) cautioned against “the abuse of ‘other’ cases in order to show the particularity of the main [or selected] case” (p. 123). What phenomenology does is to return to things themselves, not to the abstraction or representation of the things investigated.

Another convincing reason why the comparative method was not espoused in this study (see methodology chapter) was the tendency of comparative proponents to capture generic aspects as *more compelling* or *causal explanations across space and time* of the phenomenon being studied and its outcomes. As Ragin (2014), one of the founders of comparative method, recently declared,

The essence of the analytic approach [of comparative method] is to link configurations of causally relevant conditions to outcomes... Researchers can assess which ones [cases] display identical configurations as causal conditions and which differ on one or more causally relevant conditions. (p. xxi, see also Collier, 1993, p. 108; Kocka, 2003, p. 40; Lange, 2013, p. 5; Schneider & Wagemann, 2012, pp. 8-9)

As is clear from the statement above, for better or worse, the comparative method tends to carry the cause-effect line of thought in which much of positivism sits. In sum, comparative method collides with the phenomenological idea of sedimentation into which the researcher is called to drill deep to unbundle the details, individualities, and patterns cumulated. As Kocka (2003) wrote,

One cannot compare totalities, in the sense of fully developed individualities. Rather, one compares in certain respects. One has to decide with respect to which viewpoints, questions, or *Erkenntnisinteressen* [knowledge interests] one wants to compare two or more cases... In other words, *comparison implies selection, abstraction, and de-contextualization* [emphasis added] to some degree. (p. 41)

As a positivistic-born tradition, comparative method research has tended to overlook the context and its richness by giving weight to abstracted communalities. This study considered the selected cases as totalities with four levels of understanding: characteristics, contexts, experiences, and interpretations.

Perhaps to best visualize the four levels of understanding, characteristic refers to the nature of or marks engraved on something or someone. Context concerns the physical/external world or setting. Experience indicates the inner/emotional world whereas interpretation involves the cognitive/mental world. As explained in literature review chapter, development in this study is not taken to mean the implementation of traditional econometric parameters such as GDP, GNP, etc. (see Sen, 1988, 1993a, 1993b, 2000a), rather the expansion of people's opportunities or capabilities. Consequently, development was understood in this study as the range of opportunities, options, capabilities, or "the freedoms that the person can respectively exercise"

(Sen, 2009a, p. xi). Hence, another terminology of development more or less preferred in the social sciences is the word socio-economic or social development (Brokensha, 2001). However, for consistence sake, this study used the word development.

It needs to be clarified, as is clear below from the findings, that participants could describe instances where development (i.e. one or two options/capabilities) was or could be manifested through mobile phones. But participants could also describe an overarching view or interpretation of development where all people's capabilities could be ensured or maximized. The best example of this is with the idea of a forest (although not the topic of this study). On the one hand, people in rural areas can describe one or more specific trees and related potential benefits. On the other hand, those people can describe the overarching view of the forest to allow a better growth of all trees and their benefits. The idea implies that development seeks the actualization or *capabilization*, so to speak, of all members of the community in all spheres of life. A group is defined as a set of people constituted for a specific task whereas a community is a set of people tied to one another by more or less permanent activities or locations.

Case study one: Parents

Introduction

Since its explosive dissemination to the wider public in the 1990s, mobile phone has become an established belonging of individuals across spaces and occupations. However, much of the literature on mobile phones and people's development refers to national/official data and standard surveys in order to speak in the name of individuals and their experiences of development (Alkire *et al.*, 2015; Blumenstock & Eagle, 2012; Jensen, 2007; Srinivasan & Burrell, 2015) whereas this study aimed to give voice to individuals in rural areas who have a view on development and mobile uses. This case study presents the findings derived from interviews with parents regarding the uses of mobile phones and people's development, in comparison to other groups that were identified, for example the youths (see detail later). The case study seeks to expose the experiences that individuals in a rural society in a remote area of the Congo have of development and of mobile dissemination in their daily lives. The patterns underlying mobile phones and their relationships to people's development as lived by individuals in everyday activities of rural societies are presented. The goal was to interview individuals from

different villages and houses to gain an individual side of the mobile phone story or phenomenon, but it turned out that the interested/interviewed individuals were all parents. The reason for this might be that in rural societies once a child becomes an adult, he acquires a land to build his hut(s) and establish a household, of which he is responsible.

Characteristics

Part of the qualitative research espoused in this doctoral work was the interview of 32 individuals/parents in order to investigate the uses of mobile phones and their potentials to generate development in the Congo. The data set of parents was analyzed, saturation was reached, and three characteristics of the interviewees were distinguished: (1) family-oriented, (2) multi-tasked visit, and (3) predominantly female (see Figure 12).

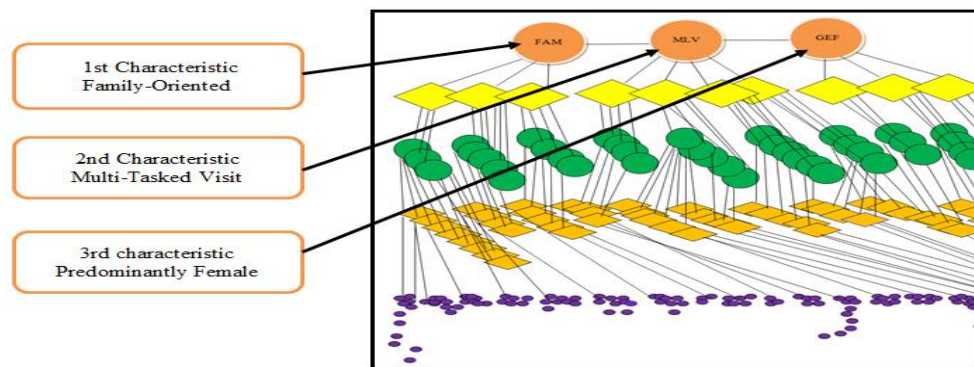


Figure 12: Parents' Characteristics

The first characteristic seen in interviewed individuals was that individuals proved to have a family-oriented tendency. Although they were recruited individually for the interview (i.e., in the market, at the river, or at the house), none of the interviewees showed up to the interview meeting alone. Gender did not make a difference because even men came with a few children (youths) or with the wife. The finding emphasized the impact of the family upon an individual. Not too surprisingly, the family-driven tendency, or shared uses of mobiles as some would argue, affected (Aker & Mbiti, 2010b; Burrell, 2010; de Souza e Silva *et al.*, 2011; James & Versteeg, 2007; Porter *et al.*, 2012) ways in which mobile phones were used in this area. As someone observed,

I have come with my little children; they are part of who I am. They keep me on track on a number of things. (Parent III)

One person stated,

As always these little boys love being with me wherever I go to keep watch on me. I love them. (Parent XXX)

Another person declared,

I did not even realize that my children and my husband came with me. They are so much part of who I am that I do not have to introduce them or ask them to join me. (Parent XXXII)

Another reason of the family influence is the versatile role that the family plays regarding basic needs. In several respects, the family helps carry fruits, items, utensils, firewood, water, oil, flour, etc. As one man said,

The family is my development agency. When I pass out, they will lift me and carry me home. When I oversleep, they wake me up. When I am sick, they take care of me as much as they can. When I am thirsty, they bring me water. When I am cold or wet, they bring me firewood and oil to start the fire. (Parent V)

As a woman narrated,

I was born and raised in a family. Now, I bear children in a family, I raise them in a family, and I live in a family. (Parent IX)

As another woman explained,

I am stronger and healthier with my family than when I am separated from them. The company, warmth, support, understanding, and the like are there when needed. I do not even ask for it, to be honest. (Parent XX)

The family is an integral part of not only development, but also of mobile phone uses. For example, people share goods and services within and between families, and mobile uses do not make an exception (see below where the contexts within which mobile phones are described).

The second common characteristic of interviewed individuals, after family-oriented, is multi-tasked visit. Most of the interviewed individuals came not only for the interview, but also for other duties in the village in order to visit the family or remote relatives. This characteristic highlighted the multi-tasked role of the family. This meant that rather than making a more or less long trip to a place just to be interviewed or to visit a relative, people also tend to travel with the family in order to maximize the utility of the trip by bringing back for example needed items such as water, oil, wood, corn, salt, herbs, chicken, goats, fish, potatoes, etc.

Even those who live in the same village where the interviews were taking place, they sought to visit other family members nearby with the idea of making the most of the trip or visit.

A woman stated,

When I leave my house to be interviewed, for example, I have to make sure that when I return I have made the most of the trip for the family. That means, I bring back some roasted fish, smoked meat, baked potatoes, fried cassavas, boiled crabs, etc. Just a little something that makes life easier in the family. (Parent XXII)

Another woman related,

The good thing with any trip is that there is always a little something to bring home and resolve some issues that could probably not be resolved otherwise. (Parent II)

Still another woman stipulated,

Going out means bringing something back for my children and husband. (Parent VI)

The statements above show that in various instances of daily life, the woman can make a small contribution to the family.

The third and last characteristic of the interviewed individuals, after family-oriented was that participants were predominantly female. Out of 32 interviewed individuals 24 were female, even the men who came, brought with them their wives. One reason for the predominance of women might be that women are the agents of development in the selected population. Also, since the topic of this doctoral study is specifically targeting those interested in development and mobile phones, it is not a surprise that recruited respondents prove to be predominantly women. As a man indicated,

Women are development enablers par excellence here. Without them, we will starve, we will lack water, food, cloth, soap, sugar, oil, body lotion, medicine, firewood, etc. (Parent XXIV)

A woman asserted,

The power that women have and the role they play in the community make us vibrant and dynamic. (Parent X)

A man remarked,

When someone feeds you, clothes you, cares for you, etc. you find yourself healthy. That is what women do: to develop or help grow the community in all respects. (Parent XIX)

To a great extent, the statement above shows that women are the care takers of society in that they provide for their family and society at large.

Context of mobile uses and people's development among individuals

The context of mobile uses and development is key to the understanding of the extent to which mobile phones enable development. The data set of parents was analyzed, saturation was reached, and three contexts were captured. The first context in which mobile phone uses take place is that of communication, with and between different groups such as friends, relatives, professionals, etc.

As Parent XXX stated,

Mobile phone for me means primarily communication with people, namely: friends, siblings, agronomists, pharmacists, etc.

Another parent indicated,

Mobiles are tools of communication with family members, friends, visitors, etc. (Parent III)

One parent also said,

Mobile phones came just like radio to help communicate, though there may be other things to do with a mobile. This happens with any technology. (Parent XX)

Communication stands out to be one of the contexts in which people were using mobile phones. Communication matches with the primary nature of mobile phones since their inception.

The second context in which mobile phone uses are found is with regard to special occasions such as a trip to the city, death of a relative, sale of artifacts, etc. Special occasions force individuals to consider ways in which the situation at hand can be dealt with. As Parent IV put it well,

A mobile phone can be used on special occasions even by people who do not use or own it. That was the first time I used it, but it is also the way I have used it several times in recent years, be it emergency or excitement.

Another parent pointed out,

I cannot anticipate special occasions. When they can come I can borrow someone's mobile and see what to do or say. (Parent XXI)

Still another parent argued,

The first time I used a mobile, even a radio, was in an emergent situation. I think I had to make a quick trip to the city to welcome my brother. (Parent XIX)

This and similar statements refer to an emergency situation where people use mobile phones. Special occasions can also mean a time of joy or excitement such as a new born in the family, marriage of a girl, completion of a harvest, etc.

The third context in which mobile phones are used concerns work or manual labor. Manual labor can cause people to call a certain professional or person needed for the task at hand, for example, gardening, thatching, bike repair, canoeing, giving birth, etc.

When I bore my second child, a friend of mine called my sister (a nurse) in the city using a mobile phone. My sister responded back with the date and day she will be coming to visit me. The local mid-wives also came the same day, and one of them was called on a mobile phone by her niece. (Parent XXII)

As Parent XIII stated,

I like canoeing. I have learnt it from my siblings. They all canoe. When it comes to repairing a canoe or carrying bags or loads on it, mobiles can help to notify interested parties or to contact wood workers if there is a need for timber or straps to fix the canoe.

A woman related,

One time I had the roof repair because there was a sudden big leak in the middle of heavy rain. My grandson had a neighbor's mobile, and the roof people came in the next few days since they had to find enough thatch for my roof. (Parent XXVII)

In this and similar situations, professional calls accounted for the use of mobile phones, with relatives or friends.

The fourth and last context in which mobiles are used has to do with history, “digital” library, or repository of information. Digital library simply means that a mobile phone can be used as a library to check some useful information, as opposed to a physical/traditional library. In other words, unlike the context of communication, mobile phones are used here to check past events, dates, pictures, history, stored information, etc.

I usually have my grandson check how long I saw my son last or the pictures taken at Christmas or the birth of my granddaughter. I can't trust my memory as much as I used to, so I use mobile phone to get my head around a number of past things. (Parent XXVIII)

As one parent affirmed,

With my memory problems, I have to always check who owes me and how much they owe. My nephew does all the recording to keep track of my lending business. He stores those details on the mobile. (Parent XI)

A woman testified,

Sometimes I might get confused about names of those who came or those I talked to. My daughter helps me with the mobile, not sure how she does, but she keeps the names in the mobile. (Parent XXXI)

The statements confirm the idea that mobile phone serves more than mere communication or conversation with people. Mobile phones are like a library or history tool.

As to the context of development, after that of general uses, mobile phones were not shown to be particularly helpful. For the most part, development is seen as something not entirely germane to mobile communication. Mobile phones have come to this area primarily as a means of communication. In other words, building a house, fixing a roof, installing a bridge, sewing a cloth, drinking a malaria pill, etc. involve more than communicating or texting on a mobile phone. The major reason for this estrangement of mobile phones from the areas of development is the cost that mobiles entail in rural communities, not to mention the money needed in other pressing areas of daily life.

I live at more than 200 Km from the railroad. Therefore, charging the mobile is prohibitively expensive. You need to pay the trip, charger, and battery, not to mention the credits on the mobile. I have to wait till the harvest time of corn to make some investments for the mobile. (Parent XIX)

As a man observed,

You have to learn, at least I have, to put the mobile aside and do the things that are more important. Repairing a bike, planting seeds, tilling tomatoes, etc. can be even more expensive than chatting on the mobile. (Parent XXIII)

Parent XII explained,

The thing with mobiles is that you have to have battery, power, and prepaid cards. A radio is much different so is a bike. But, mobiles mmmm are simply money-consuming technologies.

Apart from cost, the development of mobile phones has been shown in relation to the ability of people to connect with others in order to survive (e.g., siblings, nurses, friends, etc.).

Mobiles help me in the capability of connecting with friends, professionals, and relatives. That is something positive, considering the need at hand, emergency or necessity. It helps to survive when you see a sibling/friend give you a hand. (Parent V)

One parent indicated,

Some siblings might be a bit far in another village. Mobile can help connect when the sibling can afford the battery and prepaid card. (Parent I)

Another parent declared,

On election day, my son's friend sent a message that he was elected in the parliament. I know that child because he used to come here. (Parent XXXII)

The definition of development speaks to the capabilities or opportunities that people are presented with when using mobile phones (see Figure 13).

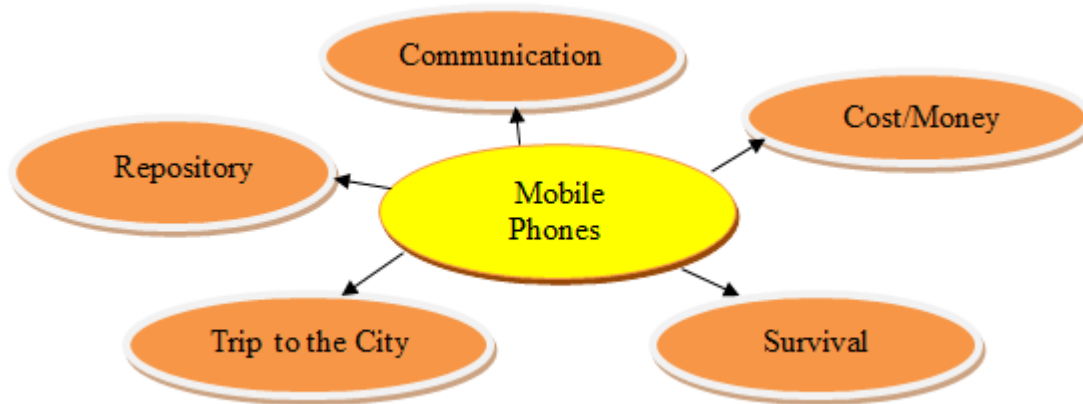


Figure 13: Parents' Model of Mobile Phone Uses and Development

The contexts in which parents live involve the uses of mobile phone on the one hand and the need for development on the other. As explained earlier in the introduction, context was understood in this study as the environment that surrounds a specific phenomenon or thing and contributes to its understanding and unfolding. Both contexts, for example, communication and survival, lead people to seek a better life in their daily activities. The goal is to maintain a permanent interplay between the uses of mobile phones and the struggles for survival. Also, it is important to bear in mind the concept of development as understood in this study (see introduction chapter), namely: the spectrum of opportunities that people have in order to survive or achieve better lives.

Experiences of mobile uses and people's development among individuals

The data set of parents was analyzed, saturation was reached, and three key experiences were determined. The first key experience (as discussed above see section on context) that people have of mobiles in rural areas was cost or debt. Debt means that someone might need to borrow money in order to engage a mobile phone conversation. As a woman remarked,

One needs to bear in mind that mobile phones, even more so than any technology, are money-consuming. Sometimes I see mobile phones as alcohol. Mobiles are not forgiving when it comes to money. With one dollar (1 US \$) you have 10 minutes of conversation between customers of the same mobile carrier domestically, and 5 minutes of conversation

when connecting with a person using a mobile of a different carrier domestically. One dollar lets you talk for 2 minutes with a person overseas. That is a lot of money, I tell you. Therefore, my advice is: talk on mobiles sparingly. (Parent X)

One parent asserted,

Mobiles can lead you into debt. Those things draw money like a river carries water ceaselessly. (Parent VII)

Another person testified,

Maybe because they are too small, mobiles are the biggest reasons for falling into debt. I personally use the mobile very sparingly. (Parent XXIII)

The experience shows that communication on mobile phones is expensive to undertake. Customers are aware that communication on mobiles is not free. The second experience, after cost, was the inability of people to undertake m-banking, micro-credits, and financial activities with mobile phones. In simpler terms, a man responded,

Mobile phone is a tool of the rich. This means that in addition to providing for the family concerning the basic needs, I have to save a certain amount of money for the maintenance of mobile phone. Moreover, I would have to save extra money to be able to afford all these financial activities we hear on the radio such as m-banking, micro-credits, market opportunities, etc. Indeed, these financial activities much advertized on the radio are not free nor do they belong to the poor like us. (Parent XXVIII)

One person said,

I only hear on the radio about m-banking. I don't even know how to use a bank, much less banking with a mobile. (Parent V)

Another person indicated,

There are a lot of anecdotes about m-banking, micro-credits, markets, you name it. They keep busy people on the radio. I do not bother about those stories anymore. I have no way can afford them, nor is there a bank here to accommodate those kinds of activities. (Parent XX)

The statements highlight the fact that m-banking, market opportunities, and micro-credits are activities that go far beyond the capabilities of the average person in rural areas.

The third and last experience of mobiles involved the lack of collaboration between mobile phone carriers. Data analysis shows that individuals did not have a good experience with mobile phone carriers because very often customers found themselves in the middle of a fight, or, to use a variant word, competition, between mobile phone carriers, making the communication between customers difficult. On this note, Aker and Blumenstock (2015) wrote, “whereas other technologies have required significant investment and coordination from the public sector, the expansion of mobile networks has been fueled by *intense competition* [emphasis added] between operators of new subscribers” (p. 355).

As one individual related,

There are five major mobile phone carriers: AIRTEL, VODACOM, ORANGE, TIGO, and AFRICELL. Communication between subscribers of these carriers is not always easy, technically and financially. If you add to that the possibility or habit (?) of the government to shut down the whole communication system (as was the case, for example, with people’s demonstrations after 2011 elections), mobile phones do not enable people’s development in the least bit. The legal, social, economic, and personal capabilities of people are constantly denied using mobile phones. In rural areas, we (people) have no choices. (Parent XXVI)

Another individual said,

I have AFRICELL as a mobile provider. When someone with another mobile carrier, say, TIGO, contacts me there are fees, and the connection is not always the best. The bottom line is that a mobile provider forces its customers to stay with the same provider. (Parent II)

Still another individual remarked,

It is no clear why mobile phone carriers do not get along, so to speak. And yet, they are running the same business in the same nation for the same customers. Perhaps one of the worst things with mobile communication is communication with someone outside your provider or your nation. That involves fees. Not sure why mobile phone carriers never give social or legal advantages to customers. The government can do all they want with people's money, mobile phone carriers will never defend the rights of the rural people. (Parent XVII)

From a holistic vantage point (see introduction chapter), as is also clear from the findings, development presupposes that mobile phones can and should increase people's capabilities in all spheres of daily life. As Sen (2009a) emphasized, "the concept of capability is thus linked closely with the opportunity aspect of freedom, seen in terms of 'comprehensive' opportunities" (p. 232). Capability or opportunity that is not comprehensive becomes incomplete and counterproductive. Indeed, as is clear from the above and similar statements encountered in the findings, no interviewee was happy with or advocated for a fragmentary development, a development that is limited to a specific sector or action. Not surprisingly, people strive to survive in *all* spheres of life since no state official/service is established in rural areas to cater to people's wellbeing or the world's poorest (see Alkire *et al.*, 2015). But, as is clear from the finding above and similar others, mobile phone carriers and people in rural areas seem to differ widely in how mobile phones can generate development. Mobile carriers (see below on case study on mobile posters) seek profit with their business of mobile phones whereas individuals in rural areas seek to survive when using any technology.

Interpretations of mobile uses and people's development among individuals

The meanings ascribed to mobile uses and development are closely dependent on the experiences lived by people. These meanings imply some lessons learned and specific worldviews. The data set of parents was analyzed, saturation was reached, and three dominant interpretations were identified. The first dominant interpretation noted in interviewees' responses in relation to mobile uses and development is that mobile phone is seen as a recreational tool with which to engage a conversation with a person.

As a man argued,

Well! Mobile phones are a tool of recreation when I want to chat with a friend I have not talked with in a long time. This means that I have to make sure that I have accomplished my daily chores (e.g., corn crops, garden, hut reparation, etc.). Considering the pressures of daily lives here in our community, recreation does not fit the bill every single day. There are times where one just has to work and put the mobile aside till the family is able to make ends meet. (Parent XI)

As Parent III said,

I chatted to my children once in a while on the mobile. Then, I put the mobile aside and go about my business, which is more important. I cannot grow corn on the mobile.

Another person specified,

There are just so many priorities in daily life here that mobile phone is often a diversion or recreation from what is most important such as water, food, fuel, etc. (Parent XVIII)

Recreation implies the need to use mobiles in order to communicate with a person, without a specific goal at hand. Cost might be the major reason why mobiles are seen as recreational. The recreational interpretation of mobiles can be found in the historical use of mobiles (Blumenstock & Eagle, 2012; Blumenstock, Shen, & Eagle, 2010; Molony, 2007, 2008a, 2008b, 2008c, 2009).

As Parent VII stated,

Sometimes I just used the mobiles to check my old messages, pictures, texts, etc. This is simply a way of killing time when, for example, I am waiting for someone.

As Parent IV said,

My grandson likes seeing and storing pictures on the mobile, and also he likes listening to music on the mobile. He also plays games, at no cost. He just enjoys playing games.

One person argued,

People play games on the mobiles since the games are free of charge. You do not need a prepaid card to play games, apart from battery and power. (Parent XIX)

The statements show that games are less expensive to play on mobiles than it is to communicate on mobile phones. The reason might be that games are not networked or connected online; they are simply limited to a specific software on mobile phone wherein users play with a set of stored pictures or icons.

The second dominant meaning attributed to mobiles is that of *ad hoc* situation. Data analysis indicates that mobiles are seen not as a permanent or ongoing, but a need-based device, depending on the situation(s) at hand. In line with this, Parent XXIX affirmed,

Perhaps unlike other technologies, mobiles are used to respond to specific pressing situations. And these situations do not occur at all times. They may happen once or twice a year.

As one person said,

Financially speaking, daily communication on a mobile in our rural community is just unrealistic. Mobile phone is kept for rare occasions. (Parent VI)

Another person declared,

It is quite rare to use a mobile to communicate. I do not see my family use a mobile daily, unless there is a heart attack, sudden death, disaster, etc. (Parent XXII)

The *ad hoc* situation derives from some kind of emergency or pressure that a person or community might be faced with, for example, heart attack, thunder, flooding, broken leg, etc. This means that in addition to the recreational component, mobile phones display also an emergent component.

Considering development as the spectrum of opportunities spanning all spheres of life, the limitation to recreational and emergent interpretations of mobile phones can be problematic. In other words, development cannot be available only for recreational and emergent purposes. People need development at all times and under all circumstances. It is like saying that one is allowed to eat only under recreational and emergent circumstances.

However, the interpretation that individuals have of mobile phones with regard to development and mobile phones is that mobiles should be allowed to increase people's capabilities at all times, which includes and goes beyond (mere) recreation and emergency. As Parent XXI stated,

Just like any technology, mobile phone has some preliminary conditions in order to fully serve rural societies. One of those conditions is the ability of mobile phones to allow for the fuller capabilities of people. This is a journey/process in order for mobiles to be fully beneficial both to the carriers and the customers.

One person said,

A technology that is only used or usable for one single activity is not practical nor does it enhance people's opportunities. Mobile phone as a technology faces the same situation.

(Parent VIII)

Another person pointed out,

Perhaps a radio is an example with its many programs and shows. But, mobile phone can have more features than a radio can. A radio is limited to one-way communication. A mobile is more interactive than a radio. (Parent XXVI)

This interpretation amounts to a recommendation to improve the current status of mobiles in rural areas. Since mobiles are shared between and within families, on the one hand, and development tends to target family through women, on the other, mobiles have the potential to develop rural society as a whole. The reason people tend to seek a holistic development or development in all spheres of social reality might derive from the fact that one basic need or priority leads to another. For example, food requires water, water requires strength (health), health requires shelter, etc. No basic need is addressed in an isolated or exclusive manner.

Related to this ongoing idea of capabilities is the third and last dominant interpretation, that is, the idea of bodily safety with which mobiles are also interpreted. For example, Parent X declared,

Mobile phone also warrants, and should do so, my bodily safety when I am alone or away from my grandson, husband, neighbor, etc. Just as development cannot be installed by weapons, so too bodily safety is a lifestyle that I usually enjoy in the community here. Mobile phone plays an important role in that regard since I can connect directly with those absent by activating/press a mobile key.

A man said,

I would love to have my wife use a mobile so that she can feel safe when she travels to the city alone. (Parent XIX)

Another man related,

There is nothing more precious than bodily safety when it comes to people with special needs, but also all the vulnerable in society such as women, children, the elderly. Mobiles could play a huge role of bodily safety. It means that with a mobile one could call or press a key for immediate assistance. (Parent XXVIII)

Bodily safety is presented here as a lifestyle or culture promoted by people in rural areas, which allows the vulnerable to feel safe in villages at all times. The statement above implies that bodily safety is a culture that people are called to take on or internalize, otherwise nobody can protect nobody.

Summary

Interviewed individuals saw mobile phones to be linked to recreational, historical, and emergent purposes. Individuals also considered mobiles to be a community-shared and multi-tasked device. The cost of mobiles owing primarily to batteries, pre-paid credits, call and text rates, and chargers has caused respondents to question the link between mobiles and development in rural societies. Respondents suggest that mobiles be a tool that could actualize the fuller capabilities of people in the holistic sense of the word (i.e., economic, legal, political, social, personal, etc.). Mobiles could alleviate people's struggles to survive. Mobile phone was also presented as a guarantee of bodily safety.

Case study two: Mast guards

Introduction

Despite their rapid diffusion across spaces and times, mobile phones cannot function without the installation and maintenance of masts. Masts, also called main antennas or aerials, are an elevated structure that transforms electrical power into radio waves, which are used by

communication devices such as radio, television, mobile phone, etc. In developing countries, due to the lack of towers and/or electrical power, mobile phone masts are equipped with generators and installed on mountains or higher locations to ensure the broadest range of radio waves. As such, masts require permanent human presence. This group of informants was spotted due to the ecological method applied in the present doctoral study (Krebs, 1999; Manly & Navarro, 2015; Navarro & Díaz-Gamboa, 2015; Nomani, Oli, & Carthy, 2012). To refresh the memory, the ecological method skims as closely as possible the selected place to detect the potential units of analysis present in the place. This case study depicts the findings derived from the interviews of 14 mast guards regarding the uses of mobile phones and development. The case study lays bare the experiences that mast guards of rural societies in remote areas of the Congo have of people's development and of mobile phone diffusion.

Characteristics

The data set of mast guards was analyzed, saturation was reached, and five major characteristics were found to encapsulate the work of mast guards (see Figure 14).

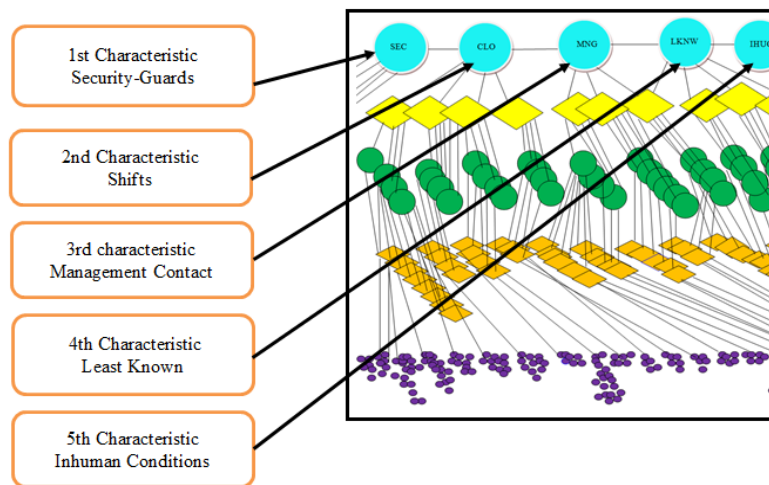


Figure 14: Mast Guards' Characteristics

The first major characteristic of mast guards is that they are security guards of mobile phone companies, with the duty to keep watch over the mast and related machines.

I am here to keep watch and take care of the generator, filling it with oil when the oil is running low. We are trained, but some of us are not. For example, the person who is replacing me in a few hours is a college student. This work does not require a specialized training. (Mast Guard IX)

One mast guard testified,

My job is that of a security guard to watch the antenna and its machines. These items have to be watched over 24/7. (Mast Guard VII)

Another mast guard asserted,

It is almost like a soldier in charge of these technologies, namely the generator and the mast). In a nutshell, that is what I do here. (Mast Guard I)

The structure of the mast and its equipments might be the main factor that leads to the need for security guards.

The second characteristic of mast guards is that they work around the clock, taking shifts/turns to ensure the permanent usability of mobile phones.

I have been here since yesterday morning at 7:00. I was supposed to leave at 7:00 today. But now it is 2:12pm, and my shift has not showed up, therefore I have to stay all day till tomorrow. (Mast Guard XII)

One mast guard affirmed,

We take turns to do this work, each starting early morning at 7 and stay for two days till the next guard comes. (Mast Guard VI)

Another mast guard pointed out,

My work lasts 2 to 3 days in a row, starting at 7 in the morning the first day. The next security guard comes at 7 for his shift for another 3 days or so, depending on when the shift takes place. (Mast Guard II)

The use of mobile phones and their chargers around the clock presupposes some basic services around the clock as well.

The third characteristic is that mast guards have each a mobile phone with which to communicate with mobile phone management in case of emergency. As a mast guard said,

I have a mobile with me, but I cannot call my family or friends. This is only for me to communicate with my manager. (Mast Guard III)

As another mast guard put it,

The mobile I have is only to communicate with the manager, not with family or friends. (Mast Guard V)

Still another mast guard indicated,

In case of an emergency, I have a mobile with me to contact the manager. I cannot and am not supposed to use it to communicate with other people, such as relatives, friends, etc. (Mast Guard XIII)

Maybe the prohibition of public access explains the provision that mast guards communicate solely with the manager.

The fourth characteristic of mast guards is that despite the spectacular advances of mobile technologies, mast guards represent one of the least known and researched profession and social groups of mobile phone era. The reason for this might be the location and distance. Masts are installed in areas that are least accessible and/or most distant. The fifth and last characteristic is

that mast guards work and live in remarkably inhuman or difficult conditions (details below). Masts do not have a decent house or hotel in which mast guards can live with their family and beloved ones.

Context of mobile uses and people's development among mast guards

The data set of mast guards was analyzed, saturation was reached, and four major contexts were ascertained. The first major context of mobile phone uses for mast guards is exclusively professional in that mast guards can only use mobile phone for professional or work-based communication. The second context of mast guards regards loneliness in the middle of the wood or up on the mountain. This context seems to be explained by the location in which masts are installed. Masts tend to be placed at higher elevations and/or uninhabited locations. Even when masts are placed in a more or less inhabited area, they are fenced off to prevent misuse from the public. In addition, the distance between one mast and another does not allow mast guards to interact with fellow mast guards at work. The third context, related to the second, is long shifts or work hours. Mast guards spend more than the standard eight hours of work per day (Marx, 1867/1977), usually two to three days in a row, due in part to location and distance.

As Mast Guard VIII pointed out,

We work many hours and very often entire days, with the possibility of having one or two days off during the week.

One mast guard argued,

The exact number hours for us mast guards is unknown, but what is best known is that we can and usually do work more than 3 days or more in a row. (Mast Guard IV)

Another mast guard explained,

I work many many many hours. I do not even count them since there is no need. The important thing is to never leave the mast and the machines unattended. (Mast Guard IX)

The shifts of a mast guard do not seem to have a well-organized schedule or policy to avoid abuse or overwork of mast guards.

The fourth and last context of mobile uses of mast guards is that mobile phone carriers do not provide a house or food for on-duty mast guards. As one mast guard said,

When it comes to house or food, we are on our own. Under the rain, sun, or wind, we use card boxes and plastic to make a hut. (Mast Guard I)

Another mast guard declared,

Here, you are on your own when it comes to food. The company does not provide food or a house. This hut that I made is my house when, for example, it rains. (Mast Guard X)

Still another mast guard related,

I usually bring some food and snack to keep me going since the company does not provide meals. There is no toilet facility. (Mast Guard XIV)

It needs to be mentioned that toilet is not provided by mobile phone carriers, either. Perhaps, the fear is that the public might use the toilet.

For mast guards, the need for development proves to be ever more urgent due to the situations in which mast guards are called to work. On the one hand, mast guards need to have communication with their beloved ones at all times, and lodging conditions need to be provided and improved, on the other.

Experiences of mobile uses and people's development among mast guards

The data set of mast guards was analyzed, saturation was reached, and three recurring experiences were noticed. The first recurring experience that mast guards have of mobile phones is that of being disconnected from the world and from their beloved ones.

As Mast Guard VII described,

I usually don't see that I have a mobile when I come to work. I simply ignore it till I go home. Since I only use it for the company, not for me or my family.

One mast guard narrated,

I have to forget the world and family when I walk into this place. I have been doing this for a few years now. (Mast Guard XI)

Another mast guard explained,

I come here to work as required by the company, and the rest, that is, family, friends, relatives comes after. (Mast Guard VI)

Work becomes one of the reasons why mobile phone (including the family and friends) has to be ignored. The second recurring experience mast guards have of development is that of limited capabilities (i.e., social, economic, political, and personal).

When I come here I have my capabilities of development put on hold in order to ensure the safety and functionality of the mobile phone company. (Mast Guard VI)

One mast guard testified,

Development is not the topic to be discussed or experienced here. Development is out of the picture till I go home to see my family. (Mast Guard XII)

Another mast guard said,

Perhaps the most important thing to develop or see developed, for me right now and at this place, is the mast and its technologies. (Mast Guard III)

The safety and maintenance of mobile phone carrier or company take precedence over the development of mast guards and their relatives. The third and last recurring experience of mast guards is the disconnect from local community. In fact, some mast guards come from far off.

I live several miles and villages away. I come here to work, and after my shift. I return. I don't know much about the people who live here. (Mast Guard IX)

One mast guard recounted,

Several times, I come across people on my way to work, whom I do not know. They are certainly people who live in this area. (Mast Guard XIII)

Another mast guard portrayed his experience as follows,

My work here teaches me to ignore the people who live in this area. I just come to work and watch over the mast and its machines. (Mast Guard IV)

Perhaps the isolation of mast guards stated above is partly because of the machines that mast guards are taking care of, which might be considered hazardous to an unauthorized person or the general public.

Interpretations of mobile uses and people's development among mast guards

The data set of mast guards was analyzed, saturation was reached, and three major interpretations were found. As can be anticipated, the first dominant interpretation that mast guards have of mobile phones and development is that mobile phones are a tool aimed at the benefits of wider mobile carriers, and not mast guards or their families.

I can barely see mobile phones improve my life and that of my family. The company is paying us, but the ultimate goal is about its growth. (Mast Guard III)

One mast guard retailed,

Put clearly, I work for the mobile company so that they can make more money. My money comes second to their money. (Mast Guard XIV)

Another mast guard delineated,

When the company makes profit, I can be paid, when they lose, I lose too. So the trick is to work hard in order for them to be able to pay me, not as much as I should have or would love to have. But that is the world in which we live. (Mast Guard VI)

As the statement above implies, mobile carriers were not perceived as envisaging the development of people as a priority (see Figure 15).

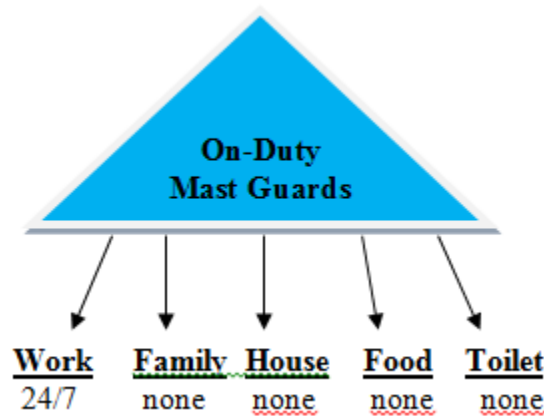


Figure 15: On-Duty Mast Guards

Mobile phone carriers prove to have a different understanding of mast guards whereas mast guards are faced with specific needs that underlie their daily lives and their relationships in society at large.

The second dominant interpretation that mast guards have is that of secrecy. Mast guards tend to keep their work and location(s) secret.

Most people don't know that we are here, they won't know because we talk softly so as not to alert people. (Mast Guard XI)

One mast guard specified,

One thing I keep in mind when I come here is to be hidden from the general public to avoid potential damage to the machines. (Mast Guard I)

Another mast guard emphasized,

The structure around the mast itself is one of secrecy so that the general public might not be coming here regularly. A person might come out of curiosity, to share a cigarette, see what is here, ask for direction, etc. (that is rare, though). (Mast Guard XIV)

Secrecy might be partly because mast guards have to ensure safety (for themselves and the machines).

The third and last interpretation of mast guards is abandonment. Mast guards are aware that they are abandoned in the middle of the wood.

I am waiting here. If the next shift to replace me comes, I leave, if not I wait as many days as it takes for him or another person to show up. I can call the manager, but usually, there is not much they can do in that kind of situation. (Mast Guard V)

One mast guard argued,

There is a feeling of loneliness, which is part of my job. I would say that this is not unusual for workers, especially security guards. (Mast Guard II)

Another mast guard explained,

I did not come here for company or chat, but to work and go home when I am done. (Mast Guard IX)

Maybe an immediate/efficient response to the needs of mast guards would help eliminate the mast guards' belief in abandonment.

Summary

The conditions in which mast guards work are utterly unconscionable, and show little benefit from the acclaimed gains of mobile phone era. It is ironic and indeed problematic that although they are an essential component of mobile industry, mast guards benefit the least from mobile phone advances. Similarly, the use of mobile phones, for mast guards, is markedly limited to work and company; so too the developmental capabilities of mast guards is reduced to the economic growth of mobile phone carriers. This situation may be partly because of the marginalized nature of this community of workers.

Case study three: Kiosk vendors

Introduction

Kiosk vendors, also called kiosk retailers or kiosk purveyors, are the merchants that sell the prepaid cards used to exchange communication on mobile phones on a pay-as-you-go basis to avoid subscription with the mobile phone provider. This section is concerned with the findings related to the interviews of 18 kiosk vendors regarding the uses of mobile phones and development. The section aims to outline the experiences that kiosk vendors in a rural society, in remote areas of the Congo, have of people's development and of mobile phone uses.

Characteristics

The data set of kiosk vendors was analyzed, saturation was reached, and four major characteristics were detected (see Figure 16).

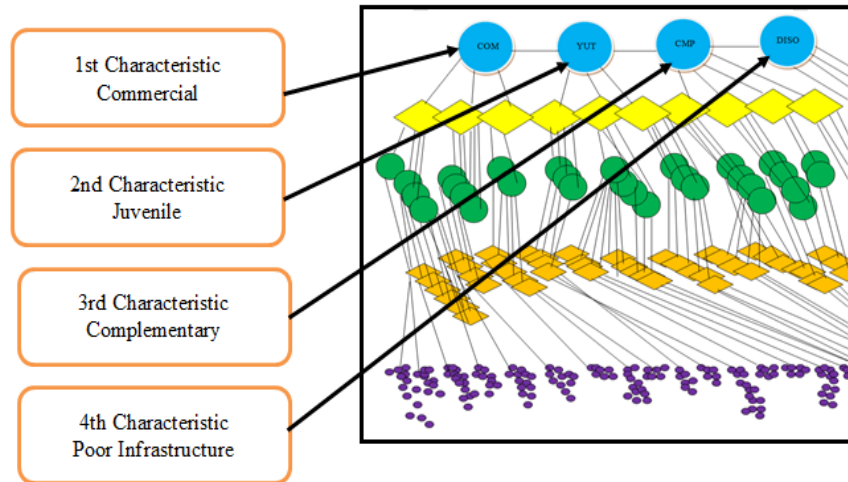


Figure 16: Kiosk Vendors' Characteristics

Being retailers, kiosk vendors undertake a profit-seeking activity with mobile phone carriers. Therefore, the first major characteristic of kiosk vendors is that they are commercial. As a kiosk vendor admitted,

I buy the prepaid cards and sell them in order to make some benefits. However, the benefits are not significant. I only make 1 to 2 % out of the prepaid cards sold. (Kiosk Vendor XVIII)

As another kiosk vendor argued,

The prepaid cards are commercial products of mobile phone carriers as the subscription system will not be reliable and productive for them. (Kiosk Vendor I)

Still another kiosk vendor testified,

Prepaid cards can go fast as long as people need them. But, they are not the best merchandises for money or salary making. (Kiosk Vendor IX)

The second characteristic of kiosk vendors is youth. All interviewed kiosk vendors were juvenile. The reason for this might be that the commerce of prepaid cards is not nearly as lucrative as one would need in order to make a living. Stated differently, kiosk vending is not a salaried job. Therefore, individuals with large family responsibilities are less interested in the activity of kiosk vendors. The third characteristic of kiosk vendors is that they tend to complement the vending of prepaid cards with the trade of other items such as cigarettes, newspapers, cookies, stationeries, cosmetics, soft drinks, etc.

I sell other things in addition to prepaid cards in order to maximize the benefits of trade.
(Kiosk Vendor IX)

One kiosk vendor asserted,

Kiosk is not just for prepaid cards, I sell other items. In fact, kiosks were here before mobile phone era to see things such as newspapers, cigarettes, cookies, etc. (Kiosk Vendor II)

Another kiosk vendor delineated,

I cannot live just by selling prepaid cards. I have to sell pharmaceuticals, stationeries, cosmetics, etc. (Kiosk Vendor XVII)

Even here, the supplemental trade tends to be limited to the retail of small items, which still keeps the productivity low. This does not help the youth to pay education or obtain a better paid job. The reason for the low productivity of this trade can be explained by the lack of necessary infrastructure that characterizes mobile phone industry, which simply installs kiosks in lieu of supermalls, roads, railroads, airports, or stores. Kiosks are usually made of card boxes and thus are opened anywhere. As such, kiosks cannot contain or accommodate significant supplies and services needed for rural populations. In this respect, mobile phone industry does not contribute to the implementation and modernization of infrastructure, an important aspect of development (detail below).

The fourth and last characteristic of kiosk vendors, related to the third, is the lack of urban planning or infrastructural organization. Some kiosk vendors simply use an umbrella or the shade of a tree or of an existing building or fence.

As Kiosk Vendor IV related,

I just use a stool or small table, and put the prepaid cards on top it, and sell the prepaid cards.

One kiosk vendor argued,

I would foul myself if I were to expect the mobile company to build facilities in rural areas for the sale of prepaid cards. Kiosks have nothing to do with the infrastructure. The place in which kiosks are placed is lively, but crowded and unhealthy. (Kiosk Vendor XVIII)

Another kiosk vendor explained,

One would not see an improvement of the infrastructure go alongside the sale of prepaid cards. They just do not go together. (Kiosk Vendor III)

One of the consequences associated with the lack of necessary infrastructure is that kiosks do not need a permit nor land ownership, they are implemented on an *ad hoc* basis. While kiosk vendors can decide where is the best location to sell the prepaid cards, the returns or benefits remain insignificant (see experiences and interpretations below). Furthermore, the implementation of kiosks seems to encourage the tragedy of slums seen in rural areas of developing countries, and thus does not help rural populations with regard to the spectrum of capabilities.

Context of mobile uses and people's development among kiosk vendors

The data set of kiosk vendors was analyzed, saturation was reached, and two major contexts have been found to underlie mobile phone uses among kiosk vendors. The first context in which kiosk vendors use mobile phones is the trade of prepaid cards. In other words, kiosk vendors use

mobiles to add credits to the mobiles of customers who purchase the prepaid cards. The reason might be that the prepaid card system is a temporary, not a lasting solution/option for mobile carriers. The hope is that someday all mobile customers can subscribe to mobile services. The second context is one in which kiosk vendors calculate the remainders of prepaid cards to make some income, although minimal.

When the mobile phone says that the customer cannot make a call or send text, the prepaid card might have fractions of units, that if added up, can amount to 1 or 2 minute of conversation. (Kiosk Vendor XI)

One kiosk vendor affirmed,

With prepaid cards I cannot make an income in the full sense of the word. I can rely on the leftovers when clients use their credits, which in fact is very small. (Kiosk Vendor XVII)

Another kiosk vendor retailed,

The small percentage or number of minutes or credits on prepaid cards does not produce a profit substantial enough to make a salary. (Kiosk Vendor II)

As noted above, those added minutes are the sum of fractions of prepaid units left over and collected from hundreds of cards, and therefore although a small contribution is achieved kiosks vendors cannot make a living with this money. The third and last context is the low productivity of prepaid cards. Thus, development is particularly questionable in that the range of opportunities that kiosk vendors have is tenuous. An important point to call to mind here is that capability approach, espoused in this study, defines development as the spectrum and expansion of opportunities that people have.

As Kiosk Vendor II lamented,

Development for us means that everything from the rate of mobile call to the price of prepaid cards to the availability of electrical power will have to change or be improved. I cannot make a living on prepaid cards; it is just too little in terms of productivity. For example, m-banking about which there is a lot of hype, is something that no kiosk vendors can afford. One cannot open a bank account with prepaid cards.

One kiosk vendor pointed out,

I do not see prepaid cards as a source of productivity, at least from my perspective as a kiosk vendor. (Kiosk Vendor II)

As another kiosk vendor put it,

Prepaid cards are not a trade in the full sense of the word. Perhaps the company is trying to minimize the cost of minutes or prepaid cards. (Kiosk Vendor IX)

The statements show how m-banking is not as practical in rural areas as usually claimed (Adler & Uppal, 2008; Tobbin, 2012; Yousif, Berthe, Maiyo, & Morawczynski, 2013; Zainudeen, Samarajiva, & Sivapragasam, 2011). One would have hoped that kiosk vendors of mobile phones and prepaid cards would be the most frequent customers of m-banking since there is the possibility for them to open, own, or share m-banking accounts. The reason is that prepaid cards are used since people do not have credit or visa cards with which to *top up* their mobile phones.

Experiences of mobile uses and people's development among kiosk vendors

The data set of kiosk vendors was analyzed, saturation was reached, and three main experiences were identified. The most notable experience that kiosk vendors have of mobile phones is that of limited capabilities. A kiosk vendor emphasized,

Yes, I am very busy with supplying the prepaid cards. These cards sell quickly. And I have to make sure I do not run out of prepaid cards. It is fun running back and forth. However,

they don't pay much, the returns are small, considering the trips to supply them. (Kiosk Vendor IX)

Another kiosk vendor indicated,

We try the best we can, but a kiosk as whole is just a limited means of production. (Kiosk Vendor II)

Still another kiosk vendor recounted,

Despite the supplementation of kiosk trade with other items, there is still not much to make with a kiosk. (Kiosk Vendor IX)

The remarks reveal that it is not unusual for youths to enjoy trips back and forth just for the sake of exercising the body rather than profit.

The second experience is that kiosks do not lead to significant infrastructural development in rural societies. This means that infrastructure is one of the least concerns of mobile phone companies. Indeed, the idea of kiosk does not lend itself to a society's development or modernization.

I can see that mobile phone carriers have opened stores to sell mobile devices and accessories in crowded places of the city, nothing more concerning construction. As a kiosk vendor I use a table or the back of a container to put out my merchandises. (Kiosk Vendor VIII)

As one kiosk vendor put it,

The key concern of mobile phone carriers is not so much about the prepaid cards as it is about the revenues with which to keep the company up and running. (Kiosk Vendor XV)

As another kiosk vendor described,

Kiosks, hence kiosk vendors, are not part of the mobile phone company; they are accessory to the organization of the company. One cannot expect the mobile phone company to clean a kiosk or modernize it. If they do, the work will need a specific revenue/fund to keep the company in good shape. (Kiosk Vendor V)

The statements are a glaring testimony to the fact that kiosk vendors do not have much constructive rapport or interaction, if any, with mobile phone carriers.

Not surprisingly, the third and last experience of kiosk vendors is that the role of kiosk vendors does not lead to limited communication with mobile phone carriers.

I sell the prepaid cards, and I am on my own. Mobile phone carriers don't even know where I live, whether I have a house, where I sleep. The tiny leftovers of credits, if there are left of course, are your profit or salary, I would say. (Kiosk Vendor XVII)

One kiosk vendor indicated,

My work is completely separated from the mobile phone carrier. I am not a registered worker of any mobile phone carrier. I am just a simple retailer. (Kiosk Vendor XIII)

Another kiosk vendor argued,

This is like selling cigarettes at the beach on a ferry day; that retailer has nothing to do with the ferry's revenues. The same is true of kiosk vendors and mobile phone carriers. Perhaps the difference with the ferry is that mobile phone carriers depend entirely on the sale of prepaid cards for the spread of mobile phones in rural areas whereas the ferry does not. (Kiosk Vendor IV)

As said earlier, kiosk vendors have but the small amounts of credits collected on prepaid cards and no salary, compensation, or capability is provided by mobile phone companies to strengthen or promote the work of these vendors.

Interpretations of mobile uses and people's development among kiosk vendors

The data set of kiosk vendors was analyzed, saturation was reached, and two key interpretations were determined. The first key interpretation that kiosk vendors have of mobile phone uses and development is that the kiosk is not the best approach to develop communities. As a kiosk vendor explained,

When I see a kiosk, I see a sign of poverty. Yes, a kiosk can be a place where certain services are undertaken. But, we can do much better in our rural societies by building decent facilities where people can receive the needed services or goods. When it comes to development, the idea of kiosk should not be the only way in which a given service is provided. (Kiosk Vendor I)

One kiosk vendor indicated,

I do not see how a kiosk system can develop, strengthen, unite, etc. a community. (Kiosk Vendor XI)

Another kiosk vendor narrated,

Kiosks are a diversion from the struggles and needs of the community. There need to be ways to incorporate the kiosks better into the company system and that of the local community. That needs some hard work of collaboration between the company, community, and kiosk vendors. (Kiosk Vendor XVIII)

The statements underline the belief of kiosk vendors that a kiosk is not a tool of development, and that a decent facility would make a difference in the neighborhood.

The second key interpretation of kiosk vendors has to do with the role/job of kiosk vendors. In fact, the idea of prepaid cards does not seem to promote the role of kiosk vendors. To say the least, kiosks only add to the proliferation of shelters in rural areas whereas a regular subscription system could lead to more sustainable infrastructure.

The way I see my work of a kiosk vendor is that I do this temporarily, this is not and should not be a permanent job (e.g., baker, fishermen, driver, potato trader, etc.). Just like any business, prepaid cards can be replaced by regular subscription. By doing so mobile phone carriers will create jobs and build new facilities in our communities. (Kiosk Vendor IV)

One kiosk vendor argued,

The role I have as a retailer of prepaid cards is of no interest to the community and to the company. (Kiosk Vendor II)

Another kiosk vendor explained,

Being a vendor of prepaid cards is just as minimal as the prepaid cards are to the mobile phone company. We are too poor to matter for mobile carriers. (Kiosk Vendor IX)

As noted above, the statement reminds us that kiosk is a reflection of underdevelopment. Perhaps the reason is that rural areas are not a big source of money for mobile phone companies. Kiosk vendors would like to see more comprehensive services (detail below) that would generate more opportunities for them (see Table 1).

	Mobiles	Infrastructure	Productivity	Age
Status	Reduced services	Reckless Ad hoc	Low	Juvenile 12 to 17 years
Replacement	Complete services	Planned Organized	Sustainable	Adult 18 years and on

Table 1: Kiosk Vendors Model

Comprehensive services are services that are not limited only to prepaid cards, but rather they include mobile devices and advising staff (i.e., personnel, devices, batteries, chargers, etc.). They also include kitchen utensils, garden tools, roof materials, bike parts, generators, etc. with advising staff on hand in order to best empower people with capabilities in their struggles to survive. Put differently, a comprehensive service (see section about Parents, Case Study I) is one that goes past the mere distribution of a given technology or commodity, by allowing a broad-based education or advising of people about the tools and skills in relation to the needs faced or expressed such as cooking, woodworking, gardening, sewing, roofing, fishing, kayaking, hiking, grinding, hiving, etc.

The third and last interpretation concerns a replacement of kiosks which is thought to provide comprehensive services, organized activities, and sustainable productivity. Comprehensive services are activities that attend to the full range of basic needs that people are faced with, such as fuel or firewood, water, food, shelter, cloth, etc. Organized activities imply the possibilities offered to clients in order to make use of the services or technologies. As Kiosk Vendor VI related,

Vending the prepaid cards is one thing, but having to look for water, wood, corn, mill, cloth, malaria pills, soap, vegetable oil, etc. is a completely different thing. When those items are needed, they become daunting priorities. Without addressing those needs kiosk service remains incomplete.

One kiosk vendor declared,

Seeing what the community needs or struggles with daily is a good start for mobile phone carriers to integrate their business into the local community. (Kiosk Vendor XVI)

Another kiosk vendor said,

Mobile phone carriers should address our basic needs in order for mobile phone services or prepaid cards to be productive for the local community and kiosk vendors. (Kiosk Vendor I)

As is clear from the above and similar reflections, an integrated purvey of services within, for, with, and by the community is thought to be a way of mobile phone carriers to contribute to the development of rural areas.

Summary

Despite the fact that kiosk vendors were selling prepaid cards, they described their work as one of tenuous productivity and limited capabilities/opportunities, which did not enable m-banking, market activities, and micro-credits. While kiosk vendors were an indication that mobile phones were being spread throughout rural areas, they were also a sign of *maldevelopment*, to use an expression of Rhodes (2009, p. 18), with regard to productivity and infrastructure. Rather than seeing their service as a permanent profession/career, kiosk vendors saw it as a transient activity and thus suggested to replace it with formal subscription, sustainable jobs, and decent facilities.

Case study four: Group Discussion Session One

Introduction

Mobile phone is a device that concerns not only individuals, but also families, groups, communities, etc. As noted earlier, a group was understood in this study as a set of people constituted for a specific task. A community is a set of individuals tied to one another by more or less permanent activities or locations. After the interviews with parents (see above the section on

case study I), which involved one-on-one communication, it was also necessary to make use of group-based communication, more precisely group discussions, in order to allow a greater participation of people. The reason for this is that some people may be comfortable at one-on-one communication whereas others may not (see Hasson, 2012, p. 5). Furthermore, group discussions add the flavor of camaraderie and community to the process. People were randomly selected by being counted aloud from one to five, and put in five distinct groups located in different corners of the plaza (see Chambers, 2002/2011). For participatory method, a random selection means that people are not divided into pre-determined groups. Participants who were counted number one were selected as leader of their respective groups. A few disabled people were selected to be moderators of discussions across groups (see Chambers, 2002/2011).

The total number of people who came to the group discussions organized at the village plaza, the equivalent of a city hall, was 52 whereas only 32 people came to the interviews with individuals. The reason the number of participants to the group discussions was higher might be that “human beings are social animals” (Seneca, *On clemency*, 1.3.2); they tend to flock and chat to one another. People came from the host village as well as from surrounding villages. As outlined in methodology chapter, people were gathered to be instructed on the dynamics of the discussion as well as the proposed research questions (Chambers, 2002/2011). The discussion lasted from 8am to 5:30pm, and was concluded with a meal. Participants adjourned after dinner at around 6:30pm. The groups comprised each 8 to 10 individuals. This section reports on the findings collected in the five discussion groups (see Figure 17). The section describes the experiences that individuals mentioned in group discussions in relation to people’s development and mobile dissemination in everyday activities.

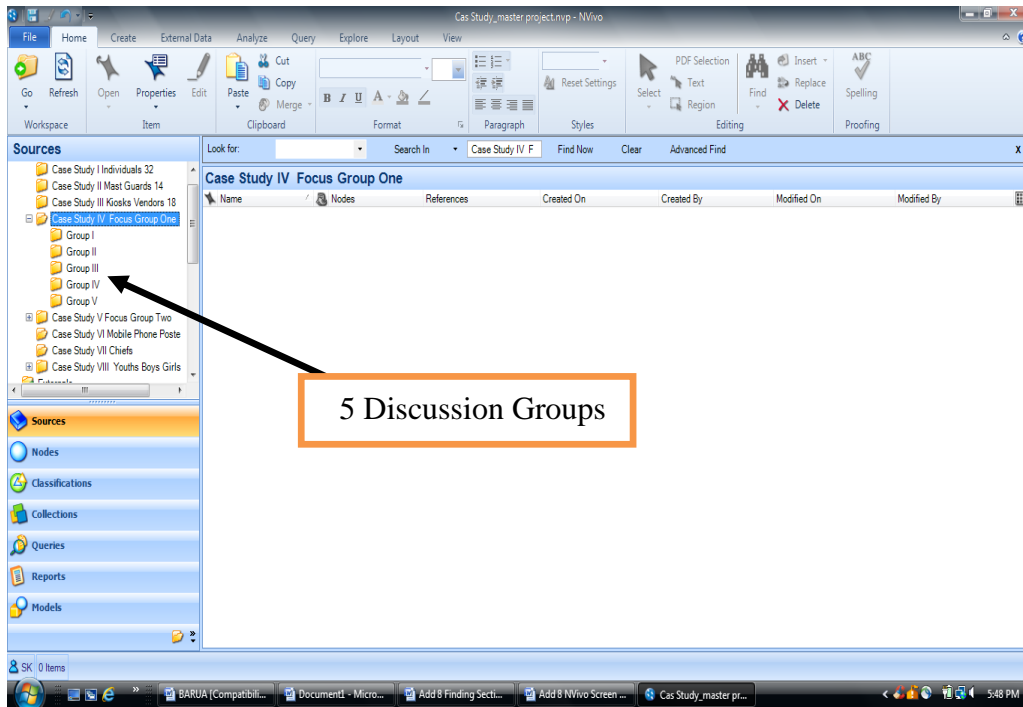


Figure 17: Random Discussion Groups in NVivo

The findings were collected from the discussions held in each of the five selected groups. Each group presented some recommendations, based on the discussion, questions posed, and issues raised in the group.

Characteristics

The data set of group discussion session I was analyzed, saturation was reached, and three major characteristics distinguished the five selected groups and related discussions (see Figure 18).

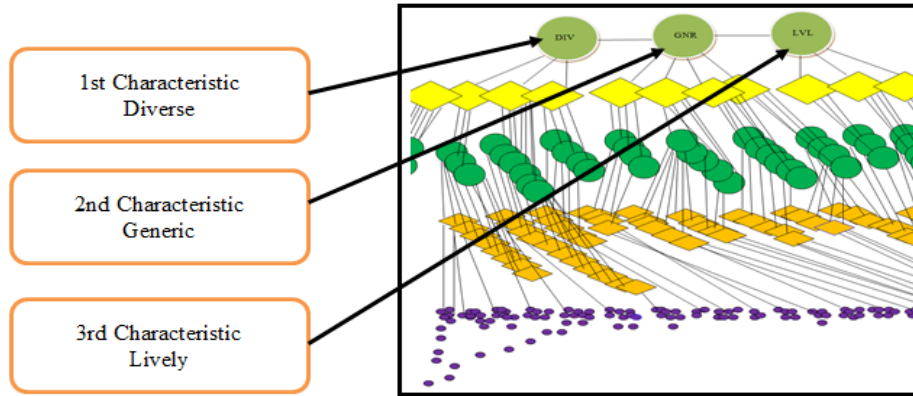


Figure 18: Characteristics of Group Discussion Session One

First, the group was extremely diverse, such as age, profession, gender, background, etc. As one person stated,

It was difficult to resume discussions immediately as people were still laughing after the game, including the moderator. But, the discussion had to start. (Group III)

As another person said,

When all the community gathers, diversity becomes more apparent and enjoyable since everyone brings their talents, backgrounds, views, professions, histories, stories, etc. (Group I)

Still another person asserted,

It is unbelievable how people are gifted when they come together. We have a wide-ranging variety of experts, so to speak. (Group V)

The above comments showcase the centrality of community engagement in this area. This is partly because the community welcomes everyone regardless of age, education, expertise, etc.

Second, the discussion was generic, not tied to a specific demographic (e.g., age, gender, background, etc.). The reason for this might be that as with any public gathering such as market, harvest, funeral, etc. the whole community is interested in participating. Third and last, discussions in groups were lively and fun due to local games, plays, and songs with which the session was conducted (see Chambers, 2002/2011).

Context of mobile uses and people's development in Group Discussion Session

One

The data set of group discussion session I was analyzed, saturation was reached, and three major contexts of mobile uses emerged from the responses and recommendations of the five selected groups. First, mobiles were said to be used for the purposes of the community or village.

As Group III pointed out,

Mobile phone is a tool that was/is used to pass information around the community. This role has been helpful as with the radio.

One person said,

Mobiles are used in order to get people together concerning a specific task for the sake of the village, for example, to repair a bridge, clean a water well, start a harvest, etc. (Group IV)

Another person testified,

It is not unusual to see the members of one village come to gather around a mobile phone, one after another, in order to hear back from someone needed or someone seen as an expert. (Group I)

The statements seem to conflict with idea of private subscription, on which much of mobile phone literature is based (Aminuzzaman, Baldersheim, & Jamil, 2003; Blumenstock, Gillick, & Eagle, 2010; Blumenstock, Shen, & Eagle, 2010; Chib, Wilkin, & Hua, 2013; Duncombe, 2009a,

2009b, 2011, 2012a, 2012b; Duncombe & Boateng, 2009; Jensen, 2007; Kabeer, 2013; Mansell, 2012; Rashid & Elder, 2009; Srinivasan & Burrell, 2015; Waverman, Meschi, & Fuss, 2005; Williams, 2005). The second context of mobile phone use is found in connection with community service, such as garden, roof, laundry, harvest, etc. Community service is an activity undertaken within and for the community in order to protect the vulnerable in areas that might be threatening their lives. This type of service usually involves a group of volunteers, a dozen or more, depending on the need at hand. As a person said,

We need to keep the habit of community service to help the vulnerable with regard to roof, laundry, crop, garden, wood, and the like. Some people just need such service. (Group II)

As another person affirmed,

To a great extent, community services can be boosted by the use of mobile phones. (Group IV)

Still another person asserted,

Cutting the grass around the market was facilitated by the use of mobile phones, when the owners of the houses nearby, most of them widows, were able neither to do the work nor contact the village due to health issues. (Group V)

The above statements point to the fact that community is not only about interacting with one another, but also providing services for the needs of its members. The third and last context of mobile phone use concerns visitors or guests within the community.

We have seen many times, mobile phone can be used to introduce a guest or visitor to the community, even as radio has been used for the same purpose. (Group IV)

A man pointed out,

Guests are another reason why mobile can be helpful; most of them come with mobiles themselves. (Group I)

As another man put it,

A visit within the community, for example a family member, might need the use a mobile, as with the radio. (Group III)

The ideas seen above show that mobile phones can be used as a link between the community and the exterior world.

As to the context of development with regard to mobile phone uses, it was noted that mobile phone uses were related to bridges and weather conditions. In particular, as one group said,

Bridges and weather conditions can be unpredictable for most of us, and a simple mobile text can make all the difference by warning the traveler not to venture to the river, for example. (Group III)

One woman indicated,

It is often dangerous to go to the crops without knowing of upcoming bad weather conditions. We have that happen a number of times. (Group I)

Another woman vendor argued,

Flooding or high tide can make the bridge impractical and dangerous. A warning on the mobile would be very helpful. (Group IV)

As is clear from the statements above as well as group discussions, mobile phone uses and development are seen as a service to the community as a whole. This aspect can help reduce mobile phone costs since the whole community is involved in a particular service.

Experiences of mobile uses and people's development in Group Discussion

Session One

The data set of group discussion session I was analyzed, saturation was reached, and three major experiences were discerned. First, groups saw mobile phones as a protector and informer of the community just like radio.

It is always gratifying to realize that mobile phones can and has helped protect the community on several occasions. One time, we received a warning about a flooding. And people stayed away from the lake. (Group I)

A man explained,

When we heard the news about Ebola in West Africa, some people kept asking those had a mobile or a radio for updates. (Group IV)

One woman recounted,

Several years ago, news broke about swarms of locusts in North Africa, mobiles could have been helpful. Though we never had any swarms of locusts here. We only have ordinary tasty grasshoppers. (Group II)

More than a simple tool for chatting and texting, mobile phones were seen as a news forum and a shield of the community.

Second, mobile phones were seen as a financial contribution to the wellbeing of the community. Several times, it was not known who covered the charges/fees for texting or calling in relation to a given service for the community.

Some mobile phones are taken care of by volunteers who do not always give out their names or that of their family. (Group IV)

A person declared,

There is a mobile in our neighborhood, and we have no idea who puts the credits on it.

(Group I)

Another person related,

Some of the young men like to play around with mobiles. We see them take a mobile or two to chargers by bike. (Group V)

The statements indicate that mobile phones and their services can be taken care of by the community's members.

The third and last experience to do with mobile uses and development is that of people with special need(s), which means that mobiles can help, for example, a disabled person within the community.

Since we take care of the disabled people, mobile phones have been used to assist these people. (Group III)

As a woman narrated,

A few months ago, we had a group of strong men from the village repair the roof of a blind lady in a few hours, which usually takes days or weeks, if it is done by one person. The men were used a mobile several times. (Group V)

As one man described,

We usually help those with special needs. And people volunteer to charge or use the mobile for them. (Group IV)

It can be argued that individuals with special needs may very well benefit from some discount from mobile carriers and/or state officials. Within the community people tend to volunteer to help one another, especially disabled individuals or those in need. Voluntary work becomes a tool with which to ensure a society's services, and can be available free of charge.

Interpretations of mobile uses and people's development in Group Discussion

Session One

The data set of group discussion session I was analyzed, saturation was reached, and three interpretations were observed. The first interpretation made of mobile uses was that of special-need capabilities in order to help the disabled people within the community.

The power of a society lies in its ability to know and attend to those with special need(s). Special need is not always, though it is, related to a disease or disability, but to situations that require sustained attention. (Group V)

One woman declared,

Mobiles can provide information on how to attend to those have a more or less big harvest, to protect their products against termites. That will give a huge capability to people. (Group III)

Another woman said,

During the mushroom season, mobiles can give information to people as to how to best preserve mushrooms. People usually have huge quantities of mushrooms more than they can handle, some people dry them. The same is true of caterpillars, crickets, aunts, winged termites, etc. (Group II)

The statements highlight the facts that humans can all have special needs, depending on the situation at hand. Situations vary, based on the location, individuals, season, time, day, etc. For

example, falling roof or branches might not be a special need, but they require some specific attention in order to prevent a worse situation from happening in the community.

The second interpretation was of that of community-owned centers of mobile phone services.

Mobile phones can be distributed and operated within community-owned centers so that the proceeds are used for the community. We have the same policy for teaching diverse skills to adults and young people (e.g., swimming, hunting, singing, grinding flour, cooking, plowing, gardening, etc.). All these “jobs” have been learned and passed on to generations through community-driven teaching(s). There are places where those teachings can be taught. Booths, that we see here and there distributing mobile phone cards, would not be appropriate for such community-based activities since they do not involve permanent/decent facilities. (Group II)

As a man delineated,

The village could have its own community-managed mobile services, such chargers, batteries, prepaid cards, etc. (Group III)

As another man emphasized,

Some people can be trained in mobile phone activities, just as we have people trained for certain types of works such as gardening, roofing, thatching, matting, etc. (Group V)

Booths or kiosks were seen to be impractical, especially under inclement weather or when more people were interested in learning. Also, the idea was to allow the generation of community funds by using/offering mobile services.

The third and last interpretation was that of mobile services paid for by others to meet people's needs.

Just like any expenses, we can also make payment with our agricultural products, based on a person's possibility or harvest. One can offer corns or potatoes in order to have a mobile phone charged, for oneself or a beloved or someone else in the community. (Group I)

A woman specified,

One of the amazing things of the community is the people who volunteer to cover the fees of mobile services in the community. (Group III)

As one man put it,

People are poor, but they are rich with their capabilities, for example, to raise crops, collect mushrooms, catch crabs, etc. and give the proceeds for the community. (Group V)

For example, a person could grow tomatoes and keep the proceeds in a community fund to be used upon request or necessity. This allowed the poor to open a form of bank account or credit by using or offering the products of their labor. The use of mobile phones in this context fostered community engagement in which kiosks were installed or embedded. This is also, as discussed earlier, one of the ways kiosk vendors viewed mobile services, namely: a non-paid and low-profit work done within the community (see Figure 19).



Figure 19: Community-Centered Mobile Services

As shown above, in this context the community is the central nerve in which all other activities are rooted and thus encourage greater cohesion and better individual actualization.

Summary

Groups of Session One were aware that for the poor the cost of mobile phones was hard to overcome. In the same way, mobile services associated with kiosks, m-banking, market opportunities, and prepaid cards were not seen as productive as they should be for the community. It was thought that these activities only provided temporary solutions. Volunteers were seen as a dynamic with which to ensure various services within the community. Therefore, community-centered mobiles were conceived of as a tool with the goal to serve community building, people with special need, community funds, and credits for the poor.

Case study five: Group Discussion Session Two

Introduction

One of the distinctive dimensions of a community is its classification based on profession. Profession is a key component by which a community's members ensure their survival. Since mobile phones have been spreading across communities, professions provide another view on mobile phone uses in rural areas. As with Group Discussion Session I, participants of Group Discussion Session II were gathered in the main hall in order to be briefly informed about the unfolding of the discussions and the research questions. To achieve greater in-depth and consistency suited to the nature of this study, the same research questions as those of Group Discussion Session I were asked. However, participants of Group Discussion Session II were grouped based on people's professions. Eight discussion groups were formed and included: (1) mid-wives, (2) artists/craftsmen, (3) healers, (4) builders, (5) gardeners, (6) traders, (7) teachers/sages, and (8) storytellers. This section engages with the findings of Group Discussion Session II in which the responses of the groups regarding the uses of mobile phones and people's development were collected (see Figure 20).

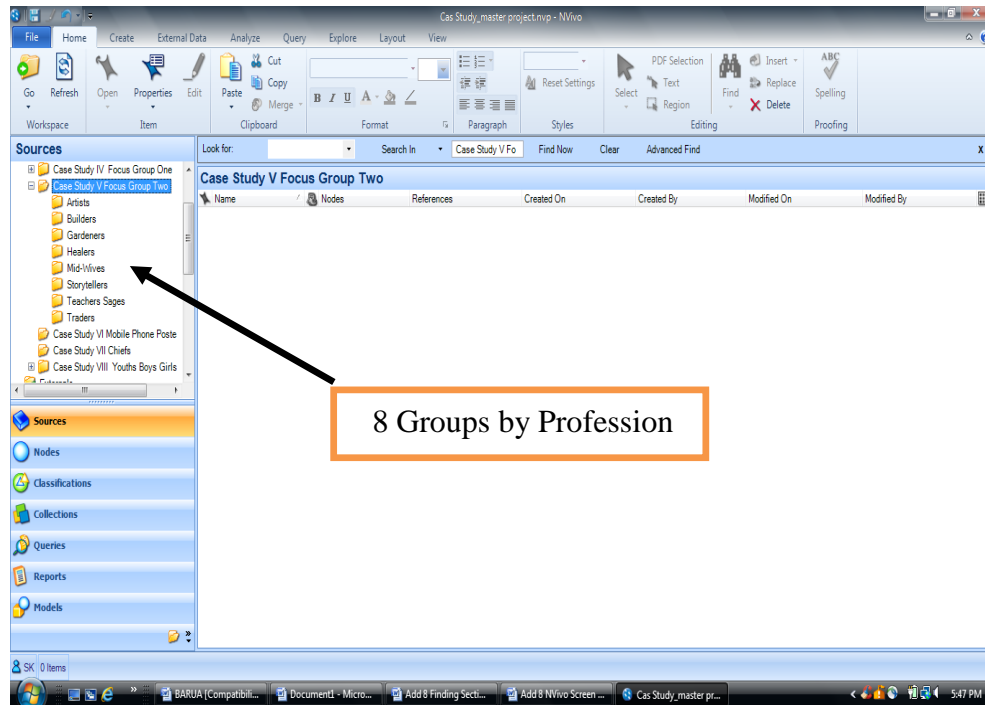


Figure 20: Discussion Groups by Profession in NVivo

Because of their professions relating to the group, each group had a specific set of issues and recommendations of mobile phone use in the community and of development.

Characteristics

The data set of group discussion session II was analyzed, saturation was reached, and three major characteristics featured the eight selected professions and related discussions (see Figure 21).

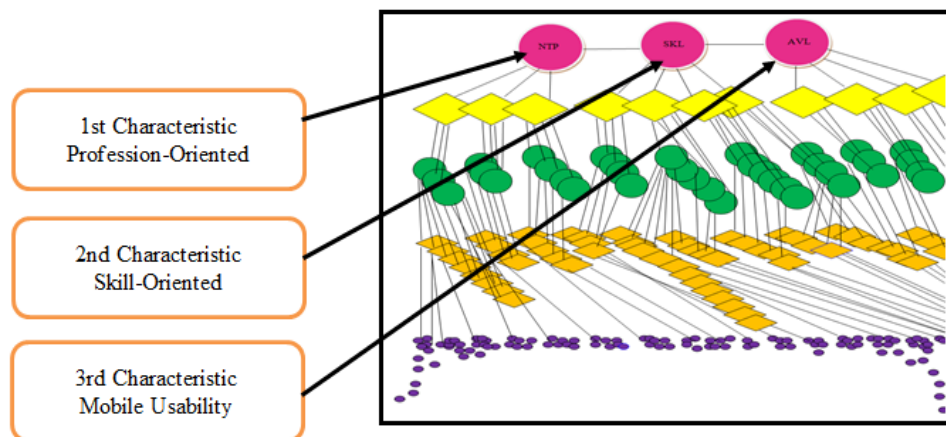


Figure 21: Characteristics of Discussion Group Session Two

First, people were not professional or qualified in the strict sense of the word, but they had a profession-oriented practice or role.

I have not studied this (gardening) in the city or any school. But I have been doing this since I was a little boy, with my siblings and parents. I am also using mobile phone in the same way, of trial and error practice. (Gardener I)

A gardener specified,

You garden by watching and working in the family's backyard and crops since a garden is sort of a section of a family's pantry. (Gardener VI)

Another gardener testified,

I cannot imagine a meal without a garden. All produces come fresh from the garden or the crop. In my family, each member of the family, from the youngest to the oldest, has a garden in the backyard. (Gardener II)

The second characteristic was the focus on skills and familiarity with certain practice(s). As for any activity, skills are needed in order to make progress or ensure efficiency. As a woman specified,

Mobiles are not a manual of those who go to school, but a tool with which I can gain specific skills in undertaking my job. (Healer IV)

Another woman emphasized,

Skills are the core feature of a community. Without skills, there are no human beings in the village. (Artist IX)

Still another woman asserted,

A job is the implementation of a person's skills. In our community, skills are taught from generation to generation despite the fact some people are born highly skilled in one domain or the other. (Trader VI)

Third and last, Group Discussion Session II was particularly concerned with mobile phones as a tool and their availability and manipulability.

We need to know what tools to use, at what time or in what place. Mobiles follow the same pattern so that someone knows how to use them. (Builder II)

One mid-wife pointed out,

All technologies had to be learned when they were introduced in this community, such as bike, radio, canoe, hew, mortar, grinder, etc. (Mid-wife X)

As a builder delineated,

As with any technology that had made its way through the community, mobile phones have to be assimilated or taught locally in order to be transmitted from generation to generation. It does not mean that there are no specialized skills or techniques, but that the basic skills need to be locally known and taught. (Builder III)

Mobile phones serve as a means of communication, but they are also, perhaps more importantly for this community, a tool that one needs to know when and where to use, enabling people to make a multiple use of this technology.

Context of mobile uses and people's development per profession

The data set of group discussion session II was analyzed, saturation was reached, and three major contexts denoted the eight selected professions and related discussions. First, mobiles were used as a tool to achieve certain tasks, direct or indirect. A direct task has to do with mobile phone, for

example, text, call, beep, etc. An indirect task is one that is performed by contacting a professional, for example, mid-wife, artist, healer, etc. using a mobile phone.

We need to know the tasks at hand in order to use a mobile phone. Many times, we see mobile phones being used simply as a recreational or chatting device. But, just like any technology, they can and should be used for the tasks of manual labor. (Builder IX)

As a woman put it,

The features of mobiles need to be explained in light the ordinary tasks that people perform. (Teacher IV)

As one trader portrayed her context,

Communication is not all that people do or live, there are other priorities that we have, and mobiles need to be used in light of these priorities or basic needs. It simply means that people do not eat communication, they do not shower with communication, etc. (Trader IX)

The idea here is that task is broader than information uses. Task involved any profession-oriented activity in order to maximize efficiency. In other words, a mobile phone could be used for something other than mere information or communication, for example, to view pictures, provide light, or an alarm, etc. As Aker and Blumenstock (2015) specified, “unlike many ‘single use’ technologies (such as seeds, fertilizer, chlorination), the mobile phone serves as a multi-use platform for other services” (p. 355, see also Carrillo & Subrahmanyam, 2015, p. 82).

The second context is one where people were in the middle of a specific profession such as gardening, sculpting, grinding, etc.

It is gratifying to see a mobile being used when I am in the middle of sculpting a piece of artwork. I have measured the size of artwork using a mobile phone. (Artist X)

A storyteller indicated,

An activity at hand can be a reason for people to use a mobile phone, to receive additional information or to accomplish a specific task that could not be accomplished otherwise.

(Storyteller VII)

As one man recounted,

Canoeing or kayaking is one of the best examples where mobile phone can be used in the middle of an activity. (Healer I)

One can use a mobile, just like any object, to measure the length of a wood or branch in order to do some work on the wood. This is a rural society where rulers are not necessarily known or used. People use branches or objects to estimate the length of an artwork or object.

The third and last context concerns continual readiness in that tools and skills may be needed and mobiles may be used to access resources at any time.

We do not have rigid work hours so that mobile phones can be turned off or put aside at certain times, as we hear from the radio in the city. Just as a gardener can go the garden any time of the day, so too a mobile phone can be used any time of the day. (Trader III)

As a woman described,

Since most of the professions we have are needed any time of the day, mobile phones have to be usable at any time. (Artist VIII)

A man argued,

Keeping watch over the crops at night when the harvest is near requires the use of mobile phones. (Teacher II)

The idea is that there is no time specifically designated for mobile uses or manual labor. Tools are used as the need arises. The idea also implies that development cannot be restricted to certain times, places, and activities, but that it encompasses all spheres of human existence in rural areas. This is a society that does not have specialized services of civil engineering that one can call or notify when a need arises, for example, a fallen tree in the backyard. Therefore, needs have to be addressed as they arise, and “experts” have to be called on accordingly.

Experiences of mobile uses and people’s development per profession

The data set of group discussion session II was analyzed, saturation was reached, and three major experiences set apart the eight selected professions and related discussions. First, mobile phone use and development are a profession-specific process. The idea is not so much about the context in which mobile devices can yield development, as it is about the activity or service to which it is directed. A service is not bound to a context, but can be performed by certain experts across communities, villages, or places.

Mobile phone is a tool geared to a specific activity, be it gardening, teaching, knitting, baking, sewing, weaving, etc. (Teacher IX)

As a woman explained,

Every professional uses mobile phones according to their agendas and needs. This creates an expectation that a mobile is a profession-geared tool just like a bike can be used in all professions in the village. (Mid-wife VII)

A trader narrated,

When I see a mobile I see my skills and their needs. A mobile is like a meal that contributes to the health or progress of every professional. (Trader IV)

The point made above shows that not only is development specific to a context, but it is also geared to a given service in the community. Also, this and similar points of the findings highlight

the fact that there are sporadic instances where mobile phones produce or can produce development among rural populations, but, as is clear from group discussions and the responses of other groups, participants suggested an integrated/holistic system or service where mobile phones can fully expand people's capabilities by responding to people's struggles for survival. This confirms an increasing awareness among development researchers (Harriss, 2014; Grabowski, Self, & Shields, 2015; Giugale, 2014; Mosse, 2013; Peet & Hartwick, 2015) that development is a *sustained* and *integrated* endeavor to allow a fuller and better life of people. Indeed, as is also clear from the findings of chiefs (see below), for instance, the struggles for survival encompass all spheres of life since no state-run or private service such as hospital, school, store, farm, etc. is in place to cater to people's basic needs.

The second experience is that of basic needs in that services are very often an attempt to respond to a primary need experienced in a given community and place.

I look at the shelter to see if I need to text or call a builder in the next few weeks or months.
(Builder VI)

An artist declared,

When the grass in the backyard is getting s tall as my door, it is time to use a mobile to have it cut. (Artist IV)

As one teacher related,

The rise of water at the well is an indication that some people need to be called upon to clear the stream. (Builder III)

Basic needs are therefore an important dimension in the understanding and implementation of a society's development.

Third and last, mobile phone uses and people's development go beyond traditional basic needs in that they can and should fulfill the need of entertainment or storytelling.

As humans we like stories, and mobile phones are tools with which people can just chit chat, with no specific goals. (Storyteller IX)

A woman delineated,

Just like any technology in the community, the mobile comes to us as a story to be lived, improved, shared, etc. (Trader III)

As a man said,

Reading stories on a mobile will make it a community-building tool. (Builder VI)

One of the dimensions of people's development is their desire to spend time talking, joking, and laughing. Storytelling is more than mere entertainment such as sport, game, play, etc.; it implies the process of expressing one's thoughts in informal ways. As a wise woman put it,

Story is not just a voice/person describing a specific event, but the processing of or the connecting with one's dreams, ideals, and perspectives through symbols, arts, signs, trees, rivers, birds, people, mountains, etc. Reality around us is filled with stories in which each finds a place or home one way or the other. Growing tomatoes, for example, is a story, with roles, actions, goals, objects, etc. So one can live a story of development, and improve their lives. One can live a story of peace, and ensure the safety of the community. (Storyteller III)

A woman testified,

Everything or experience you share becomes a story to which people are interested in participating. (Teacher X)

As another woman put it,

Development itself is a story of how people live their capabilities day after day using a mobile phone or any technology. (Mid-wife IX)

The quoted statements suggest that development is a story or stories in which people share roles, objects, actions, and goals to fulfill their capabilities/opportunities. The statements corroborate earlier findings that “stories are not fictions, in that they must sustain a meaningful interpretation of ongoing activity for participants... This conjoining of stories [within the community] highlights the sensemaking aspect, in addition to the persuasive element involved in storybuilding” (Millerand, Ribes, Baker, & Bowker, 2013, p. 13). As also seen in games and activities held during group discussions, the persuasive and sense-making aspects of stories motivate the community to pursue and fulfill its capabilities.

Mobile phones can echo that fulfillment in many ways. The point is that “stories become... interacting narratives that prompt discussion and create shared meaning” (Millerand, Ribes, Baker, & Bowker, 2013, pp. 13-14). What is unique to a story is that it involves everybody, regardless of who they are in the community. Pertinently, Aristotle (*Politics*, 1253a 10) showed that one of the key features of humans is their ability to tell or act on stories. A story can be played, repeated, sung, narrated, sculpted, imitated, internalized, etc.

Interpretations of mobile uses and people’s development per profession

The data set of group discussion session II was analyzed, saturation was reached, and four leading interpretations distinguished the eight selected professions and related discussions. The first interpretation was one where professionals value the idea of skills in order to best use mobile phones.

We have a hard time to see a mobile phone without the skills we need every day in our profession. The rainy season is one of the most demanding periods of the year because that is when we do a lot of gardening. Some of the soils can be better for gardening in some

places than in others. With a text or some information on a mobile, one can be warned against gardening in some places. The same is true of other professions. (Gardener I)

A man declared,

The professional knowledge stored on a mobile can be helpful in time of danger or when it is most needed. (Builder X)

As another man said,

Every success made, in fact, every story of a profession can be saved and shared on a mobile. (Gardener IX)

These and similar statements show that skills could be acquired through mobile phones regarding some locations where gardening, for example, is difficult. Maybe the soil in that place does not have the necessary nutrients for plants, and therefore gardeners can be warned.

The second interpretation of the eight selected professions, closely related to the first, concerned the tools needed for their profession. As Healer III remarked,

Tools have their ebbs and flows. Tools are good when they do the work. But, tools are bad, when they no longer do the work. That can be disappointing when you expect it the least. Maybe, mobile phones can tell or warn people who specific tools.

A mid-wife specified,

Going to save a life without the needed tools can be challenging for both the patient and the community. A mobile can feature a list of the tools required for given professions. (Mid-wife III)

As one man put it,

Information shared on a mobile is or should not just about conversation between people, but perhaps more importantly about the tools or technologies used in the community.

(Builder V)

The idea shows that participants were using tools without knowing how long or when a specific tool might need replacement or parts. Information via mobile phones on where or how the parts can be obtained would be helpful.

The third interpretation of the eight selected professions involved the services rendered. As one man explained,

In order to get the best results of any work, services should be rendered in due time. Just like one cannot do the thatching of a house in rainy season because the grass is green in the wood, so too one cannot harvest when it is time to plant. People need to be aware, and ask for services in due time, if not ahead of time. Some mobiles have calendars that can be of help to people with special needs. (Builder IV)

An artist indicated,

A service becomes harmful when it is done at the wrong time and wrong place. Mobiles can help people in this regard by conveying the needed calendar or map. (Artist III)

As one builder clarified,

A disabled person may not know when and where a given service is to be supplied. This is something a mobile can provide. (Builder VIII)

The above and similar statements show that services need some planning or calendaring, and that mobile phones could help those with special needs.

The fourth and last interpretation of the eight selected professions was about storytelling. Interestingly enough, while storytelling was understandably the feature of storytellers, all professions insisted on having or sharing stories or narratives about their respective works. As one mid-wife mentioned,

A work without narratives is dry and unproductive because it does not communicate, share, or describe its day-to-day activities. Narratives teach everybody. (Mid-wife XII)

A woman specified,

Just as games are featured on a mobile, so too stories can be listed by profession or task. (Healer VIII)

As one man put it,

It is the stories we tell that teach people the things they need to know for themselves and for the community. (Trader XII)

The statements cited above confirm the oral nature of rural societies where stories are a key factor of community life. The statement also speaks to collaboration between professions instead of competitiveness, for example. Collaboration might be partly because these professions are primarily voluntary work, as opposed to money- or profit-driven activity.

In essence, mobile phones and people's development lie at the core of professions, to which respective skills, tools, and services contribute to bring about human fulfillment (see Figure 22).

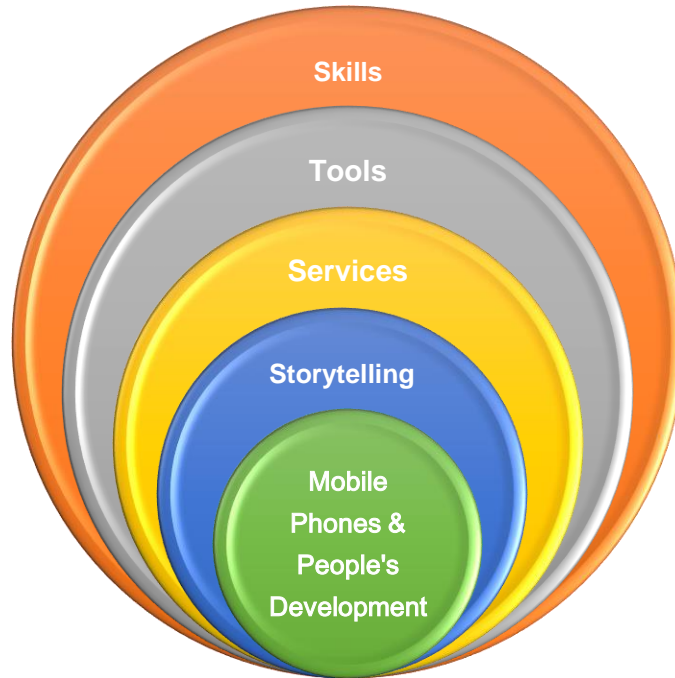


Figure 22: Skills and Services Model

The diagram underlines the fact that professions in rural areas are not professions in the abstract/academic sense of the word, with diplomas and/or certificates conferred to people. Rather professions concern the skills, tools, services, and stories that accompany people in their struggles for survival. This means that there is a continual interplay between the elements summarized in the diagram. In other words, a tool brings skills, and skills allow the person to provide a service, and a service is undertaken with a story to best involve the person. This is the model in which “professionals” in rural areas receive mobile phones and the idea of people’s development. Put differently, a profession has to have a concrete impact upon people’s struggles to survive, by allowing skills to be learned/taught, tools to be best used, services to be rendered, and stories to be told or acted on to honor the profession or role. Mobile phones are not an exception in this process.

It is clear from the above interpretations that skills, tools, services, etc. do not carry any anti-Western motives seen in many development circles in relation to information technologies and people’s development. Groups were also friendly despite their professional boundaries. Also, each of the above interpretations speaks to a specific profession/role, and thus constitutes one of

the many facets of people's development and their uses of mobile phones. Not one interpretation noted in Group Discussion Session II was said to replace others or exclude novel ones, based on the needs at hand. In other words, the community seeks to pay attention to all its members, and thus strives to attend to people's needs as they arise, with no preference for one need or person over the other.

Summary

Groups of Session Two Since brought to light the pristine context in which tools and skills are being mentioned. It was observed that there was no specific anti-West, anti-White, or anti-colonial categories similar to the ones usually expressed in development circles (Giugale, 2014; Harriss, 2014). Post-colonial ideas seemed to be limited to urban or political areas and related literatures. Since development was seen as the process that enhances skills and related tools, mobile phones were understood as a tool of development, based on the need(s) at hand.

Development was regarded as a context- and service-specific process in which people can enjoy the use of mobile phones. Basic needs were broadened to include informal chatting or storytelling. Storytelling was presented as a practice that goes beyond the mere human voice to include reality around us as a story or stories in which humans engage to achieve their actualization. This confirms the view of reality as a stageplay in which people share roles (Goffman, 1959). This is particularly understandable in an oral society wherein stories are key to the acquisition and transmission of culture, language, profession, knowledge, etc. In this context, mobile phones can be integrated into stories to enable people to make the most of their capabilities/opportunities.

Case study six: Mobile phone posters

Introduction

In recent years, overwhelming empirical evidence in the field of behavioral research has been showing that "humans are visual creatures" (Lu & Doshier, 2014, p. 3, see also Peoppel & Overath, 2012, p. 2; Koch, 2004, p. 1108). Mobile phones owe much of their rapid dissemination to the visuals that inundate social daily activities and places. Visuals cut across times, cultures, backgrounds, professions, locales, etc. Humans see and consume visual products without even

realizing the “visual noise” (Peoppel & Overath, 2012, p. 6) or ubiquity in which they live. Mobile phone posters were not originally planned to be studied, but they were brought to light when using ecological method. To recap, ecological method aka ecological sampling (Krebs, 1999; Manly & Navarro, 2015; Navarro & Díaz-Gamboa, 2015; Nomani, Oli, & Carthy, 2012) is a method employed in biological and life sciences in which the researcher samples species or plants within an area marked with an imaginary line (*transect line*) and points set at intervals around the line in order to obtain a sample of species or plants that is the most representative of the area. The transect line can be enlarged (*belt transect*), *stratified* (depending on the density of species underneath a place, or *random* (depending on the size of the place). This method has been applied in the social sciences to ensure that groups or populations that might be of interest in a selected area are not overlooked. Mobile phone posters were found a few feet away from booths and main roads. This section reports on the findings related to 12 mobile phone posters encountered in the area. The chapter seeks to capture the experiences surrounding mobile uses and people’s development as seen or implied by investigated posters. Since mobile phone posters are protected intellectual properties, owned by communication firms, their pictures are not reproduced in this study.

Characteristics

The data set of mobile phone posters was analyzed, saturation was reached, and three major characteristics were determined (see Figure 23).

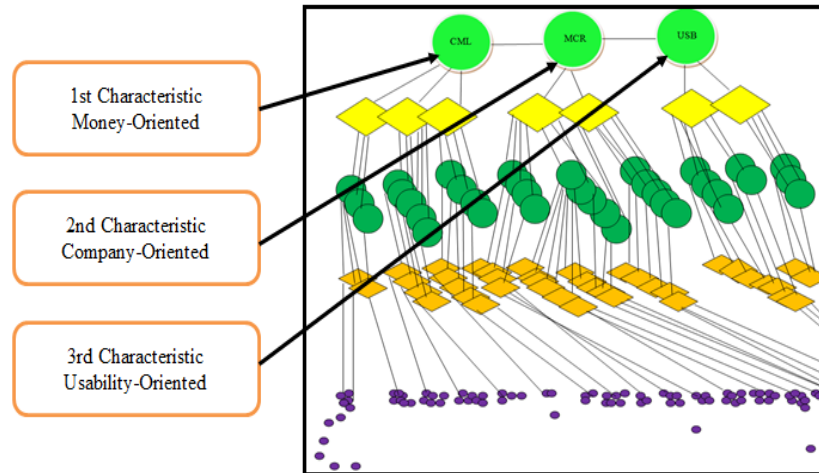


Figure 23: Characteristics of Mobile Phone Posters

First, posters are commercial, with the rationale of making profit. For example, one poster said,

Airtel money. (Poster IX)

Another poster stated,

Earn more credits. (Poster III)

Still another indicated,

With your money, you can connect. (Poster XII)

Second, posters are geared to the needs of the mobile phone carrier. Third and last, posters tend to revolve around the usability of mobile phone devices. Poster VI, for example, read,

Simple, sure, and instantaneous.

One poster said,

Easy to text with. (Poster IV)

And another poster claimed,

Now with the Internet available. (Poster VIII)

The statements show how the functionality of mobile devices takes prevalence over the lives of customers regardless of whether the customers live in urban or in rural areas.

Context of mobile uses and people's development according to posters

The data set of mobile phone posters was analyzed, saturation was reached, and three contexts were spotted. The first context of mobile uses and people's development is the satisfaction/gratification people might have in using mobile devices. The second context is the systematically advertized dissemination of mobile phone uses.

As Parent XXVIII remarked,

The advertisements we see and hear about mobile phones are overwhelming. It is almost like if you do not have a mobile phone, mmmm... something must be wrong with you.

As one poster advertized,

We cover all the provinces. (Poster I)

Another poster stated,

With offices in remote places of Congo. (Poster VII)

The spread of mobile phones does not come randomly, it is advertized, sponsored, encouraged in order to reach the highest number of people. The third and last context of mobile uses and people's development according to posters has to do with mobile phone design, in which customers are not involved. Mobile phone users are seen as mere consumers, and their living conditions are not the concern of mobile phone carriers.

Experiences of mobile uses and people's development according to posters

The data set of mobile phone posters was analyzed, saturation was reached, and three experiences were noticed. The first experience seen in mobile phone posters with regard to mobile uses and people's development concerns the payment of bills or of mobile phone devices. Payment of bills or avoidance of debt has become one of the major topics of mobile phone posters.

Poster II noted,

My mobile is easy to pay, easy to buy, and easy to use.

Another poster stated,

Also with credits. (Poster IX)

Still another advertized,

Easy way to pay. (Poster III)

The statement does not imply the living conditions in which a person may or may not be able to buy a mobile phone.

The second experience is that mobile phone posters tend to target or serve the nation. For example, Poster X noted,

Congo my country. Airtel my network.

Another poster read,

Number one in the Congo. (Poster VI)

Still another claimed,

Best network for Congolese. (Poster II)

The statement presupposes the need of or pressure on mobile phone carriers to comply with the nation's aspirations.

The third and last experience concerns the fact that mobile phone posters read as instructions and orders to which people should adhere. Poster IX noted,

M-money.

One poster displayed,

Just click to text. (Poster IV)

Still another indicated,

Talk and send messages. (Poster I)

The statement implies that money is needed to use mobile phones. Whether the user is or is not able to afford the mobile phone service is not the concern of mobile phone carriers.

Interpretations of mobile uses and people's development according to posters

The data set of mobile phone posters was analyzed, saturation was reached, and three dominant interpretations were observed. The first dominant interpretation of mobile phone carriers as seen in posters is to be found in the company- or business-centered design of mobile phone carriers. Put differently, mobile phones are designed to ensure the productivity of the mobile phone company and of its business than that of mobile phone users. As one respondent claimed,

I always wondered if mobile phone carriers have the time to consult local customers before they implement a given mobile service or device. (Parent XXX)

Poster VIII stated,

Join the biggest mobile provider in the nation.

As one poster put it,

With the highest number of customers on the continent. (Poster XII)

The lack of infrastructure might be the reason why local populations are not consulted in relation to mobile phone products and services.

The second dominant interpretation related to the first, is that mobile phone carriers tend not to be aware of the need for development in rural societies. None of the posters mentioned the prosperity, infrastructure, wellbeing, productivity, etc. of mobile phone users. The third and last interpretation, related to the second, concerning mobile phone posters is that the rules and policies in place do not seem to include the development of rural societies as a priority. Mobile phone carriers are willing to comply with the government aspirations rather than addressing the situations of people. This means that the goals and understandings that mobile phone companies have of mobile phone uses differ widely from those of mobile phone customers, and reflect a money-driven cycle (see mobile phone cycle on Figure 24).

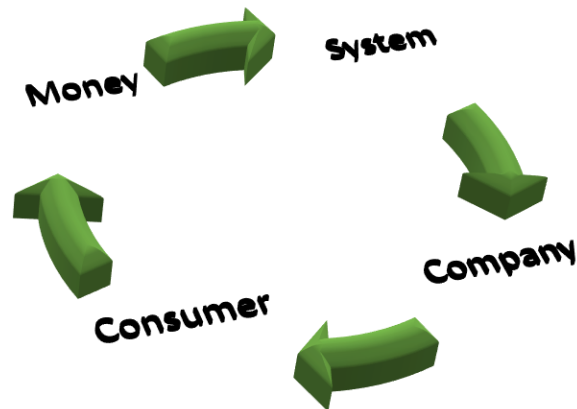


Figure 24: Mobile Phone Cycle

Summary

Mobile phone posters were far from a user-centered design and service of mobile phones. Mobile phone carriers tended not to take into account the living conditions of users in rural societies. Similarly, mobile phone posters assumed that people in rural societies were rich or well paid and thus had cash any time. No incentive was given by mobile phone carriers to rural populations to move from poverty to better lives. Messages on mobile phone posters did not display rural population-oriented statements. The spread of mobile phones was seen to be not a random process, but a well advertized, sponsored, and planned market.

Case study seven: Chiefs

Introduction

Chiefs are one of the most common social classes of rural populations. The word chief might be misleading since it usually implies absolute authority and subjugated individuals. Chiefs in this rural area are more of an icon of cohesion within the community than an authority to whom people are submitted. Chiefs are named or enthroned, according to heredity, to represent the community before state officials. Some chiefs are teenagers when they are elevated to the throne, although none of those interviewed in this study were teenagers. Some chiefs were in their twenties, others in their thirties, and still others were a little older. Age, just like education, was

not specifically investigated nor asked in this study, received responses and different signs or events were used to get a rough estimate of people's age. For example, teenagers tend not to have beards. Respondents who could relate with more or less detail to the first and second elections held in the Congo in 2006 and 2011 respectively were most likely to be in their twenties and/or thirties. Those who could provide some more or less detailed account of Mobutu's fall in 1997 could be in their forties and those who could with some detail connect with Mobutu's reign in the late 1960s, 1970s, and 1980s were most likely older. National events are usually heard on local radios.

This section outlines the findings drawn from the interviews of 16 chiefs regarding the uses of mobile phones and people's development. The section aims to bring to light the experiences that chiefs in rural societies in remote areas of the Congo have of people's development and of mobile dissemination in their daily lives. A quick recap of the four selected layers/levels of phenomenological in-depth understanding might be in order here. Characteristics relate to the visible or engraved marks or signs that distinguish something or someone. Context has to do with the physical/exterior world of a phenomenon. Experiences refer to the inner world, and thus include the feelings, emotions, perceptions surrounding something or someone. And interpretations concern the cognitive/mental world, and thus entail the worldviews, reflections, perspectives, beliefs, etc. surrounding something or someone.

Characteristics

The data set of chiefs was analyzed, saturation was reached, and three major characteristics were detected (see Figure 25).

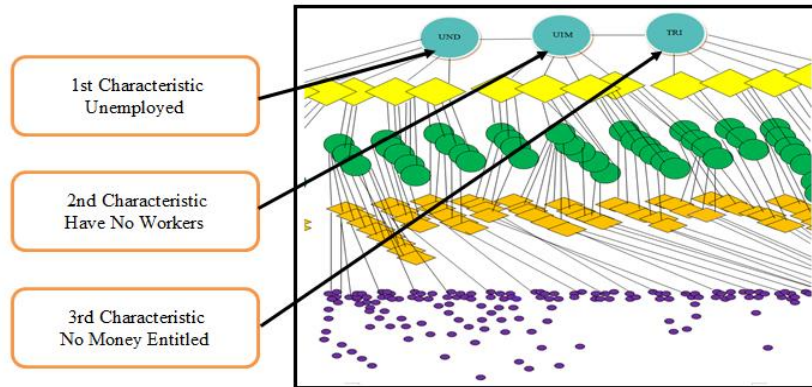


Figure 25: Characteristics of Chiefs

First, chiefs do not have a clearly defined job description. Chiefs do not have absolute power upon people in the sense of the word for example, army, police, radio, TV, etc. Chiefs are also members of the community just like any others. They have families, they raise crops, seek firewood, make water reserves, etc.

As Chief IV stated,

I should be able to meet after I return from the crops and after we have enough water in the house. It should be late in the evening.

One chief said,

Although I am the community's chief, I am just a member of the community as any member. (Chief VIII)

Another chief testified,

Being a chief is simply a title just like being a teacher or corn grower. I have to take care of my family. (Chief XVI)

The statements show that chiefs have needs to attend to just like any member of society. Second, chiefs do not have workers to do the job for them. Labor is taken care of by the chief's family or by volunteers when a need arises.

Chief IX explained,

I am the representative of the communities here and of those in the surrounding areas, but I do not have workers assigned to my family. This is not even an issue to be discussed or raised in our community.

As another chief affirmed,

Chief does not mean that I have workers to do what I want or command. That would be a big mistake. (Chief I)

Still another chief asserted,

It is not the logic of the community or the culture for the chief to have workers. The chief would not be able to pay those workers and nobody in the community would be willing to cover those expenses. (Chief VII)

The chief's family, for example, wife, siblings, children, etc. has the responsibility of taking care of the chief and his needs. Third and last, chiefs do not exact tribute nor require money or gifts from people.

Chief III related,

My role is not to require money or assets from people in my kingship. We all work, and our children live just like any children in the village. Also, there are many children or siblings in the chief's family who are not or cannot be king. They have to live. When special

treasure or species is found or hunted, the chief can receive the tenth of the discovery, and nothing more.

One chief put it,

It is neither the role nor the goal of a chief to exact money, gifts, or possessions from the community. Just family members, the community or friends can offer gifts to a chief on a purely voluntary basis. (Chief X)

As Chief XIV pointed out,

The chief is a member of the close and larger family of the community. As such it is inappropriate and unimaginable for a chief to ask or require items from your own brothers and sisters.

The statements show that, although a portion of a discovery can be given to the chief when a special species is hunted, chiefs have to look after themselves.

Context of mobile uses and people's development among chiefs

The data set of chiefs was analyzed, saturation was reached, and three major contexts were discerned. First, to maintain their relationships with people chiefs do not use mobile phones. They prefer and privilege the natural bond which ties the members of the community with one another.

I find the natural bond with the community's members to be much more effective and lasting than mobile phone communication or any information technology. In case of an emergency, I can use a mobile phone or someone can use a mobile phone to contact me. But, again the direct contact with the concerned remains the priority. (Chief XII)

As one chief argued,

The core value of a chief is not about the technologies found in the community such as radio, mobiles, bikes, canoes, etc., but about the bond that unites him with all the members of the community. (Chief II)

Another chief indicated,

A chief finds his strength and essence in the members of his family. And the community constitutes his close and large family, with whom he and his children live and interact daily. (Chief VI)

The idea of building the community is more important for chiefs than mobile phone or radio communication. This makes sense since chiefs are interested in knowing people and their realities in the community. Second, perhaps the most common context in which mobiles are used in relation to people's development is where people may or may not use mobile phones to express their desire to participate in a given service.

People might contact me or my wife or my children when they choose to do so. But, they do not have to. I do not want to be in a situation where only those with mobile phones can be seen or can communicate with me. (Chief XV)

One chief explained,

It is the case that mobiles are important in the community. Some people might use a mobile to contact a chief in order to achieve a certain service for the community. But mobile and any similar communication are not the only channel of communication between the community's members, including the chief. (Chief III)

Another chief declared,

Communicating on a mobile is only valuable when it serves the needs and members of the community. (Chief XI)

The statement showed that despite the ability offered by mobiles to rapidly communicate with a chief, the interaction or relation with chiefs was not based on the use or ownership of mobile phones. Third and last, chiefs might use mobile phones to contact or respond to friends, siblings, or relatives.

My grandchildren can text me when they can afford since mobile phones depend on the extent to which a family is able to cover the communication. (Chief II)

One chief narrated,

The first and last time I use a mobile was when one of my grandchildren contacted me to inform me about his crops. (Chief IV)

Another related,

I might receive a message on a mobile that one of my children have, but I am not even aware of how they use it. They have to explain me almost everything on the mobile. Some of it I understand, some of it I do not. (Chief XII)

This use of mobile phone varies from one chief to another since this depends to some extent on how wealthy they are. Some chiefs are poor.

Experiences of mobile uses and people's development among chiefs

The data set of chiefs was analyzed, saturation was reached, and three major experiences were ascertained. The first experience of mobile uses and people's development among chiefs is that mobile phones are not an important tool when it comes to the power/role assigned to chiefs. As Chief VII admitted,

I would be fooling myself if I were to rely on mobile phones. I have seen and used mobile phones. They are tools just like any others we can find here. Mobile phones are even more costly.

As another chief described,

I have been elevated to the throne of chief by virtue family lineage, and mobile phone or any technology is not what I need in order to acquire and ensure my kingship. (Chief V)

Still another chief recounted,

I had once a foreigner visitor asked why I did not want to have a mobile phone. My answer was it is wise to keep the role of the chief and new communication means separated. It keeps me and the community free of any unwarranted greed of new information technology. (Chief XIII)

The second experience to point out in relation to mobile uses and people's development among chiefs is that development is provided by volunteers, not mobile phones.

Our work of development is the work of dedicated volunteers who often sacrifice their lives. That is what keeps our community as vibrant and healthy as it is or is trying to be. (Chief X)

As one chief said,

When a need of repair arises in one or another area of the community, there are brave volunteers who show up to resolve the issue at hand. (Chief I)

Another chief claimed,

It is the work and dedication of volunteers that keep the village infrastructure decent, such as bridges, springs, showers, toilets, etc. These volunteers do a good job, despite the limited tools they have. (Chief XVI)

Volunteers often step up to the plate when a need arises. Volunteers have to do that work because no official or state services exist in the rural areas. Volunteers play the role of what is called utility services or civil engineering in Western societies.

The third and last experience regarding mobile uses and people's development among chiefs is that mobile phones are being used during market gatherings when it comes to information of general interest, for example, harvest, dig, roof, bridge, etc. – although markets remain the most effective means of communication in rural areas. Communication can be conveyed through mobile phones when the market is being held because batteries, chargers, and mobile devices are available on market days. But, markets are still the most frequented place for information sharing in the community.

With a lot of success, we use markets to convey our important messages to the community. Mobile phones have been used here and there, but with limited coverage in comparison to markets. We learn much about the community and its members when we come to the market. People share information about their family and works when they come to the market. (Chief I)

One chief suggested,

Since the market is one of the most frequented forums, it is the best place where mobile services can be provided. (Chief XV)

Another chief recounted,

People come to the market to share information with friends, relatives, professionals. It would certainly be most appropriate to provide mobile devices and services, such as text, charge, battery, power, etc. (Chief II)

Markets are not only a commercial activity, but a social and communal forum where people gather to connect and reconnect with one another and exchange information.

Interpretations of mobile uses and people's development among chiefs

The data set of chiefs was analyzed, saturation was reached, and three interpretations were captured. The first interpretation of mobile uses and people's development among chiefs regards the need for a community- and neighborhood-based dissemination of mobile phones.

We need the spread of mobile phones to respond to and reflect the make-up of our community just so that the community as a whole, not a clique of youths or individuals, will benefit the most of this technology. (Chief IX)

As one chief asserted,

Mobiles could respond to the needs of the community and its neighborhoods. This means that mobile services could be installed based on the specific neighborhoods and their pressing needs. (Chief XIV)

As another delineated,

Just like a store will be installed in a community based on the needs at hand, so too mobile phones need to be geared to the needs of neighborhoods. A neighborhood that has people with special needs might need mobile phone services accordingly, with more volunteers at hand. (Chief III)

Mobile phones cannot be spread regardless of how the community is structured. The structure of the community represents the roles that people are associated with in order to allow greater cohesion.

The second interpretation of mobile uses and people's development among chiefs is the provision of legal power with regard to land, property, wealth, etc.

We hear a lot about the spectacular advances of mobile phones on the radio, but nothing is said about the spectacular advances of people's legal rights. (Chief III)

As one chief insisted,

A community with rights is like a community with food. Mobile phones can also augment the capabilities of people concerning the different rights. (Chief XIII)

As another chief clarified,

It is not that mobile phones should not be used to text, but ignoring people's rights is like a radio that only sends news with no further information or debate about the options that these people have. (Chief IV)

The idea stated above shows a clear need for the legal empowerment of people. In other words, by providing information and sources to people, the distribution of mobile phones in rural areas could help expand the legal rights that people have with regard to land, house, river, mountain, crop, etc. This means that without information or education people can be easily deprived (by state officials or companies) from their houses, plantations, gardens, springs, forests, fish, plants, mountains, etc., with no options or discussions as to what are the inalienable rights of concerned populations. The reason being, as Sen (1992, 2009a, 2009b, 2013b) insisted, capabilities come with rights and justice to ensure a fuller development of people. In essence, “the relevance of human rights must be the importance of the freedoms [capabilities] underlying those rights” (Sen, 2009a, pp. 366-367). The lack of capabilities leads to inequalities and injustices in any society. As Nussbaum (2003) noted, “capabilities have a very close relationship to human rights” (p. 36) or to “rights as freedoms” (Sen, 2009a, p. 366). Thus, rights become a variant language of capabilities. In greater details, Nussbaum (2003) explained,

Regarding fundamental rights, I would argue that the best way of thinking about what it is to secure them to people is to think in terms of capabilities. The right to political participation, the right to religious free exercise, the right of free speech -- these and others [i.e., rights to land, house, property, river, etc.] are all best thought of as secured to people *only when the relevant capabilities to function are present*. In other words, to secure a right to citizens in these areas [of fundamental rights] is to put them in a position of capability to

function in that area. To the extent that rights are used in defining social justice, we should not grant that the *society is just unless the capabilities have been effectively achieved* [emphasis added]. (p. 37, see also Sen, 2009a, pp. 225-317, pp. 355-387)

Mobile phones are not just a means of communication, rather they can or should become a tool of empowerment or enhancement of capabilities among the poor.

The third and last interpretation of mobile uses and people's development among chiefs involves a supply of technology held once or twice a month in the village(s).

A service of crews with particular supplies, such as mobile phones, gardening, kitchenware, construction, fishing, crop, health, etc. is one of the most needed services in our areas before all the claims of mobile phones were even made. (Chief XII)

One chief declared,

Information technologies can be supplied to the villages on certain days. The best example is with markets, ferries, harvest, etc. People may not have electricity, but they can have it on certain days. (Chief V)

Another chief related,

Infrastructure can be installed temporarily on designated days where technicians and supplies can be brought in to help the community. (Chief XII)

The statement implies that the provision of supplies does not necessarily require facilities fully installed in every neighborhood, but they can be ordered or shipped on market days.

The same is true of mobile phones, which can be charged or serviced on market days by trained personnel. This idea alludes to a more integrated, holistic approach to the provision of useful technologies (see Figure 26).



Figure 26: Chiefs' Model of Mobile Phone Services

The diagram implies the idea of a moving or mobile service of technologies help in villages on a regular basis just like markets are held in the community every week or so. The idea also seeks to maximize the benefits of people's gathering at the weekly market. Markets in this sense involve the ability to offer specific information technologies needed in different situations within the community.

Summary

Chiefs were members like any others in the community, with no right to require money or labor from people. Since they had to provide for their families, some chiefs were even poorer than certain members of the community. According to the data derived from the interviews with chiefs, the natural bond and the community services could not be supplanted by mobile phones, and thus remained the privileged channels for community building. Chiefs recommended a regular supply of technologies and related services on market days, which related to all the needs of the community, such as health, building, communication, gardening, kitchenware, laundry, clothing, crops, electricity, etc. This kind of supply would be one of the best ways that allows people to charge and/or service mobile phones or any technologies they may have or need.

Alongside the rapid spread of mobile phones, chiefs suggested that other areas should take priority, more particularly, the legal empowerment of people in relation to land, property, riches, etc. Mobile phones could provide information and sources regarding people's inalienable rights.

Case study eight: The youths

Introduction

For most literature related to mobile phone and people's development, the youths constitute one of the least researched and represented social classes of rural societies. Indeed, development studies has tended to focus on the adults and apply parameters suited to the adults such as income, marital status, profession, property, car, home, credit, loan, etc. (Alkire *et al.*, 2015; Giugale, 2014). When concerned with the youths, mobile phone literature is characterized by its focus on the youths living in more or less urban areas (Bertel, 2013; Goggin, 2013; Porter *et al.*, 2015; Porter *et al.*, 2016). To clarify, the word youth was understood in this study as a boy or girl approximately between the ages of 10 and 17 years old. One of the reasons why the youths are often left out by much of the research into mobile phones or information technologies is because the youths fall under the category of minors and thus require parental permission and/or presence. Such a permission might entail a lot of paper work, depending on the country/location/gender. In the meantime, the youths in rural areas are some of the most avid consumers of technologies, especially new digital devices. This section narrates the findings of the interviews undertaken with the youths regarding the uses of mobile phones and people's development. The youths were divided along the lines of gender, due to cultural customs. There were 18 boys and 20 girls. Although parents brought their youths from the host village and from other villages far off, they were not involved in group discussions and activities of the youths. Per local culture, parents have to be in the vicinity of the place where the youths are meeting or playing in case something happens. Some girls were babysitting for their parents during discussion breaks.

Characteristics

The data set of the youths was analyzed, saturation was reached, and three characteristics were determined (see Figure 27).

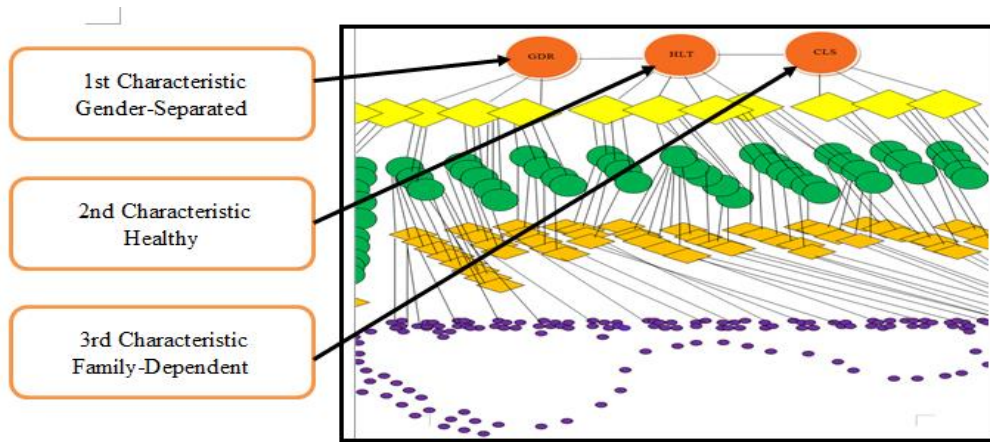


Figure 27: Characteristics of The Youths

First, the youths are grouped according to gender in daily activities.

We do not mingle with boys; we stay between ourselves when we undertake the daily chores at the house or at the crops. (Girl VIII)

A boy said,

There are many things that we feel comfortable doing between ourselves as boys. It does not mean that this boy-oriented meeting is designed to hurt the girls. It is simply a matter of convenience. (Boy IX)

As one girl testified,

For ease of communication, we sometimes prefer to be between ourselves girls in order to think deep about our topics. We can communicate with boys afterwards. (Girl I)

The statements presuppose some protection or safety put around women in general and girls in particular. Second, the youths are healthy and therefore use all their senses, for example, seeing, hearing, singing, running, swimming, biking, etc.

Because of our health, we help the adults in fixing or doing things they cannot do due to their age or health. (Boy XIX)

One girl asserted,

I have learned or improved most of the skills I have in doing things by helping my mom and grandma. Being around them is just a learning experience. (Girl XX)

One boy pointed out,

My dad and I fix things together and many times my dad let me fix things for him or for his friends. When I cannot fix, he shows me how to. (Boy XVIII)

Girls, for example, help older women in sorting out seeds or in weaving. Third and last, the youths have a close relationship with their respective families or parents in order to learn new skills or professions. The direct consequence is that boys stick with men whereas girls stay with women.

I babysit when my mom is busy with other chores. This happens during harvest time or on our way back from the well or from the market. (Girl III)

One boy affirmed,

One of the things I like doing is canoeing. This is something I have learned from my grandpa and his friends. (Boy I)

As one girl put it,

I grind flour and produces in the mortar. I take turn with my mom and my sisters. Or we grind together at the same time in the big mortar clapping and singing. (Girl X)

The statements indicate close collaboration between girls and women within the family. Because of their family-dependent status, the youths are not involved in self-sustained activities or professions. In this respect, the youths are a variant class of infants in the community.

Context of mobile uses and people's development among the youths

The data set of the youths was analyzed, saturation was reached, and three major contexts were detected. First, the youths display a highly multi-purpose use of mobiles and of people's development.

We use mobiles for many things, such as music, games, watch, light, picture, toy, ruler, beeping, case, etc. Development is not just about one thing, for example eating, but the whole suite of daily activities in order to achieve a better life. (Girl XX)

Another girl said,

For me as a girl, a mobile involves everything I need I order to live better, it is not just about communication. For example, I do not wear communication, but I wear a specific dress, based on the situation or weather. The same is true of development. Development allows people to live better under different conditions and situations. (Girl XII)

One boy retailed,

There is no society where life is only about communication on a mobile and development is only about eating. Therefore, limiting mobile phone to communication and development to food is unrealistic. The idea is to use a mobile phone for multiple purposes and seek development in its multiple facets. (Boy VIII)

Mobile phones prove to be versatile when used by the youths, and communication is only a fraction of mobile phone utility.

People's development is also perceived as multi-tasked by the youths. For instance, a container can also be used as a chair or a table on which to sell crop products. As Boy IX put it,

Tools are designed to be used, so we use them to the fullest extent, depending on the situations and needs that arise.

As another boy delineated,

I have a bag that I can use for carrying items, but also a shade against the sun, rain, and wind. (Boy XVII)

One girl testified,

The mortar can be used as a grinding tool and a chair or stool to sit on. It also serves to preserve some grains. (Girl II)

Another example with the impact on the wider community is a bike. A bike can serve as a means of transportation, but also as a means with which to cross a paddle or thorny bush. Furthermore, a bike's old tires are used as straps with which to tighten packages, loads, or belongings.

We throw nothing from a bike's parts. Old tires are excellent wrapping materials, when we transport products from the harvest. The same is true of a mobile phone. (Girl VI)

One boy retailed,

Recently, frames and rims of bicycles were used to strengthen the bases of the Northern bridge on both ends to avoid flooding when it rains. (Boy II)

One girl asserted,

Several times, worn-out saddles and tires of a bike are used to cover the surface of bridges to allow pedestrians to pass. (Girl XIX)

The idea implies the recycling of the materials or mobiles found in specific technologies. Mobile phone devices or boxes can be recycled for different purposes. For example, boxes are used to keep seeds and the back cover of mobiles is used to dig small holes in dirt. As Girl II related,

We use the mobile boxes to keep beads and seeds. The back cover of mobile phones serves to dig small hole in dirt when we play games.

Another girl indicated,

After the black plastic cover is removed, the copper wires of a mobile phone can be used to string pearls, shells, or beads of bracelets and necklaces. (Girl XI)

One boy affirmed,

The screen of a mobile phone can serve to adorn stained glass jewels or to polish and decorate wood work. (Boy XVI)

This context of mobile uses and people's development among the youths is that of "killing two birds with one stone" in that one thing/trip is used as an opportunity to respond to varying needs. As noted earlier, mobile phone was shown to be a multitasked technology (Aker & Blumenstock, 2015; Carrillo & Subrahmanyam, 2015). As a girl explained,

When we go to the market or crops, we come back home with several needs resolved, such as laundry, shower, cooking, corn shelling, etc. (Girl IV)

Another girl clarified,

We do not see a mobile phone as one purpose-tool, but rather as a multi-purpose tool since we have many tasks to perform, based on situations. (Girl XVIII)

As one boy stated,

Using a mobile phone just for calling or texting is not enough to address my needs. It is like using water just for brushing the teeth, forgetting what water can do for the community and family. (Boy III)

The idea shows how one activity serves to respond to a community's or family's series of needs so that people do not have to make several trips for the same activity.

The second context of mobile uses and people's development among the youths concerns rapid growth stemming from the youths' bodily and psychological transformations. As a youth related,

Life is all about transformation, progress, change, novelty, etc. That is how I see mobile phones and people's progress. One cannot use a mobile phone and be indifferent to the need for change in real life. Life is about change, progress. (Boy X)

Another boy pointed out,

I am realizing how my body has dramatically changed in the last few months. I cannot use a mobile phone or claim to be developed without taking into account the transformations of my body. (Boy XV)

As one girl put it,

I see myself as involved in ongoing transformations, and I cannot see myself and other youths developed without these transformations. (Girl V)

Put differently, since they undergo a more or less rapid transformation of their bodies, the youths have a high sense of progress and change. As Sales and Irwin (2013) indicated, “adolescence is a developmental stage characterized by dramatic physical, cognitive, social, and emotional changes” (p. 13, see also O'Donohue *et al.*, 2013; Lerner, 2009, 2011; Lerner *et al.*, 2011; Lerner & Steinberg, 2009; Susman & Dorn, 2009). The youths connect this sense of change with nature-based transformations seen with trees, rivers, seasons, crops, etc. This might be partly because the youths receive ritual initiation in the woods in closer connection with nature. This study was not addressing the rituals of initiation since they required confidentiality and local symbols and customs.

The third and last context of mobile uses and people's development among the youths is with neutral history. The youths do not see mobile devices as a sign of imposition or domination. This attitude might be explained by the society in which the youths live. In fact, this society, as seen earlier in the section on Case Study I, does not display anti-colonialism or anti-Western tenets found in development literature. The youths see the potentials of imposition in all aspects of social reality (i.e., local or national, or international, etc.).

Just like anything in life, mobile phone can be imposed. Imposition does not have to be coming from the West or the White man. Culture, language, location, etc. are imposed, but it depends on how they are being used in society. (Girl III)

Another girl argued,

We cannot live in total isolation from other communities, youths, people, professionals, etc. Not technology including mobile phone can be best used in isolation. (Girl XVII)

One boy explained,

Nobody harvests for oneself. We always work for others. As young, we cannot ignore other youths and the kind of technology they are using in their lives. The skills needed to use any technology can be taught by locals or by people from outside. Those technical skills are

universal. It is like saying that a bike used in this community functions differently from a bike used someplace else in the world. The skills and materials of a bike are the same and can be taught or brought by any bike-specialized professional in the world. (Boy VII)

The statements underline a need for a balanced or neutral view of history and the community. In other words, the absence of or disinterest in anti-Western ideas seen in these and other statements is something that cannot be discounted altogether. Perhaps one of the consequences is that the mistakes that have been committed in the past with regard to themes such as colonialism or post-colonialism, imperialism, etc. should not be exaggerated or overstated when interacting with local communities. This does not mean that local participation is not important, but that one aspect/interpretation of history should not be considered as the sole reality.

Experiences of mobile uses and people's development among the youths

The data set of the youths was analyzed, saturation was reached, and three main experiences were detected. First, the youths are seen as the technicians of the community in all aspects of social life, such as cooking, gardening, roofing, swimming, weather, plowing, etc. As a boy stated,

We are seen as the technicians of the community in all areas of daily life. When something is broken, the first person to look at is the youth. Then the youth will travel to see/contact an adult who is skilled in that matter. Being healthy means you can do it or at least you can go where it can be fixed. (Boy IV)

Another boy specified,

I find myself doing several kinds of manual works as needs arise in the community. This allows me to learn different kinds of professions. This is why I like being with my father and grandfather because they teach me things I could not learn otherwise. This is how I see a mobile and development. (Boy XIV)

As one girl put it,

With my mom, grandma, and sisters, I learn the skills of cooking, washing, gardening, grinding, etc. Mobile phones can teach or remind us girls those skills like a map. (Girl XVI)

Technicality becomes one of the main experiences in which mobile uses and people's development can be found among the youths. This is true also of mobile phones. The youths are eager to grasp all the details related to the technicality of mobile phones. Technicality involves all the aspects that make a specific tool useful within a community. The second experience to do with mobile uses and people's development among the youths is universality. The youths see mobile uses and people's development as a need for universal skills, all of which include the practical things with which people can go about their business.

As one girl portrayed her experience of mobile phones,

Mobile phones, just like any tool, imply certain universal skills or abilities that people have to know across the globe. These are the things that we are supposed to know more or less in order to help people here and everywhere. (Girl XX)

As another girl emphasized,

I do not want to be left behind when it comes to new technologies. I want to learn to use as they appear on the market. (Girl XVI)

One boy recounted,

I always like to be knowledgeable about computers and their features to be able to make the most of these high-tech devices. (Boy V)

As noted above, people in this community assume that the youths know the universal skills regarding the tools used daily, for example, mobile phones, corn-shellers, blenders, containers, etc.

The third and last experience of mobile uses and people's development among the youths is creativity or ingenuity. For better or worse, the youths have to come up with ways to fix or handle things. This helps the youths improve their skills or learning.

From using a specific tool/mobile phone, certain skills are devised to undertake the most needed activity. For example, the light on mobile phone can be used at night, beeping can signal a person's presence, exposure of the batteries under the Sun to save energy, etc.

(Boy XVI)

Another boy said,

The more I handle tools the more I come to learn some novel techniques of use and even repair. I do so with mobile phones as well. (Boy XIII)

As one girl declared,

On several occasions I have fixed things for my mom and the family. Since my mom can have memory or sight problems. Just like the keys of mobile phones, some grains, for example, are tiny and require a sharp vision in order to see or sort them out. (Girl XV)

What is evident here is the ability to perform novel things with technologies. This means that rather than being a channel of communication, mobile phones become a tool of learning or skill acquisition, depending on the needs at hand. For example, as seen above, the youths learn how to save battery energy when using mobile phones.

Interpretations of mobile uses and people's development among the youths

The data set of the youths was analyzed, saturation was reached, and three major interpretations were discerned. The first interpretation of mobile uses and people's development among the youths is one in which mobile phones are viewed as a means of modernization. In other words, for the youths, mobile phones are not just about communication, but even more importantly, about the improvement of their societies/communities.

When I hold a mobile phone, I see many things behind it, such as music studios, photo shops, light shops, batteries shops, radio shops, etc. (Boy XII)

Another boy specified,

The improvement of the communities we live in is important just so that we are not overwhelmed with the requests of service, help, or repair. This means that the improvement or update of mobile phones should also have an impact on the community's conditions. (Boy VI)

One girl said,

Skills are not simply for mobile phone communication, but also, perhaps more importantly for improving the conditions of our houses and backyards. (Girl IX)

The statements imply that the services associated with mobile phones represent future development expected by the youths to happen in their respective communities. The statements resonate with Fidel's (2012) suggestion that "we [information scientists] cannot significantly improve human lives without changing the material conditions and the economic system that shape them" (p. xi).

The second interpretation of mobile uses and people's development among the youths lies in the enhancement of the skills needed for mobile phones, such as the keypads and related applications.

These keypads and their applications imply some combinations that have to be 100% functional here in our communities so that one does not need a trip to the city in order to be able to use those functions. (Girl II)

Another girl affirmed,

The applications of a mobile phone are something I really need to master for the good of the community. (Girl VI)

As one boy pointed out,

I want to be comfortable when using the features of a mobile phone. This allows me to be more helpful to people. (Boy XII)

The youths saw the keypads as something that they can fully use and repair just like a bike or any tool. In other words, mobile phones are seen by the youths as an opportunity of skill learning in rural societies. The third and last interpretation of mobile uses and people's development among the youths is one related to upgrades. The youths wanted to have the most up-to-date version of mobile phones that they hear about on the radio.

Mobile phone upgrades have no barriers. Those upgrades and their functionalities are made to be used across the globe. There is no apparent reason why those upgrades cannot be shipped or fully used here. (Boy XV)

Another boy specified,

The versions of mobile phones that we hear about on the radio are overwhelming. I do not want to be left behind. (Boy X)

As one girl put it,

It is almost every day that mobile phones and computers are invented or re-invented with new functions. It is important for us girls to be informed as well just any girls in the world. (Girl VIII)

The statements imply that the lack of a fair and even dissemination of mobile phones are arbitrary and uncalled-for. Mobile phones are understood to modernize society. Therefore, a

technology model propounded by the youths is one which provides a pair of shoes per youth, a backpack per youth, a jacket per youth, a watch per youth, a mobile per youth, a computer per youth, a bike per youth, etc. (see Figure 28).

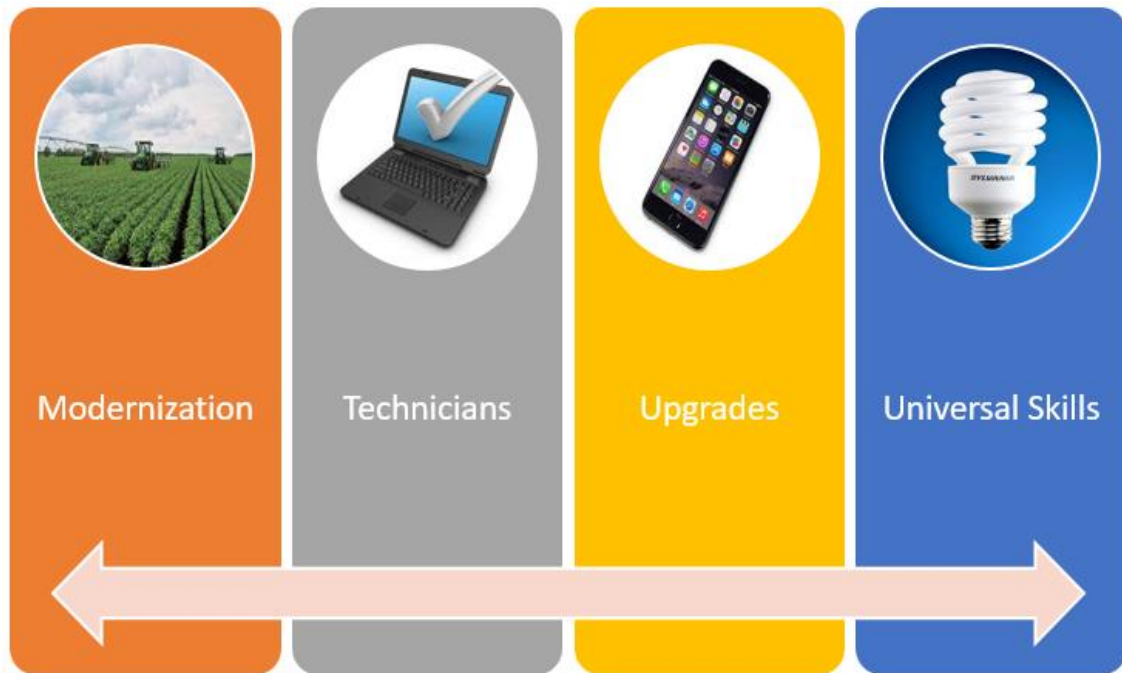


Figure 28: Mobile Phone Spread according to the Youths

The diagram displays the view shared by the youths that technology involves modernization, technicians, upgrades, and universal skills. In order to modernize, technology needs a trained personnel, namely technicians. Technicians ensure the upgrades of the needed equipment. Technology upgrades are universal in that they cross-cut places and times. For example, in order to be ridden a bike requires the same technical skills across the globe. Therefore, the youths do not want to be left behind in terms of technologies. For the youths, mobile phones as a technology represent a world of learning skills. The skills that the youths want to acquire involve several interrelated levels. In other words, modernization, technicians, upgrades of technology, and universal skills underlie the world in which the youths are keen to live. This is also the world that the youths are associated with when they are approached by other members of the community.

Summary

For the youths, mobile phones and people's development imply the modernization of rural areas. This means that mobile phones are regarded as multi-purposed tools to respond to the people's various needs, such as bridge, weather, trip, music, light, batteries, etc. The youths are seen as the technicians of the community, and therefore they are keen to learn and master the technicality of mobile phones and other technologies. To this end, the youths wanted to keep pace with new technologies from around the world, and thus suggested to have the universal skills of new technologies with the most up-to-date version of mobile applications. The youths do not want to stay behind in the era of fast growing information technologies. Just like any technology, the idea of a computer and mobile phone per youth makes perfect sense to the youths.

Conclusion

As is clear from the findings, mobile phone-mediated development proves to be a context-, group-, service-, and individual-specific process. Development thus entails deeper levels of mobile phone uses and interpretations within each of the eight case studies involved. It can be said that the history of development literature and practice as well as the history of research methodology, which are marked by a long held battle against the positivistic misrepresentations of the Other and ensuing context-independent generalizations, has led to the increasing need for the involvement and empowerment of local rural populations and their views on development and mobile phone uses. Thus, the present doctoral study brings into sharper relief the lenses/frames/views of specific social groups and key players involved in the processes of mobile phone uses and development in the rural area of the Congo. This sheds light on the degree to which people enjoy and fulfill their capabilities. However, certain statements were collected from across case studies in order not to overshadow, but to highlight the contexts involved, the views or lenses displayed by the groups, and the potential outliers.

The context in which rural communities live was not one of antagonism toward the West as seen in much of the development and methodology literature (Easterly, 2006b). It is also inexplicable that, as shown in the findings, members of rural communities tend to be seen and targeted by mobile phone carriers and their advertizers as rich people with pay checks any time. Money is

being expected constantly from the poor in rural areas to pay mobile phone devices and related services.

Mobiles were found to be related to recreational, historical, and emergent purposes. The living conditions in which mast guards and kiosk vendors work sharply contrast with the gains and advances of mobile phone industry. The cost of mobile phones and services was presented to be one of the biggest pitfalls of mobile phone uses and people's development, which individuals seemed to circumvent by voluntary work and shared ownership. Mobile phones were also presented as a tool that can modernize rural areas and enhance various professional skills with regard to computers, mobile devices, bikes, kitchenware, etc. M-banking needs some basic infrastructures (i.e., facilities, representatives, offices, etc.) in order to function in the selected rural areas.

While there were flashes of development instances reported (or wished) here and there, there was also a view of a sustained and holistic process of development in the selected rural areas. This process involves the expansion of people's capabilities or options in the struggles for survival. In this respect, for example, a high number of participants from across groups suggested a comprehensive community-based service mediated by mobile phones. This service is to bring different crew and technologies (i.e., batteries, tools, generators, chargers, etc.) into a village. The service is to be held once or twice a week on a market day from village to village, with the possibility of devices and advice provided to people in various areas of daily life such as writing, texting, computing, cooking, woodworking, gardening, sewing, roofing, fishing, banking, kayaking, hiking, grinding, hiving, etc. Since the targeted population is predominantly illiterate, the service might provide advice in terms of text messages, mails, bank accounts, bills, prescriptions, recipes, manuals, etc. Individuals also expressed the desire to receive help geared to their specific needs such as health, privacy, talents, personal belongings, etc. Mobile phones can incorporate these features to best serve the rural populations. Advising can be offered to neighborhoods, groups, and individuals, based on the context involved such as river, mountain, hill, beach, valley, etc.

Chapter Five: Discussion

Introduction

The aims of this study were to inquire into ways in which mobile phones produced development in rural areas of the Congo from the perspectives of concerned populations, and give voice to these populations. The objectives set to peruse these aims were outlined in introduction chapter. Since the participants dealt with were predominantly illiterate the research was undertaken via semi-structured interviews and group discussions resulting in qualitative research (Creswell, 2013; Denzin, 2006, 2009, 2010; Denzin & Lincoln, 2011a, 2011b; Hammersley, 2013b; Harding, 2013; Lincoln & Guba, 1985; Patton, 2015; Silverman, 2012; Tracy, 2010, 2012, 2013). The populations were selected to provide a comprehensive coverage of key members of the community, including: parents, mast guards, kiosk vendors, builders, traders, healers, artists, teachers, mid-wives, gardeners, storytellers, chiefs, and youths. The research questions were put forth as follows:

1. Do mobile phones produce development in rural areas of the Congo?
2. Do mobile phones improve the living conditions of people?

The application of Sen's framework provided insights into development and mobile phone uses. Since the research undertaken was qualitative research -- with an aim to give voice to concerned populations -- the answers sought were not those of yes or no, right or wrong, or black or white, but rather those of in-depth or thick information needed to gain a better understanding of the extent to which mobile phone was seen to produce development in the selected location. Thus, in order to explore the research questions, four methods were chosen to guide the research:

1. Phenomenology,
2. Sen's capability approach,
3. Participatory method, and
4. Ecological method also called transect sampling

Phenomenology (Husserl, 1901/2005, 1913/2002a) helped highlight the experiences and meanings of mobile phone uses, Sen's capability approach (Sen, 1979b, 1985b, 1987, 1999, 2009a, 2009b) allowed the interviews to be focused on the basic needs of the poor, participatory method (Chambers, 2002/2011) enabled a greater participation of the respondents in discussion groups, and ecological method (Krebs, 1999; Manly & Navarro, 2015; Navarro & Díaz-Gamboa, 2015; Nomani, Oli, & Carthy, 2012) helped achieve a higher inclusion of key players in the targeted area. The application of ecological method led to eight case studies:

1. 32 Parents
2. 14 Mast guards
3. 18 Kiosk vendors
4. 52 people divided in 8 random groups for Group Discussion Session One
5. 52 people divided in 8 profession groups for Group Discussion Session Two
6. 12 Mobile phone posters
7. 16 Chiefs
8. Youths: 18 boys and 20 girls

As explained in methodology chapter (see section on interviews and discussions), the reason why state officials and mobile phone providers, who were key players with regard to mobile phone uses and development, were not included in this study's interviews was that representatives of both groups were approached and stated that they were unable to speak to rural populations due to the lack of record kept on these populations. This discussion chapter canvases the research findings under four main headings:

1. Background of mobile phone contributions
2. Cross-Cutting Themes
3. Contributions to Prior Bodies of Work in light of Sen's framework, and
4. Reflections on Sen's Framework

Background of mobile phone contributions

A brief background is needed to set the stage for a discussion on the main contributions proposed in this study. This is presented under four modalities:

1. State of research in ICT,
2. Mobile phone industry,
3. Rural areas, and
4. Social or business networks

State of research in ICT

This study took development (see literature review chapter, section on definitional clarification) to mean a holistic endeavor to expand the range of people's capabilities in all spheres of everyday life (see Sen, 1999, 2009a, 2009b). Theme (see findings chapter, section on clarification of techniques), rubric, category, or heading, etc. was understood in this study as an umbrella term, concept, or category along the lines of which a series of discussions and inquiries could be undertaken. The first modality regarding the background of mobile phone contributions was to provide an overview of the state of research in ICT. To be clear, the English word modality comes from the Latin noun (Lewis & Short, 1879) *modus, i, m*, which means: manner, way, bound, limit, measure, etc. Modality was thus understood in this study as bounds, manners, or ways in which something was presented. The state of research in ICT was one of the most determining factors of mobile phone research. This was in large part because mobile phone is becoming one of the most popular ICTs of modern day times. Since the aim of this study was to inquire into ways in which mobile phones produce development in rural areas of the Congo from the perspectives of concerned populations, a look at the micro-level or detailed dimensions of people's lives was needed to get a better understanding of mobile phone contributions. As May, Dutton, and Munyakazi (2014) noted,

Most macro-studies that investigate the contribution of ICT to socio-economic development rely upon evidence that has been collected at a level too general, thereby neglecting the micro-level data required for the interpretation of macro-level trends. It is important to go beyond this, and analyse the role and impacts of ICT on poverty reduction

at the micro-level. Although important for economic growth, in the face of inequalities and a possible “digital divide”, changes in economic output at the national level are not necessarily linked to changes in the well-being of individuals and households. (p. 50, see also Adera *et al.*, 2014, pp. 230-231; Diga, 2013a, p. 127, 2013b, p. 142; Wang, 2015, p. 19)

As a consequence, this study’s aim was to capture the micro-level or lived experiences of selected participants in order to provide in-depth information on the uses of mobile phones and development from the perspectives of concerned participants. The subsequent aim was to give voice to these populations about how development was experienced or seen in their midst.

Perhaps understandably, while qualitative work -- noted for its micro-level focus -- has been undertaken on mobile phones and development in Africa in order to best cater to participants (see Burrell, 2010; Duncombe, 2012a; Mäkelä, 2015; Molony, 2007, 2008a, 2008b, 2008c, 2009; Porter *et al.*, 2015; Porter *et al.*, 2016), it still remains thin or limited, and therefore more inclusive in-depth research is needed. This point was echoed by Duncombe (2012a) when he advocated for the

consideration of indicators of sector performance and *productivity*, assessment of broader impacts at the *community level*, greater focus on methodologies that emphasise *user involvement*, and *expansion of qualitative approaches* which could form the basis for theorising and greater geographical *diversity* [emphasis added]. (p. 1, see also Duncombe & Boateng, 2009, p. 25)

This study therefore paid heed to Duncombe’s (2012a) and Duncombe’s and Boateng’s (2009) strident calls for “more detailed qualitative case studies” (p. 25) on mobile phones. The study did so by foregrounding the diversity of experiences and views from the targeted community on mobile phones and development. Thin studies have tended to provide a snapshot of the topic investigated. Thus, this study aimed to present or involve the key players and their lifeworlds with regard to mobile phones and development.

Mobile phone industry

The second modality concerning the background of mobile phone contributions was mobile phone industry. Despite its expanding popularity, mobile phone technology is a young industry -- in comparison, for example, to oil, timber, gold, metal, cotton, fish, etc. -- and claims of its benefits should be taken with caution. Indeed, as mentioned in literature review chapter, although mobile phones were first used in the early 1980s, the literature on mobile phone and development did not start to coalesce until the first half of the 2000s with two prestigious research projects, namely: the Village Phone undertaken in Bangladesh (Aminuzzaman, 2002; Aminuzzaman, Baldersheim, & Jamil, 2003; Lawson & Meyenn, 2000) and the project spearheaded by the London School of Economics and sponsored by Vodafone, a world-famous communication firm (Coyle, 2005; Goodman, 2005; Gough, 2005; Samuel, Shah, & Hadingham, 2005; Waverman, Meschi, & Fuss, 2005; Williams, 2005).

In the same vein, *The Economist*, one of the prevailing magazines in the field of business, published two articles, *The Real Digital Divide* (2005) and *Calling across the Divide* (2005), and thus contributed to place the topic of mobile phones and development in the radar of the general public. Around the same period, two World Summits were organized on the Information Society, in Geneva in 2003 and in Tunis in 2005 (<http://www.itu.int/wsis/geneva/index.html>), with the goal to promote information access to all people around the world. Such an environment, in one form or another, precipitated the dissemination and funding of mobile phones in rural areas (Greengard, 2008; Sachs, 2008a). Moreover, the boom of social media coupled with wireless applications, for example: Twitter, MySpace, Facebook, LinkedIn, etc. add to the fascination of mobile phones. As Wallach (2015) warned, “uncertainty in the development, progress, and societal impact of an emerging technology is nothing new... In emerging fields of research, endless speculation and hype foster the illusion of inevitable progress on both laudable and anxiety-provoking fronts” (p. 5).

Rural areas

The third modality considered with regard to the background of mobile phone contributions had to do with rural areas. Mobile phone is perhaps one of the few technologies that has been so quickly associated with rural areas in Africa. For example, Sachs (2008a), a Columbia University

(USA) renowned professor, and one of the leaders of *The Millennium Development Goals* (2000) project, declared,

Mobile phones are now ubiquitous in villages as well as cities. If an individual does not have a cell phone, they almost surely know someone who does. Probably a significant majority of Africans have at least emergency access to a cell phone, either their own, a neighbour's, or one at a commercial kiosk. (para 5)

These claims have had a wide-ranging impact on the general public, industry, and academia. A typical illustration of this was with Yan (2015) when he wrote, “thus, we can state that mobile phones are becoming the most ubiquitous technology in human history” (p. xxxix).

One of the issues seen with most studies done on mobile phones in rural areas is that the statements made by these studies did not sit well with the reality of rural areas, meaning that they tended to have a simplistic view on rural areas, or, to use a description of Eagle (2010), “to provide static, behavioural snapshots” (p. 11) about rural areas. For example, these studies have tended to focus on a single topic, such as, fish, grain, farmers, etc., and thus left out other important aspects of the investigated area. The reason for this might be the tendency of mobile phone studies to focus on a specific product or market.

As Aker and Blumenstock (2015) noted, “while evidence on the impact of mobile phone technology and development has grown considerably over the past few years, these studies are for particular countries, products, and markets and still represent a small percentage of what we should know” (p. 367). This was not saying that studies done on rural areas were not valuable or that authors of these studies were being held responsible for the things lacking in rural areas, but that rural areas were characterized by specific things that could be misleading and indeed dangerous to human life if ignored, such as lack of electricity, of police, Internet, road, bank, cash, house, hospital, toilet, store, bank, safe drinking water, etc. It was and is not clear who was responsible for such shortcomings proper to rural areas. This might be largely because of the lack of access to and empirical evidence on rural areas. As Aker and Mbiti (2010b) lamented, two years after Sachs' (2008a) proclamation of mobile phone-infused rural development, saying, “but this evidence [on mobile phones and development in rural areas], while certainly encouraging,

remains limited” (p. 224, see also Rashid & Elder, 2009; Porter, 2012, p. 246; Vincent & Cull, 2013, p. 37).

The scarcity of evidence is exacerbated by the anecdotes seen on social media, with which the popularity of mobile phones and new information technologies tends to be surrounded. As shown in literature review chapter, Wang (2015) indicated, “much of the evidence linking ICT utilization and social development is anecdotal... suggesting an overly optimistic attitude toward positive outcomes for society” (p. 19). In this respect, the contribution of this study was to provide an in-depth, sedimented, and nuanced set of findings. This shed light on the uses of mobiles in the Congo at the micro-level, with an emphasis on the views, experiences, and insights of the community which enable the role of mobile phones to be placed in the broader context.

Two main findings of this in-depth empirical research need mention here. First, one of the most daunting issues that participants in rural areas were faced with was cost. This meant that they just could not afford mobile phone services and technologies (see Case Study: I Parents). Therefore, shared ownership and voluntary (free charge) work were proposed as alternative ways of ensuring communication between people and the needed services. Cost was also a reason for the practice of beeping correspondents (see Case Study VIII: Youths). This supports Taiwo and Igwebuike (2015) who explained,

In most parts of the developing world, beeping or ‘flashing’ is an established behavior in which a mobile phone users [sic] makes a call but hangs the phone after one, two or three rings, before the call is answered, mostly because they do not have enough pre-paid credit to pay for a call. (p. 71)

An important point worth underlining here, yet very often forgotten in much of the literature on mobile phones in rural Africa, is that people in rural areas did not have the privilege of flat-rate or monthly mobile phone subscription. The immediate consequence of this was that mobile phones were used on a pay-as-you-go basis or, more exactly, to borrow a suggestive expression

of Burrell (2010), on a “pay-per-use” (p. 230) basis. This meant that the person was *charged* for every minute. As one participant noted,

With one dollar (1 US \$) you have 10 minutes of conversation between customers of the same mobile carrier domestically, and 5 minutes of conversation when connecting with a person using a mobile of a different carrier domestically. One dollar lets you talk for 2 minutes with a person overseas. That is a lot of money. (Parent X)

It is likely that under the circumstances described in the statement above a conversation or call held on mobile phone can be long, and therefore costly.

The second main finding to be underlined in relation to rural areas concerned the lack of electricity. This posed a serious barrier to using chargers, computers, Internet, etc. These findings were reflected in the work of Adera *et al.* (2014, pp. 230-231), but were not fully acknowledged in the majority of literature on rural areas (see Adisa, 2012). One example of single-focused studies or snapshots about rural areas was the idea of price dispersion and market efficiency claimed to stem from mobile phone uses, an idea that an extensive literature of mobile phones had used, and still does, to explain the link between mobile phones and development in rural Africa. The premise of the idea was that, as Aker (2008) noted,

Due partly to costly or asymmetric information, price dispersion across markets is common in developed and developing countries... The linkages between costly search and market efficiency are important for welfare in Sub-Saharan Africa, and particularly Niger... As grain markets occur only once per week, traders have historically traveled long distances to potential sales markets to obtain information on supply, demand and prices. (p. 1)

Aker (2008) went on to explain,

We find that grain traders operating in markets with cell phone coverage search over a greater number of markets, have more contacts and sell in more markets. This underscores the fact that the primary mechanism by which cell phones affect market efficiency is a

reduction in search costs and hence transaction costs. The reduction in price dispersion suggests that cell phones could lead to net welfare improvements. (pp. 4-5)

The statements given above implied that mobile phones helped farmers reduce cost and price dispersion, and thus allowed market efficiency.

The study cited above or at least the idea of price information shared on mobile phones (see also Donner, 2006a; Jensen, 2007; Samuel, Shah, & Hadingham, 2005) has met with massive acceptance across various circles of development and mobile phone experts (see Aker, 2010; Donner & Escobari, 2010; Duncombe, 2012a, 2012b; Heeks, 2010a; Jagun, Heeks, & Whalley, 2008; Zanello, 2012). Indeed, Aker's (2008) study is one of, if not, the core pieces of the argument linking mobile phones with development. While Aker's (2008) findings stated above were exciting news about mobile phones in rural Africa since the traders implied in the research were traveling across Niger just as the markets were dispersed across the nation, they clashed with the findings of this doctoral research. Maybe it was because Aker's (2008) research was a quantitative study (due to endogeneity issues, see methodology chapter, section on misunderstandings about positivism), meaning that the study did not fully represent the variability proper or endogenous to the larger population, since the study was particularly limited to a set of farmers in Niger.

In other words, Aker's (2008) study was not an in-depth and sedimented account of the selected population. But the most striking difference between Aker's (2008) findings and those of this doctoral study was about the cost of mobile phone conversations per minute on a *pay-per-use* basis (see explanation above). This caused readers to wonder how mobile phone conversations were or could be afforded in Aker's (2008) study and others, considering the lack and/or paucity of electricity and of energy supply known to be common to much of Africa. Therefore, Aker's (2008) findings raised questions as to whether the selected farmers were comparatively wealthy and may not reflect the situation of others in particular more remote or less monetarized area.

Perhaps most meaningfully, in Niger, "a two-minute call to a market 65 km away cost US \$ 1" (Aker, 2008, p. 12). The Nigerien mobile phone rate is even more expensive than the one seen in

the Congo for the same period of time 2006-2007, which is US \$ 1 for a 10-minute call within the same mobile phone network and 5-minute call between different mobile phone networks (see Mthembu-Salter, 2009, also see Case Study I: Parents). As noted above, this study's participants were not able to afford the Congolese rate, therefore, it could be argued that, Aker's (2008) participants must be, to use Blumenstock's and Eagle's (2012) down-to-earth description, "*substantially wealthier* [emphasis added] than those without mobile phones" (p. 13). Therefore, price reduction on the market -- via mobile phones -- was not evident since this study's participants did not have income or cash nor could they pay the fees of the conversation needed on mobile phones to check price information. As a group of participants indicated,

Just like any expenses, we can also make payment with our agricultural products, based on a person's possibility or harvest. One can offer corns or potatoes in order to have a mobile phone charged, for oneself or a beloved or someone else in the community. (Group I)

As can be implied from the statement above, expenses were not paid by using currency or cash, but rather by exchanging (the surplus of) agricultural products. One even more compelling reason for this might be participants' illiteracy, which could not allow the usability, familiarity, or literacy needed for the flow or use of cash. As Aker and Blumenstock (2015) stated, "SMS and m-money applications... require *familiarity with numbers and letters* [emphasis added]" (p. 361). Thus, it was apparent from the argument of participants quoted above that the majority of these participants did not have cash nor could they use it efficiently. One parent also referred to corn harvest and the relations to mobile phone expenses (i.e., trip, charger, battery, etc.), saying,

I live at more than 200 Km from the railroad. Therefore, charging the mobile is prohibitively expensive. You need to pay the trip, charger, and battery, not to mention the credits on the mobile. I have to wait till the harvest time of corn to make some investments for the mobile. (Parent XIX)

The fact that corn harvest happened once or twice a year in the investigated community, and that the person had to wait till the harvest time -- in order to be able to afford mobile phone expenses -- implied that cash was not stored (or available) for the year. This indicates or confirms that

individuals in investigated rural areas trade, or, more precisely barter items against the surplus of items stored, with corn being the most cultivated and exchanged commodity since it is the staple.

Also it is likely that a phone conversation can require time in order for parties to receive and/or provide the needed details about the product(s) sought after, such as location, name, size, date, quality, weight, etc. Certain vowels and consonants in a phone conversation can tend to be confused and thus need repetition and/or *slow, clear, and loud* spelling, such as *m, n, l, p, d, o, u*, etc., and therefore are likely to take more time thus more fees on the phone than a regular conversation. For the most part, traders tended to write down the communicated prices and figures as the conversation progressed. This will also increase the amount of time and fees taken on the phone. The same is no less true of certain numbers that tend to be confused, such as ten and seven, six and three, five and nine, thirty and forty, etc. Consequently, as is now clear, apart from endogeneity (see above), the best explanation for Aker's (2008) research was that the study needed an in-depth and group-inclusive inquiry to be able to provide readers with cogent and detailed findings coherent with and grounded in rural Africa. Thus, this doctoral study made a contribution to this line of work.

Not too surprisingly, in 2010, Aker and Mbiti (2010b) made a pertinent observation that “while the proliferation of mobile-based services and projects has the potential to promote economic development, there is a tendency for development agencies and donors to ‘jump on the information technology bandwagon’ without properly assessing its effects” (p. 224, see also Diga, 2013a, p. 125). And a few years later, returning to the idea of market efficiency, Aker and Fafchamps (2013) provided a nuanced and informative position on price dispersion and mobile phones, saying,

The additional evidence presented here helps understand how mobile phone coverage affects agricultural market efficiency in developing countries. It suggests that the impact differs across agents – depending on whether they use the information for arbitrage or not – and across crops – depending on whether intertemporal arbitrage is possible or not. (p. 1)

The information for arbitrage is the information that traders in Niger were seeking, as discussed earlier, to inquire about prices across markets. In fact, Aker's and Fafchamps' (2013) research confirmed this study's finding that participants were not seeking price information or arbitrage over mobile phones due primarily to the cost of pay-per-use mobile phones and the lack of electricity. This simply meant that this study's participants could not afford the fees of the phone conversations needed to inquire about prices across the nation. Perhaps due to increasing criticism about the links between mobile phone uses and price reduction, Aker recently qualified her position on market efficiency, saying,

While reduced communication and transfer costs can make markets more efficient, this does not necessarily imply that all agents [key players] are better off. Having a more efficient agricultural market does not immediately imply that poor farmers will receive higher prices, as existing empirical evidence suggests... For example, even if a farmer is able to obtain price information more quickly and cheaply, if there is an uncompetitive market structure, improved information will not translate into higher farm-gate prices. This therefore suggests that any mobile phone or ICT-based development policy must ensure that public goods are provided or address complementary market failures [shortages].
(Aker & Blumenstock, 2015, p. 367)

The statement above markedly resonated with the claims made by this study's participants that participants needed broader capabilities in their daily lives than just the reduction of cost on the market. In addition, Aker and Blumenstock (2015) noted that "in fact, economic theory predicts that even if [mobile] phones can help make markets more efficient, the distribution of these gains across different actors is unclear" (p. 362). In fact, this study's participants proposed a closer collaboration between researchers, designers, and the community to ensure not only a fair use of the gains made, but especially a broader set of capabilities around basic needs. The idea being that participants needed to be involved in the development (i.e., school, dispensary, water well, mobile phone kiosk, etc.) of their community. Mobile phones could also help establish or promote contacts between the key players during meetings, activities, sessions, etc. related to development projects. More particularly,

what this implies for mobile phone operators, as well as public and private mobile phone for development programs, is that the “hardware” must be developed from the end-users’ perspective; In other words, the product or service addresses the individuals’ needs, for a phone that is locally available, and can be easily learned and used. (Aker & Blumenstock, 2015, p. 367)

As is clear from the statement above, the collaboration proposed by this study’s participants was aimed to promote the end-users’ perspective aforementioned. It was also observed that the information provided (i.e., incorrect, misspelt, misunderstood, outdated, etc.) and the means of information (i.e., bad connection, storm, low battery, etc.) used could stunt market efficiency. These factors undermining market efficiency, as Aker and Blumenstock (2015) clarified, “can be explained, at least in part, by differences in the type of information or service provided via the information technology, the degree of information asymmetry [gap] and the presence of other market failures [shortages]” (p. 362). Market shortages of certain products such as cooking oil, flour, sugar, lamp oil, etc. could affect the market as well as the ability of traders to afford the needed items regardless of whether a certain grain was being sold at a low price.

Quite recently, from a different angle, Srinivasan and Burrell (2015) also called into question the link between mobile phones and development. Even more clearly, Mäkelä (2015) “associated mobile phones with high expenses rather than as something that could help in providing income: this was related to local pricing of mobile phone communication” (p. 69, see also Ling *et al.*, 2012, p. 320). The reason for this might be the “income-related barriers such as the inability to afford a mobile handset and the minimum recharge amounts for mobile minutes” (Stork, 2011, pp. 88-89). This doctoral study’s participants also associated mobile phones with debts and high expenses. Furthermore, it was found that impact on infrastructures was minimal. The finding confirmed prior research showing a gap between the acclaimed growth and the grinding poverty in which people lived (Aryeetey, Devarajan, Kanbur, & Kasekende, 2012; Dulani, Mattes, & Logan, 2013; Hofmeyr, 2013; Potter, Conway, Evans, & Lloyd-Evans, 2012). Indeed, the World Bank (2015a) noted “huge infrastructure gaps” (p. 50) despite claimed global growth. Thus the aim of this study was to inquire into ways in which mobile phones produce did or did not produce development among selected rural populations of the Congo. For example, it was

observed that the dire conditions in which kiosk vendors and mast guards (see the findings of Case Study II: Mast Guards and Case Study III Kiosk Vendors) work and live indicated that the dissemination of mobile phones did not improve the basic infrastructures of the people directly involved with mobile phones, let alone others. On this note, Diga (2013a) advocated that “since affordability is *the most significant barrier to extending the reach of mobile services, as well as the range of services offered to the poor* [emphasis added], priority should be placed on policies aimed at reducing tariffs” (p. 125).

Social and business networks

The fourth and last modality – after rural areas – regarding the background of mobile phone contributions concerned social and business networks. It was observed that mobile phones tended to be associated with social networks and business networks (Smith, Spence, & Rashid, 2011). However, since the research questions of this study were about how mobile phones produced development and how they improved people’s living conditions, the study went beyond the social and financial networks to propose a broader focus of capabilities – informed by Sen’s (1999) conception of development -- in order for participants to enjoy fuller and better lives in their community. The reason being, since the aim of this study was to look into how mobile phones produced development, business networks or social networks were seen to be only a portion of people’s wellbeing. What has galvanized mobile phone literature into linking the rise of social and business networks and mobile phones was in large part the finding that “mobile phone use is related to network size and diversity” (Hampton, Sessions, & Her, 2011, p. 130). This finding came as a rebuttal against a seminal prior work that stated that “while these technologies [i.e., mobile phones] allow a network to spread out across geographic space and might even enhance contacts outside the home... they seem, however, to lower the probability of having face-to-face visits with family, neighbors, or friends” (McPherson, Smith-Lovin, & Brashears, 2006, p. 373). Hence, it could be argued that a focus on networks tended to bypass the (immediate) context of individuals and their wellbeing or development and the significance of face-to-face community engagement.

Studies that neglected context, space, locale, and the like tended to be the products of quantitative research. For example, mobile phones were shown to expand business networks in

Rwanda (Donner, 2006a) and in Ghana (Overå, 2006, 2008), and market outlets or networks in Niger (Aker, 2008, 2010; Aker & Mbiti, 2010b), or to be “facilitating communication among social networks” (Graham & Nikolova, 2013, p. 131, see also Geser, 2006, p. 9). While studies linking mobile phones and social networks were interesting, their preoccupations with “business networks” (Porter, 2012, p. 250), “smallholder farmers” (Maree *et al.*, 2013, p. 8), “firms... entrepreneurs and their employees” (Maree *et al.*, 2013, p. 28), or with “expanding market boundaries” (Smith, Spence, & Rashid, 2011, p. 78) did not address the impact of mobile phones from the perspective of this doctoral study’s participants -- who did not have a business, enterprise, or income. Indeed, business networks implied the idea of market-centered or profit-riveted business leading to an extractive, monetary, or commercial perspective of mobile phone era, with the goal to obtain or extract from poor individuals as much money (i.e., fees, prepaid cards, mobile phone devices, etc.) as possible. In this study, for example, participants wanted, but could not afford mobile phone calls needed to engage and maintain a business network, and thus the category that might best describe these participants was that of less than a dollar per day, or more precisely, to use an expression of Alkire *et al.* (2015), *deprivation* or *destitution*. Destitution was the new term to describe the poorest people who have no bank accounts, assets, incomes, etc.

Cross-cutting themes

One of the benefits of an in-depth inquiry of such magnitude as that seen in this study was the multilayered and multifaceted presentation of the phenomenon under study. The cross-cutting themes, also called headings, or categories, were sorted into two complementary perspectives: community and individual, each comprising six sub-themes (see Table 30) that were identified by participants.

Map of Cross-Cutting Themes

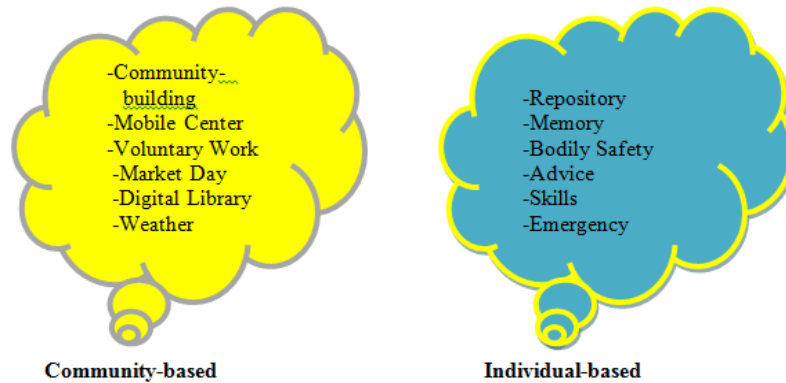


Figure 29: Common themes

Community-based sub-themes

As noted earlier, the community-based perspective was made of six sub-themes where participants saw mobile phones playing a distinct role. These sub-themes or headings reflected prior work that showed the centrality of community in African cultures (Bongmba, 2005; Diagne, 2005; Esongi, 2011; Eze, 1997; Gambembo, 1995; Gyekye, 1996, 2003; Kanyamachumbi, 1995; Mabe, 2005; Maquet, 1967; Nyerere, 1977; Ramose, 2003a, 2003b; Tempels, 1945; Tshiamalenga, 1975, 1985; Wiredu, 2005). This centrality was evident in the data gathered. First, community building was the theme whereby most interviewees expressed the need to strengthen the cohesion between the members of the community in order to promote the community as a whole. The reason for the centrality of community among this study's participants resided in the fact that the community represented the bedrock on which the actualization of individuals was anchored. As Wiredu (2005) wrote, "African societies are, famously, communalistic" (p. 1745, see also Diagne, 2005, p. 1762; Gyekye, 2003, p. 366). However, the focus on community did not presuppose the disregard or destruction of individuality (see detail below).

African communal culture. The expression community building might be an understatement of the reality proper to this study's participants since community building in most Western societies

has the connotation of maintaining or affirming a given association or groups of people. Since Research Question 1 was about the extent to which mobile phones produced development, and Research Question 2 about how to improve the living conditions of people, the culture, lifestyle, beliefs, or practices prevalent in the concerned community were important to bear in mind. The best explanation of African communal culture might be with the concept *Ntu* (Tshiamalenga, 1975, 1985) -- taken from Bantu languages – meaning: life, existence, being, etc. While the concept *Ntu* rose to fame in the 1990s under the Zulu (South African) term *Ubuntu* (see Esongi, 2011, p. 28; Kimilike, 2008, p. 131; Kithaka, 2015, p. 103; Oppenheim, 2012, p. 369), with former South African President Nelson Mandela using it, it was brought to light and largely explained by Congolese philosopher Tshiamalenga (1975, 1985). Variant words in Swahili include: *Utu*, *Umtu*, *Umutu* (humanity, humanness), *Ujamaa* (family-hood), *Binadamu* (living being), etc., or *Bumuntu*, *Bwenamuntu* (humanness, humankind) in Ciluba (Congo). The idea conveyed with these *Ntu*-related words is that of the rapports of a person with self, others, things, and the world.

More than a simple family or set of families or groups, *Utu* or *Bumuntu* involves the totality of being(s), and thus relates to things, people, mountains, rivers, valleys, animals, plants, events, contexts, relations, situations, etc. in which humans are embedded or situated. *Utu* is a culture, underlying philosophy, a way of living, which implies material or tangible as well as immaterial or intangible dimensions. In other words, as a Zulu proverb says, “*Umntu ngumuntu ngabantu*” [a person becomes a person through and with (the help of) others] (Esongi, 2011, p. 26, see also Kithaka, 2015, p. 105; Oppenheim, 2012, p. 369). Or as a Ciluba (Congo) proverb says “*Buena muntu budi ndambu ndambu*” [Humanity lies in sharing the little a person has] (Kalamba, 2013, p. 30). This had consequences for the way mobile phones were shared (see Case Study I: Parents). The concept *Utu* was kept in this study as a contribution since its *Ntu* affinity was verified in radicals across Africa (see Tshiamalenga, 1975, 1985). For example, one mobile phone could be used, charged, topped up, repaired, etc. by a person’s neighbor, uncle, friend, sister, husband, grandma, etc. Therefore, mobile phone represents a chain of relationships and uses.

There was not a recipe or recipes as to how to be or implement *Utu*. People went in groups to the river, crops, market, city, etc. People cooked, ate, plowed, planted, harvested, danced, talked, mourned, celebrated, rested, etc. in groups or families. Since Research Question 1 was about the extent to which mobile phones produced development, and Research Question 2 about how to improve the living conditions of people, a mobile phone inquiry insensitive to the practices, forces, factors, or dynamics proper to the community – as those noted above -- was likely to miss or overlook what this community actual was and did. For example, mobile phone was used “*with regard to roof, laundry, crop, garden, wood,*” (Group II) etc. This finding confirmed prior mobile phone research that stated that “mobile phones afford users the opportunity to multitask at any time and place” (Carrillo & Subrahmanyam, 2015, p. 82, see also Aker & Blumenstock, 2015, p. 355). Thus, people had to form groups for work associated with roof, laundry, crop, garden, and wood, with each group being invited on a specific day or time, depending on who volunteers were. In order to form each group mobile phones were needed.

Groups could be based on profession or the need or task at hand. Tools could also bring groups together if they needed the same kind of tools. That meant that there were moving groups all the time, and mobile phones were being used in the process, to check on people, location, time, result, etc. Also, *Utu* was helpful in understanding Sen’s framework (capability approach) through which this study’s contributions were made. For example, capability approach advocates for the expansion of capabilities. This doctoral study’s participants too wanted to have more options or capabilities (i.e., water, health, food, shelter, clothing, etc.) in their daily lives than just a specific use or task of mobile phone in order to enjoy the fullness of *Utu* (being). It would be impractical for example to give food or a house to a person and not to share the capabilities on how to find, cultivate, or harvest corn (food), or build, fix, and maintain the house. *Utu* was also the setting, perspective, or culture in which the (idea of) market was being – and ought to be -- understood or implemented in this particular community. This meant that in this community life – *Utu* -- was not just about exchanging money and purchasing materials or items (i.e., the focus of most mobile phone studies), but living or achieving life to the fullest.

The point about *Utu* was that in an area as deprived of needed public services as the one in this study, the community or more precisely *Utu* fulfilled the role of the state, police department,

hospital, nursing home, school, restaurant, etc. To this end, as is clear below, there were a variety of instances where mobile phones could and should play a *Utu* role, with the information needed or service imparted, such as harvest, birth, parties, market, weather, wedding, battery charge, voluntary work, news, drought, etc. For example, the idea of technology day (detail below) was where participants wanted to see not just individuals (see Case Study I: Parents), but their community and capabilities developed or expanded. In other words, participants wanted to see their village or neighborhood clean and the market held in it being active. While capability approach highlighted that “any affirmation of social responsibility that *replaces* [italics in original] individual responsibility cannot but be, to varying extents, counterproductive. There is no substitute for individual responsibility” (Sen, 1999, p. 283), this study’s participants or *Utu* went further by highlighting the community in its fullness (i.e., with all it had) as the *center* in which development unfolded. This echoes Sen’s (2009a) comment:

uses of the capability approach... have been quite unequivocal in not assuming any kind of a detached view of individuals from the society around them... It would be hard to understand why and how he or she undertakes these activities [of capabilities] without some comprehension of his or her societal relations. (p. 245)

With *Utu* pervading their language and existence, this study’s participants wanted to make the focus on their community or local society *firmer* and *clearer* for their development than a simple assumption often made above in capability approach. Firmer focus meant that activities, for example harvest, needed more attention from the community to avoid theft as the crops were exposed. Clearer focus meant that the community knew what was needed at a specific time, for example, fishing, harvesting, plowing, etc. What was found was that groups were being asked to do the same services over a week or more, depending on the task at hand. One pertinent idea put forth, for example (see Case Study VII: Chiefs), was that of a technology day (details below) centered on the community with different kinds of activities, services, and capabilities made available to individuals within the community, which was a more integrated and holistic approach of development.

Utu and shared ownership. Another point of interest resulting from *Utu* (culture or lifestyle) was that of shared ownership or use of mobile phones, which was very apparent from this study's participants (see Case Study I: Parents). While shared ownership was mentioned in prior mobile phone literature (Aker & Mbiti, 2010b; Burrell, 2010; de Souza e Silva *et al.*, 2011; James & Versteeg, 2007; Porter, 2012, 2015; Porter *et al.*, 2012), it had yet – and more so the idea of *Utu* -- to receive sustained research. This study sought to fill this gap. For example, a grandmother, who is illiterate, can own a mobile phone, bike, house, etc., all of which given to her by one of her sons or daughters. In this case, the mobile phone(s) of the grandmother may have been used, maintained, charged, and topped up by her grandson(s) or community's volunteer(s). This study's finding contradicted prior claims that “the private ownership of mobile phones is skyrocketing in the developing world” (Ling & Donner, 2009, p. xi). One reason why *some* -- by no means all -- authors have signaled private ownership of mobiles or “[mobile] phone owners” (Blumenstock & Eagle, 2012, p. 1) resided in the neglect of the phenomena of solidarities born out of *Utu* – such as those seen among this doctoral study's participants. Another reason might be the lean coverage accorded to rural areas by some authors of mobile phone literature, or more particularly the constant association or identification of rural areas with urban populations (see Porter *et al.*, 2012, p. 146; Stefania & Marina, 2015, p. 13; Yousif, Berthe, Maiyo, & Morawczynski, 2013, p. 30; Mishra & Bisht, 2013, p. 513; de Souza e Silva *et al.*, 2011, p. 413; Ling, Bjelland, Sundsøy, & Campbell, 2014, p. 289).

Still another reason why *Utu* has not received sustained attention in mobile phone literature and development – again no guilt implied – was the corporate or financial focus or tendency characterizing mobile phone research (detail below). Thus, community was mostly seen as an organization, micro-enterprise, or corporate whose information flow or business networks needed to be boosted (Abraham, 2007; Ashraf, 2015; Jagun, Heeks, & Whalley, 2008; Jensen, 2007; Smith, Spence, & Rashid, 2011). Such a *corporate* definition or understanding of community left out rural populations or the world's poorest, namely: the unemployed, sick, disabled, blind, elderly, illiterate, etc. Mobile phones were thus seen as a commercial tool, with individuals being used as means to that (financial or productive) end. As Harris and Cooper (2015) indicated, “by far, the greatest contribution to society of the mobile phone at present is in improved productivity” (p. xxxv). Rural areas, as is clear in this study, had yet to be a stand-

alone subject of research among mobile phone theorists. For example, the elderly were being looked after by individuals taking turns. The same was true of other persons with special needs. One reason for this was that there were no public services to undertake those private or individual-based services as well as the communal nature of life and the notion of *Utu*. In fact, rural areas had the potential, if not the privilege, to lay bare *Utu* and resultant phenomena or practices. This was not saying that studies and authors unconcerned with rural populations and their realities were worthless, but that since the aim of this study was to inquire into ways in which mobile phones produced development in rural areas of the Congo *from the perspectives of* concerned populations, and more precisely Research Question 1 was intended to see how mobile phones produced economic development, and Research Question 2 was aimed to assess how mobile phones improved people's living conditions *in rural areas* of the Congo, rural realities became the required and informative entry or setting of the development of the community being investigated. Indeed, mobile phone literature has revealed that “despite the massive uptake of mobile phones in developing regions around the world, it is premature to assume widespread access to mobiles in the rural areas of the poorest countries” (Steinfeld, Wyche, Cai, & Chiwasa, 2015, see conclusion).

A direct contribution of this doctoral research was to bring *Utu* to the table of mobile phone and development research and thinking. The reason why the views of this study's participants were important was that in the resultant thinking, development was being viewed as the development of or expansion of capabilities *of the community and all its members (Utu)*, *not of a clique* of (rich) individuals and/or mobile phone owners. Also to clarify, this study was not saying that rich individuals were not necessary for a society's economy (i.e., development), but that such a topic was not the focus of the research questions posed in this study (see above). Grounded in rural areas, this study allowed the research to be sensitive to the “collective responsibilities and solidarities” (Randall & Coast, 2015, p. 165) with which the world's poorest survived.

Utu and voluntary work. An important finding to mention about community-based services was voluntary work. Although voluntary work was essential to the community or *Utu*, it was not – although it could -- and should not be as reliable as hoped or needed simply because it was not a requirement. Culture did not make voluntary work mandatory. Therefore, the work sought might

take time (several days or weeks) to be completed or to find the right person or professional. One exception, perhaps, was with emergencies wherein volunteers were easier to find or show up than on other occasions. The reason for this might be human compassion. Another reason why voluntary work was taking time was that volunteers had to find money, tools, skills, or information needed for the task at hand. Thus, it was not appropriate to *force* volunteers; they had to take time in order to be able to render a better service.

For example (see Case Study IV: Group Discussion Session One), Group V reported the repair of the falling roof of a blind lady, Group III mentioned a mobile phone text sent to travelers to warn them about a flooded bridge due to weather conditions, and Group IV related that mobile phone was used to repair a well, etc. These and similar instances were *voluntary and not a paid work*, meaning that they were paid for by volunteers who might or might not be able to come again or cover the fees again -- depending on their resources, time, availability, etc. A paid work is one that ought to be done according to the money given and the time set. The best example of voluntary work is with a person who happened to be at the entrance of a building and opened the door for someone needing to exit. Such a service does not make the person a door keeper of that place, meaning that next time (or every time) the person might not be there. Therefore, it was not clear if there was a follow-up on the services provided in the community, should the need arise again or the person face another need. One of the issues raised by participants was that of lasting or sustainable services, as opposed to a one-day-help or once-for-all type of service. As James (2014), a renowned expert of mobile phone research, explained,

In traditional micro-economic theory welfare from goods [commodities] is derived at the point where they are purchased. What happens after that point is not considered. Yet, as Sen and others have observed, actual welfare depends on the use to which goods are put *after* [emphasis in original] purchase. This neglected aspect of welfare needs to be investigated. (p. 363)

As seen in the statements above, the post-commodity life or reality of mobile phone users is not addressed by mobile phone research. Therefore, capabilities were regarded not as one-day-help commodities, but as *broader* and *long-term* opportunities available to people in their daily lives.

One reason why interventions of voluntary work done among rural populations tended to be seen by some mobile phone literature authors as purchased and thus once-for-all-done work might be “the emphasis on the financial [corporate] benefits of mobile phone in developing countries... due to a large number of studies that have focused on user groups such as farmers, fishermen or microentrepreneurs” (Mäkelä, 2015, p. 58, see also Boateng, 2011, p. 59). Furthermore, “current research primarily focuses on the short- to medium-term effect of mobile phones on search costs, market agents’ behavior, and price dispersion. This work is useful, but it is a subset of what could and should be known” (Aker & Mbiti, 2010b, p. 225). As noted below (see the features of capability approach), this study’s participants saw market more as a capability-empowering milieu than a mere place of purchases and commodities (see Case Study VII: Chiefs). The idea was to enhance the capabilities of the community, neighborhoods, and individuals – with advising staff, services, technologies, etc. As seen with this study’s participants, capabilities (see Case Study IV: Group Discussion One; Case Study V: Group Discussion Two) are *lasting, comprehensive* opportunities, not just commodities to be purchased or acquired at a fixed time. For example, finding information needed to fix a roof cannot be dissociated from the broader capabilities surrounding the rights to or ownership of the house and other basic needs.

The second sub-theme, after community-building, that stems from participants was mobile phone center, the theme that participants proposed. This was similar to the idea of Internet café, with a view to providing mobiles and related services to the community/village. This again reinforces and stems from the community conception of *Utu* and how solutions in this case enabling mobile phones to play a role in such a community are envisaged by the community. Third, voluntary work was the theme suggested by most interviewees in order to attend to the needs of basic infrastructures of the community since the community had no such thing as the kind of utility services found in urban areas and developed countries. People were coming to the aid of people. This required researchers, for example, to go beyond “research which focuses on the household as a bounded and discrete unit” (Randall & Coast, 2015, p. 165) in order to be able to account for the relatives or friends who were living and sharing meals together in the same house to survive. Mobile phones could help (see or tell) who was connecting with whom and for what. Fourth, market/technology day was the theme proposed as an opportunity where not only commodities, but different activities and technologies were or could be provided to the community/village.

Fifth, the memory and in a sense the knowledge bank was also highlighted as key to the capability development of the community and respondents, and participants identified how mobile phones played or could play a role. Digital library was the theme that indicated the opportunity of using mobiles as a center of knowledge, according the needs at hand. Thus, mobiles could serve as or be integrated into information services or repositories (Chowdhury, 2015a, 2015b, 2014, 2013). As explained in findings chapter, digital library simply means that mobile phone can be used as a library to check some useful information, as opposed to a mortar-and-brick library. Examples included manuals of tools, history of the village, list of local medicinal plants, newspapers, dictionaries, etc. To take one example, local medicinal plants, locations, and practices could be stored on mobile phones so that those interested could use that information. Another example, mobile phone could be used to invite volunteers in order to evacuate a tree fallen in a backyard after a storm. Still another example is with weather conditions wherein people could be warned against an incoming rain storm. However, such a discourse was/is not relevant since the research questions asked in this study were not about giving recipes or solutions of mobile uses or designs, but showing ways in which mobile phones produced development. Sixth and lastly, weather was the theme proposed by participants in order for the community to be able to best plan their works and activities, by taking into account weather conditions. Mobile phones played a role with the information provided in the areas cited above.

Individual-based sub-themes

The individual-based sub-themes embraced six themes which included: repository, memory, bodily safety, advice, skills, and emergency. These are discussed below following a broader discussion of the individual. Since the research questions of this study were to assess how mobile phones spawned development and how they improved people's living conditions, the role(s) ascribed to individuals were a compelling indication of how development was being implemented or lived in the community. For example, mobile phones were not shown to be concentrated among certain individuals, in part because of *Utu*, particularly shared ownership. However, considering the weight given above to *Utu*, the place of individuals or individuality could seem diminished or secondary to community, and thus warranted explanation. The best

way to think of individuality in the context of *Utu* is with a widely known and cited African proverb which states that

“it takes a whole village to raise a child”. This proverb exists in different forms in many African languages. The basic meaning is that child upbringing is a communal effort. The responsibility for raising a child is shared with the larger family... Even the wider community gets involved such as neighbors and friends. (Albert, 2013, pp. 1-2, see also Kalamba, 2013, p. 79)

As is clear from the statements seen above, African communal culture underlines a child’s (or individual’s) raising as the responsibility of *each* and *every* individual (in the community), not the community as a whole. The participation of every individual in raising a child was expected or required, regardless of who or what individuals were (i.e., poor, rich, skilled, etc.) in the selected community. The same could be said of mobile phones. Another, perhaps more important, idea highlighting the role of any individual in African societies was that of *vital force*. In fact, “it is a fundamental trait of African thought to hold that the force of life is the supreme value and to posit ‘being’ and ‘force’ as equivalent” (Diagne, 2005, p. 1762). This is how individuality is envisaged in African societies. A force is that which can produce effects in the community. This study’s findings showed that women were an important force of development in the community; without which African communities could not prosper. This implied that development concerned not only the community, but also each and every individual. Thus, the themes above reflected this emphasis placed on individuality within the community.

Early criticisms and individuals. The aim of the present doctoral research was to inquire into ways in which mobile phones produced development among rural populations in the rural areas of the Congo. The hope was for the findings to help sift through the statements made about mobile phones and development in relation to the rural Congo context. Only then could solid and sound contributions be brought forth to make the world a better place. It bears underscoring that since the early stages of mobile phones and development in developing countries criticisms were raised on a number of fronts (Abraham, 2011; Blumenstock, Gillick, & Eagle, 2010; Blumenstock, Shen, & Eagle, 2010; Burrell, 2010). The criticisms have also been confirmed by

extensive research done in development studies (see Alkire *et al.*, 2015; Alkire, Roche, & Sumner, 2013; Alkire & Santos, 2013; Aryeetey, Devarajan, Kanbur, & Kasekende, 2012; Dulani, Mattes, & Logan, 2013; Hofmeyr, 2013; Jerven, 2013a, 2013b, 2013c; World Bank, 2013, 2015a, 2015b). The criticisms echo the lessons learned touched upon in literature review chapter. One overriding criticism made was about the Western bias in describing or understanding the uses of mobile phones in developing countries (Gough, 2005).

Since the research questions of this study were about how mobile phones produced development and how they improved people's living conditions, this study's participants (See Case Study I: Parents), for example -- unlike in the majority of studies -- showed that uses of mobile phones were shared among individuals, meaning that that they did not have the means or income to pay mobile phone fees for themselves. Another criticism made was that mobile phone services were found mostly among wealthy and educated people (Blumenstock & Eagle, 2012). Since the research questions of this study were about how mobile phones produced development among people, and how they improved people's living conditions, it was curious to see whether mobile phones were monopolized by a specific group or social class. No discrimination based on wealth in the uses of mobile phones was noted in this study, however mobile phones were shown to be "*prohibitively expensive*" (Parent XIX). Another participant stated, "*mobiles are the biggest reasons for falling into debt. I personally use the mobile very sparingly*" (Parent XXIII). Nor was gender discrimination noted, either. Nonetheless, to be clear, those questions of discrimination were not the focus of the research questions posed in this study. Still another criticism was that mobile phones were not a source of productivity or income as claimed in some -- by no means all -- studies on mobile phones (Aker & Blumenstock, 2015; Mäkelä, 2015; Stork, 2011). Since the research questions of this study were focused on how mobile phones produced development and how they improved people's living conditions, the idea of productivity or money-earning through mobile phones needed to be analyzed. This study's participants confirmed (see Case Study III: Kiosk Vendors) that mobile phones were not a source of income or job.

Individuals and measurement. Since the research questions of this study were intended to assess how mobile phones produced development and how they improved people's living conditions,

the idea of measurement of individuals was/is a daunting one in mobile phone literature. As rightly explained in methodology chapter, quantitative research has limitations and was not as informative about people and their lives as needed, in large part, as is clear in this doctoral study, due to the tendency of numbers to overlook and indeed misrepresent people's and countries' developments and contexts, and not adequately explore basic capabilities in Sen's (1999) terms. The idea being, largely because of the communitarian nature of the *Utu* culture, some social dynamics such as shared ownership of mobiles, houses, crops, bikes, utensils, etc. resisted any attempt of measurement which crafted or conceived of reality "as a bounded and discrete unit" (Randall & Coast, 2015, p. 165) to be measured.

Shared ownership meant, for example, that a person lived in her sister's house, ate in her uncle's house, raised corn in grandma's crop, used a neighbor's mobile, and rode her brother's bike. Because of fluid social dynamics arising from such a communal culture, analysis bounded to individual measurement misses the poor, or to use a practical characterization of Randall and Coast (2015) "makes them statistically invisible" (p. 162). It was not that measurement was not important, but that it loses sight of the social dynamics at work. In other words, measurement came at the cost of "losing sight of collective responsibilities and solidarities" (Randall & Coast, 2015, p. 165) explained above. For example, individuals tended to relate themselves to others and to community-based activities. This worldview – the *Utu* -- implied a different idea of an individual. Individuals were always and already entities *networked with* others, the community, and the world. One contribution of this study was to recognize the communal nature of mobile phone experience which was not reflected in other studies that followed the individual or aggregated individuals.

By focusing on these participants and the spectrum of capabilities available to them, this study therefore contributed to prior work that indicates that "while economic studies have focused on the effects of mobile phones for particular countries and markets, there is little evidence showing that this has translated into macroeconomic gains" (Aker & Mbiti, 2010b, p. 224). Furthermore, this study went past macro-economic indications such as GDP, GNP, income, etc. (see Sen, 1988, 1993a, 1993b; Diga, 2013a). The reason for this limitation might very well be that "the limitations of these measurement tools [of economics] were investigated with poverty

researchers suggesting that poverty needs to be measured by an individual's or family's access not only to income [and similar statistics], but also to other needs" (Diga, 2013a, p. 117). This has been recognized by other researchers (Alkire *et al.*, 2015). Since the research questions of this study aimed to determine how mobile phones produced development and how they improved people's living conditions, the study made a dent by suggesting a shift away from the focus of an individual's possessions or commodities to that of broader capabilities of the individual with others and within the community.

The micro-economic or individual-based approach (see Case Study VIII: Youths) was an approach that highlighted the capabilities of participants to produce, earn, or gain resources and services, and thus be able to sustain themselves and their community. In other words, to avoid the focus on commodity for the sake of commodity or utility (detail below), it was shown that development was not measured in terms of incomes or moneys, but in terms of the extent of capabilities or options a person had to live better and fuller lives. This was not saying that numbers or measurement were not important – indeed numbers might be needed in order for mobile phone companies to thrive as business organizations (Achtzehn *et al.*, 2015, p. 63, see also Nemiroskia *et al.*, 2014, p. 11984). However, numbers were not relevant to the research questions posed in this study.

Bearing this in mind it should now be clear that the cross-cutting individual-based sub-themes ought to be understood along the lines of the points made in previous research. Perhaps due to the participatory method applied in this study, participants were able to bring to light a number of areas in which mobile phone benefits could be identified. Thus, the expansion of capabilities in these areas could be considered in order for concerned populations to enjoy better and fuller lives. At the same time, however, it bears clarifying that while it is the case that specifics or details of private life or "private interests of individuals," to use an expression of Urquhart (2014, p. 155), can become a matter of public discussion and discourse in "Western societies," (Sen, 2009a, p. 273), it might not be so in "non-Western societies" (Sen, 2009a, p. 330), more specifically in the culture of this study's participants. In effect, one of the goals of the present study was to ensure that participants felt safe and comfortable during discussions and interviews. This implied that – as also required by participatory method (see Chambers 2002/2011) --

specifics on participants' comments and responses related to mobile phone private information and uses were not pursued or asked, and therefore were sparse, lest the nature of the information concerned body parts, intimacy, sexuality, or any embarrassing topic. Moreover, comments of mobile phone private information tended to come from female respondents. Meanwhile, this study was neither about gender nor privacy. That being said, the areas touched upon were also reflected more or less in previous mobile phone research. Also to clarify, as explained below, this did not mean that participants' culture did not allow individual autonomy.

First, repository was the sub-theme considered by participants to allow people to store personal information on mobiles. Since the research questions of this study were about how mobile phones produced development, and how they improved people's living conditions, it was important to see how individuals were able to use mobile phones. For example, "*I usually have my grandson check how long I saw my son last or the pictures taken at Christmas or the birth of my granddaughter. I use mobile phone to get my head around a number of past things*" (Parent XXVIII). It was not clear what kind of past things were being mentioned here. Previous studies also focused on mobile phones with the goal "to enable users without access to personal computers to record, store, and share information... using cell phones" (Reitmaier *et al.*, 2012, see abstract). Other studies proposed devices that could be beneficial for illiterate individuals -- such as those of this study -- who depended on a third party in order to use or store information on a mobile phone. For example, "such services include interactive voice applications and services for cell phones to record and access content produced locally, or by authorities or NGO... or participate in citizen journalism or online social networks" (Bidwell & Siya, 2013, p. 36). The goal with this mobile phone service was "to enable [rural] users to record, store and share voice files for free" (Bidwell & Siya, 2013, p. 36). Such services also provided rural users with further capabilities or options with regard to mobile phone uses since illiterate users were able to use mobile phones on their own.

Second, memory was the theme that interviewees proposed in order for people with memory problems to find help by using mobile phone reminders or prompts. The best example of this was with medical prescriptions, the follow-up of which could be challenging to some people with chronic memory losses. As one parent stated, "*with my memory problems, I have to always check*

who owes me and how much they owe. My nephew does all the recording to keep track of my lending business. He stores those details on the mobile” (Parent XI). For example, previous studies “suggest that SMS reminders [sent on mobiles] may be an important tool to achieve optimal treatment response in resource-limited settings” (Pop-Eleches *et al.*, 2011, p. 825) such as those dealt with in this study. Perhaps, mobile voice files mentioned earlier could be more beneficial for illiterate users than just mere SMS reminders.

Third, bodily safety was the sub-theme participants indicated to allow the vulnerable people to use mobiles to alert the community or sages when they were at risk. As one participant related, “*Mobile phone also warrants, and should do so, my bodily safety when I am alone or away from my grandson, husband, neighbor, etc.*” (Parent X). It was observed that with regard to safety, previous studies done on mobile phones tended to present mobile phones with army- or police-based focuses such as “road safety” (Bhatti, 2015, p. 1356), “civil wars... friends and families... crime” (James, 2015, p. 48), etc. It was also shown that “a relationship between mobile phones and safety occurs in diverse geographical situations. These range from non-violent circumstances such as fishing to civil wars and post-conflict societies” (James, 2015, p. 49). However, rather than merely mentioning violent or non-violent circumstances this study’s participants proposed bodily safety to ensure the integrity of each person. Bodily safety implied a certain amount of confidence about a person’s body -- especially vulnerable people – in regard to touch, look, cloth, closeness, word, attitude, etc. For example, an authoritarian attitude in group discussion, daily conversation, or work place can prevent a person from being or doing the things or capabilities she could do or has reason to value (Sen, 1999). Again for privacy reasons, details of examples can certainly vary from individual to individual and from situation to situation.

Fourth, advice was the sub-theme that participants suggested to help people was to receive help when they faced difficulties using a specific technology or item. As one participant testified, “*all technologies had to be learned when they were introduced in this community, such as bike, radio, canoe, hew, mortar, grinder, etc.*” (Mid-wife X). It was noted that the community did not have warehouses, home depots, car shops, garages, factories, etc. in which tools or technologies used on a daily basis could be acquired or replaced. Therefore, “cell phones offer many new opportunities to people in technology-sparse regions” (Bidwell & Siya, 2013, p. 36) such as the

one investigated in this study. With increasing possibilities or demos offered on mobile phones, one could learn how to use just about any technology (i.e., blender, bike, canoe, kayak, etc.). Previous studies done on mobile phones tended to focus on mobile phone literacy or access as an information technology to be learned or handled, and not on technology literacy or access, as a process of learning any technology needed in society. As Palumbo (2014) wrote, “more still needs to be done so that this technology [mobile phone] is accessible by all” (p. 179). The reason for this might be the continual upgrade of applications put on mobile phones, which requires specific learning or literacy.

However, it was also important to look at technology-deprived societies such as the one investigated in this study. As Brown (2005) put it, “wireless and mobile technologies also make it possible to provide learning opportunities to learners that are either without infrastructure for access (example rural learners) or continually on the move (example business professionals)” (p. 299). This could be done through a mobile phone or at a later time on market day when different people from across the region come. The service “mobile learning, also called M-learning, is defined as learning delivered (or supported) solely or primarily by handheld and mobile technologies” (Dabbagh *et al.*, 2016, p. 15). Another reason for the focus placed on technology was that “using mobile phones for economic development not only requires “hardware” – for example, the handset, application or service – but an enabling environment that fosters the adoption and use of that technology” (Aker & Blumenstock, 2015, p. 367).

Fifth, skills were the sub-theme that participants mentioned to help people hone their respective professional skills using mobiles. For example, one participant noted, “*skills are the core feature of a community. Without skills, there are no human beings in the village*” (Artist IX). This was most needed for professionals. As another participant declared, “*a job is the implementation of a person’s skills. In our community, skills are taught from generation to generation despite the fact some people are born highly skilled in one domain or the other*” (Trader VI). Indeed, previous studies showed that “SMS messages containing agricultural advice increased sugar cane [in Kenya] yields by 11.5%, with relatively larger effects for farmers with no *agronomic training* [emphasis added]” (Aker & Blumenstock, 2015, p. 363). In other words, the training of these farmers was (informally) obtained through a mobile phone. This was partly because “mobile

phones have the potential to facilitate the acquisition of educational skills” (Aker & Blumenstock, 2015, p. 361).

Sixth and lastly, emergency was the sub-theme that concerns the use of mobiles during unexpected and pressing circumstances. Emergency might be one of the most cited and easiest to understand uses of mobile phones around the world. This simply means that a person can be faced with emergency situations and that mobile phones cannot be an exception. For example, previous studies done on mobile phones showed that “mobile phones contribute to the safety of fishermen during extreme weather conditions and emergencies” (James, 2015, p. 48). As one participant recounted, “*in case of an emergency, I can use a mobile phone or someone can use a mobile phone to contact me*” (Chief XII). Emergency also means that those concerned (i.e., relatives, friends, neighbors, etc.) with the event at hand might need to be notified or informed.

The six individual-based sub-themes were in no way at odds with the community-based sub-themes discussed earlier. In other words, the individual-based sub-themes corroborated the importance of individuality, and yet showed that this was embedded in the local conception of community. Without individuals or individuality, community was impossible in African cultures (see Bongmba, 2005; Diagne, 2005; Esongi, 2011; Eze, 1997; Gambembo, 1995; Gyekye, 1996, 2003; Kanyamachumbi, 1995; Mabe, 2005; Maquet, 1967; Nyerere, 1977; Ramose, 2003a, 2003b; Tempels, 1945; Tshiamalenga, 1975, 1985; Wiredu, 2005). In fact, as is clear from this study’s findings, the community did not supersede individuals, but rather it helped individuals fulfill their respective potentials. In other words, community and individuality needed each other. For example, a person needed time to be alone (to take a shower, dress, sleep, etc.), but by the same token, the person needed a community in which she performed her daily duties. The finding bore out prior research on African societies, which stated that

the community [in Africa] allows an individual to actualize his or her potential and develop personality in the social world without destroying his or her own will...

Individuals can also question what they do not agree with. Individuals are self-directing and self-determining and for that reason possess autonomy (Bongmba, 2005, pp. 425-426, see also Gyekye, 2003, p. 366; Esongi, 2011, p. 28; Wiredu, 2003, pp. 376-377).

The statement implied that the actualization of individuals took place within the community, and thus required the autonomy of individuals and related freedoms and rights. This meant that autonomy led to the fulfillment of people's potentials. As Diagne (2005) explained,

The emphasis is now on the person and on the goal set for individuals to become what they have to be: accomplished humans. The community is ontologically rich in the individuals who compose it and who must realize through it their potential as accomplished persons.
(p. 1762)

The passage above reiterates the idea of capabilities espoused in this study in the sense that accomplished persons were those that made the most of their capabilities. The community represented the milieu in which capabilities were achieved. As Gyekye (2003) clarified, "even though in its basic thrust and concerns it [African culture] gives prominence to duties toward the community and its members, it does not – cannot -- do so to the detriment of individual rights" (p. 366). According to the framework adopted in this study, namely capability approach, individual rights are freedoms or opportunities that people pursue and fulfill in order to live better and fuller lives (see Sen, 2009a, pp. 366-367; Nussbaum, 2003, p. 36).

As is now clear, more than a simple entity of choice, individuality is the locus of empowerment, fulfillment, or actualization. Community-oriented themes or headings can be used in the design of mobile phone applications related to community tasks such as calendars, meetings, parties, funeral services, etc. whereas the individual-based sub-themes can be used in the design of personal contacts, favorites, messages, medical records, etc. As Harris and Cooper (2015) remarked, "mobile phones are designed as *mass market commodities* [emphasis added] without regard to the fact that people are different from one another and that different kinds of people would benefit from phones that are designed for their unique needs" (p. xxxvi). The best example of mobile phones designed for or tailored to the needs of individuals and their lifeworlds is with a storm, fire, or disaster, wherein warnings, instructions, updates, or messages can be sent or texted to the community and individuals to direct the crowd to designated places of rescue or assembly. Responses of individuals about their whereabouts can be sent or texted to rescue services. As noted above, the way mobile phones are being currently used is that they are

mass-designed and -produced for all people to use across spaces and times in order to meet the needs of the world market, not of particular users. The point being that development cannot be implemented without a sustained look at the concerned community as a whole and at individuals in particular.

Contributions to prior bodies of work in light of Sen’s framework

The research questions of this study aimed to assess the extent to which mobile phones produced development and improved people’s living conditions in rural areas of the Congo. To this effect, Sen’s (1985a, 1985b, 1988, 1999, 2009a, 2009b) framework, also called capability approach, was used in order to best focus on the capabilities surrounding the basic needs with which people in rural areas struggle to live better and fuller lives. Since the contributions of this study were made in light of capability approach, clarification is needed before discussing the contributions identified and the capability approach used. As Sen (2009a) noted, “it is important to emphasize certain specific features of this approach [capability approach] that should be clarified at the outset, since they have sometimes been misunderstood or misinterpreted” (p. 232). More precisely, clarification needs to be made about the term capability and the background of capability approach.

The term capability

Capabilities indicate the opportunities, abilities, or options that people have in order to live to the fullest the kind of life they choose (Sen, 1999). While the term capability is central to capability approach, it is one of the most misunderstood and misused concepts of capability approach. Just about everything can and has been said to be a capability. In the meantime, as shown below, not every capability is capability – or at least satisfies the features of capability approach -- according to capability approach. Three main reasons were identified why capability is surrounded with misunderstandings. First, the major source of confusion comes from the semantics of the term capability. Indeed, the English word capability can be said of everything that can provide some ability, for example: access to mobile phones, access to information, ability to use a computer, ability to open a door, ability to drive a car, etc. Second, capability approach has resisted attempts to provide a clear (or fixed) list of capabilities, leaving such a task

to the discretion of concerned communities, based on their respective contexts and lifeworlds. As Sen (2004b) stressed,

It would be a mistake to build a mausoleum for a ‘fixed and final’ list of capabilities usable for every purpose and unaffected by the progress of understanding [emphasis added] of the social role and importance of different capabilities. The problem is not with listing important capabilities, but with insisting on one predetermined canonical list of capabilities, chosen by theorists without any general social discussion or public reasoning. To have such a fixed list, emanating entirely from pure theory, is to deny the possibility of fruitful public participation on what should be included and why. (p. 77)

As can be noted in the explanation offered above, while the reason for not imposing a list of capabilities aims to give weight to the choice and deliberation of concerned communities, it has also led to some license and confusion as to *what is* and *what is not* capability. For example, access to mobile phone information is a capability generally speaking, but according to capability approach, there are steps in order for that capability to be capability (see below).

The third and last reason why the term capability is amenable to confusion resides in the fact that capability approach does not have a united body of work or manual. As with many scholars, Sen’s treatment of capability is scattered across much of his oeuvre, using specialized or sophisticated language. It also bears underlining that works of Sen were produced in different venues, for different purposes, and on different occasions since his expertise covers more subjects or topics than the concepts capability and development do. For example, capability approach and even development were part of Sen’s (2009a, 2009b) efforts to correct and interpret the legal philosophy of Rawls (1971/2003), apparently unrelated to capability and development. This has led authors to miss the explanations provided in the aforementioned book.

The background of capability approach

The second point needing clarification, after the term capability, relates to the background of capability approach. Surely enough, literature shows that the background of capability approach

is rooted in diverse philosophical movements and figures. However, for the purposes of this study German philosopher Karl Marx (1818-1883) needs mention. Indeed, much of the language seen in capability approach markedly traces back to Marx with whom, as Sen (2009a) acknowledged, “the approach [capability approach] ... has important similarities” (p. 411). For example, Marx (1867/1977) wrote extensively about the concept *commodity fetishism* -- a translation of the German word *Warenfetischismus* (see Marx, 1867) -- to signal the alienation, objectification, and exploitation of humans, whereby human relations, labor, and production, among others were held for the purposes of money, profit, or market.

In lieu of the word objectification or objectivation of humans -- a rendition of Marx’ (1867) original German phrase, *Versachlichung der Personen* -- some English translations have the word *thingification* or *reification of persons*, which signifies that humans are being used not as humans, but as *means* (machines) or *things* for the mere sake of production or productivity. The English word reification comes from the Latin word *res*, meaning: thing or object (Lewis & Short, 1879). Since the research questions of this study were to see how mobile phones generated development and how they improved people’s living conditions, any instance of *Versachlichung* or thingification or reification of mobile phone users, for example, of mast guards (see Case Study II: Mast Guards), was of prime importance. Thus, it was particularly relevant that Marx (1844/1959) advocated for the fuller actualization of workers or humans. Fetishism denotes something that is believed to have value in and of itself. Fetishism does not deny that something is good, profitable, pleasurable, etc., but it simply points out that the thing is being regarded as good *in and of itself*. For example, participants did not want just a specific food item (i.e., corn, mobile phone, house, etc.), but the capabilities surrounding basic needs in order to be able to enjoy fuller and better lives.

Another example of fetishism could be seen with cost reduction. Indeed, cost reduction defended by most mobile phone research to demonstrate mobile phone-led development was beneficial since theoretically it allowed traders to avoid unnecessary expenses (Aker, 2008, 2010), but it tended to be seen as good in and of itself, regardless of what happened after the purchase, whether, for example, the food bought did meet the needs of the buyer’s family. This study’s participants (see Case Study IV: Group Discussion Session One; Case Study V: Group

Discussion Session Two), however, wanted broader capabilities surrounding food, not just the cheap price of given products or items. Commodity comes from the French adjective *commode* (see *Larousse*, <http://www.larousse.fr/>), meaning: convenient, comfortable, pleasurable, practical, appropriate, etc. Commodity and fetishism are some of the most common terms used in the arguments of capability approach.

A closely related term also common to capability approach is that of *utility*, another term considerably reflected on by Marx (1867/1977). The English word utility is a transliteration of the French noun *utilité*, which derives from the French adjective *utile* (see *Larousse*, <http://www.larousse.fr/>), meaning: useful, efficient, beneficial, pleasurable, etc. These words and resultant expressions are key to a better understanding of most language used in capability approach. To be clear, commodities were understood in this study as *Waren*, to borrow Marx' (1867) original German word, meaning (see *Duden*, <http://www.duden.de/>): products, (economic) goods, or services provided, and “utilities or happiness” (Sen, 2009a, p. 19) were the state of being convenient, useful, comfortable, beneficial, etc. Commodities are things or services with direct economic or financial benefits whereas utilities imply primarily a non-profit, personal, civil, humanitarian, tourist, or municipal dimension. For example, a kiosk vendor could have the commodities of mobile phone uses such as kiosks, prepaid cards, chargers, etc. Utilities in this case might include easy access to mobile phone main office, new mobile handset, remainders of units on prepaid cards, etc.

In other words, ideas such as cost reduction and business networks presented in mobile phone literature to link mobile phones with development were good, beneficial, practical, etc., but they were mere commodities. Utilities include, but not limited to, ideas such as non-profit or not money-centered purposes, social gathering, city supply, mountain view, ocean view, etc. For clarity purposes, this study differentiated commodity from utility as did capability approach and Marx (1867/1977) discussed earlier. The goal was to avoid popular conceptions. Indeed, the English word utility holds the connotation of *servicing*, and *not* making or seeking money -- the civil population with things such as gas, water, road, electricity, etc. But a commodity or an economic good, say a bank account, has the distinct role of making the most money or profit out of it. The bottom line is that commodity has to do with gain or profit whereas utility has to do

with pleasure, leisure, convenience, beauty, or non-profit task. In both cases, things can be seen as good in and of themselves.

One idea that best illustrates the difference between commodity and utility is with the statement – generally and unjustifiably referred by popular belief to Chinese literature – of French-fluent 19th century English writer Ritchie (1885), which stated, “if you give a man a fish he is hungry again in an hour, if you teach him to catch a fish you do him a good turn” (p. 342). She (the writer) went on to explain that “but these very elementary principles are apt to clash with the leisure [or utility] of the cultivated classes” (Ritchie, 1885, p. 342). This means that the commodity (profit) and utility (taste) of a fish are undoubtedly surpassed by the capability of finding and supplying it. For example, the commodity of (owning) a house lies in its rent, lower taxes, cheap mortgage, or sale whereas the utility of the house lies in the pleasure, convenience, or beauty of the house such as historic area, easy access to the shopping center, drug-free and quiet neighborhood, etc. So, people could be regarded as reified or thingified by simply being users or enjoyers of those commodities and utilities. Put differently, commodification or thingification implies the idea of making profits to eradicate poverty (Prahalad, 2005), and utilization is the idea of using or operationalizing people or systems (Marcuse, 1964) to eradicate poverty. Therefore, those commodities and utilities were being *fetishized*, that is, seen as good in and of themselves.

If the commodities and utilities were lost (because of, for example, fire, earthquake, divorce, sickness, job loss, terrorist attack, flooding, highway construction, etc.), the person was left helpless or with no other option. Thus, capability approach recommends that a person be provided with as high a spectrum of capabilities surrounding basic needs and things offered as possible -- not just the commodities and utilities obtained. As Sen (1997c) noted (details below), “I have tried to argue for some time now... that, for many purposes, the appropriate space is neither that of utilities... nor that of primary goods [commodities]... The object is to concentrate on the individual’s real opportunities” (p. 393) or capabilities surrounding the things held and/or enjoyed. In clearer terms, Sen (2009a) elaborated,

Social realizations [or actualizations] are assessed in terms of capabilities that people *actually have* [emphasis added], rather than in terms of their utilities or happiness... Human lives are then seen inclusively, taking note of the substantive freedoms [basic capabilities] that people enjoy, rather than ignoring everything other than the pleasures or utilities they end up having. (p. 19)

The idea being that if the commodities and utilities were lost, the person ought to be (kept) well off. That was the message of capability approach and of this study's participants because this study's participants too wanted, for example, more than just commodities and utilities (i.e., cost reduction and business networks). Another way to think of reification or fetishism is with the idea of freedom, meaning that humans are being used, possessed, or owned by the commodities and utilities of things offered, such as business networks, financial gains, communication, etc.

Yet, as is clear from the findings of this study, the interest that social groups in rural areas showed in mobile phones was steady and diverse. Therefore, the contribution of this study was to focus on the enhancement of capabilities to include and empower the groups, communities, and members in ways that make rural individuals not *mere consumers or means*, but *creators* of their destiny and *contributors* to urban areas and to the wider human society. Another idea seen in mobile phone literature in relation to individuals – especially regarding business or corporate networks -- was that of monetary or extractive view of market, with individuals being seen as mere consumers and buyers, instead of producers. Since the research questions of this study were about how mobile phones produced development, and how they improved people's living conditions, Sen (1999) pertinently noted, "societal arrangements [of mobile phone development] ... are investigated in terms of their contribution to enhancing and guaranteeing the substantive freedoms of individuals, *seen as active agents of change* [emphasis added], rather than as passive recipients of dispensed benefits" (pp. xii-xiii).

The reason being, the paucity of capabilities prevented people from being productive and creative. Hofmeyr (2013) wrote, "many adults on the continent [of Africa] cannot afford to buy resources for immediate use or invest in assets" (p. 5, see also Carmody, 2010, 2011, 2012, 2013; Diga, 2013a, 2013b; Maree *et al.*, 2013). It was noted that the participants of this study

envisaged a collaborative interaction or connection with and use of mobile phones within their communities rather than a consumerist, monetary, and extractive perspective of mobile phone services. The idea was to have a community-centered system of mobile phones like mobile phone cafés to give more capabilities to the members of the community (see Case Study VII: Chiefs). This was not saying that mobile phone technology was being rejected as unnecessary, but that a capability-driven perspective was being proposed to complement or correct the mere monetary or commercial perspective of mobiles. To explain, one overarching idea the participants of this study had of mobile phones was that interaction on mobile phones was not a source of money or income (see Case Study I: Parents and Case Study III Kiosk Vendors). Crudely put, people’s calls and texts in rural areas result in social connections or interactions rather than in earnings and economic gains. As Aker and Blumenstock (2015) remarked, “mobile phones may not be commonly used as a savings device *per se*” (p. 364, see footnote 12).

Thus, this study sought to make contributions by bringing to the forefront of mobile phone and development literature some of the most forgotten features or characteristics of capability approach (see below). These features also, as shown below, served to better express or relay the findings of this study. As is now clear, despite the widespread and in fact informative use of the word capability in literature, not everything claimed to be capability is capability according to capability approach, or at least meets the features or characteristics of capability approach. It bears reminding that a characteristic -- from the Greek verb *χαρακτῶ* [kharaktô], which means (Liddell & Scott, 1843/1996) to mark, stamp, brand, seal, engrave, carve, scratch, draw, etc. -- was understood in this study as a trait, dimension, aspect, or mark engraved or sealed to indicate or identify the nature of someone or something. The English word *feature* used by Sen (2009a, p. 232) above comes from the Latin noun *factura*, which means things produced, done, or created. *Factura* is a noun formed from the past participle *factus* of the verb *facere*, meaning: make, do, produce, etc. (Lewis & Short, 1879).

The features of capability approach

Capability approach (Sen, 1989, 1993b, 1997c, 2009a, 1999) shows that in order for a capability to be capability, there are four most important interrelated -- yet often overlooked by the majority of development and mobile phone authors -- features of capability approach to be taken into

account. These features, as pointed out earlier, captured or encapsulated the views of this study's participants, and thus represented the major contributions of this research:

- (1) Shift from commodity and utility space to capability space,
- (2) Combination of capabilities,
- (3) Broader focus on capabilities, and
- (4) Basic or fundamental human needs.

While literature has done a good job by highlighting the idea of development as an expansion of freedom or capability to be proper to capability approach (see Smith, Spence, & Rashid, 2011; Wang, 2015), it has yet to emphasize important features needed in order for the expansion of freedoms or capabilities to be effective. Indeed, Sen (1999) wrote, “expansion of freedom is viewed, in this approach [capability], both as the primary end and as the principal means of development” (p. xii). However, capability approach does not stop there, at the mere *new* understanding of development.

The first feature of capability approach – perhaps the most important since the understanding of it was necessary for a better understanding of any other capabilities-- resided in a shift or extension needed from the space of commodity and utility to that of capability. As Sen (1993b) remarked, “this extension is done... [by] moving from commodity space to that of actual opportunities of functioning and the capability to function” (p. 537). In other words, “the “space” in which alternative opportunities are considered and preferences are defined would have to be modified from the commodity space to the space of relevant functions and capabilities” (Sen, 1993b, p. 532). Sen also insisted on a move away from the utility space, saying, “the capability approach can be contrasted not merely with commodity-based systems of evaluation, but also with the utility-based assessment” (1989, p. 44). Based on the context of the research, utility and commodity might come with important ideas such as “positive benefits... the negatives” (Smith, Spence, & Rashid, 2011, p. 78), “positive impacts,” (Aker & Mbiti, 2010a, see abstract), “positive effects” (Graham & Nikolova, 2013, p. 127), etc. of mobile phones. For example, one participant related,

Yes, I am very busy with supplying the prepaid cards. These cards sell quickly. And I have to make sure I do not run out of prepaid cards. It is fun running back and forth. However, they don't pay much, the returns are small, considering the trips to supply them. (Kiosk Vendor IX)

The statement above showed that selling prepaid cards is fun and does not pay much. However, capability implies much more than the simple commodities and utilities (i.e., fun and money received), by allowing the person to be able to live a better and fuller life.

Since the research questions of this study were about how mobile phones produced development, and how they improved people's living conditions, the shift needed from the commodity and utility of mobile phones was key to a better understanding of not only the other features of capability approach but perhaps more importantly the actual abilities or capabilities that participants had. To illustrate, selected participants agreed that mobile phones were *commode*, *utile*, beneficial, pleasurable, useful, etc., meaning that mobile phones did and should have some *commodity* and *utility* attached to them, but they (see Case Study VII: Chiefs, Case Study VIII: The youths) wanted more capabilities than just commodities or utilities of mobile phones.

For example, rather than being just users of the commodities and utilities of mobile phones, participants *needed* to have the *ability* to deal with slums and reckless kiosks in their neighborhoods, something apparently unrelated to mobile phones, but which seemed to be concomitant with or consequent on the spread of mobile phones. Also, this was not saying that commodities and utilities gained from mobile phone uses were not important, but that they were not the end goal of human life in this particular community. The reason being, individuals in rural areas ought to keep the village clean since there were no such things as public services. The point was not placing the blame of mobile slums, reckless kiosks, loss, etc. on someone, but rather ensuring the *fuller* or *broadier* capabilities of individuals in their community (Sen, 2009a). For example, participants needed to be able to deal with their affected lives if they were to lose, could not keep, or were no longer able (because of sickness, death, storm, rain, etc.) to use the commodities offered by volunteers (i.e., roofing repair) and utilities obtained (i.e., texting a relative) of mobile phones. Without those broader capabilities, participants were left worse off or

helpless. This happened, for example, when volunteers were no longer available or devices or properties were lost or worn out.

As one could see, mobile phone and development literature demonstrated the value associated with the commodity and utility of mobile phones, with ideas such as reduction of transaction cost, reduction of travel time, access to information, cheap mobile phones, social networks, business networks, etc. (Smith, Spence, & Rashid, 2011; Wang, 2015). Indeed, “mobiles and their networks... increased access to timely and/or relevant *information*, and... expanded possibilities for *connectedness* [emphasis in original] between people” (Smith, Spence, & Rashid, 2011, p. 78), led to “reduction in search costs and hence transaction costs... reduction in price dispersion” (Aker, 2008, p. 5) and “communication costs” (Aker & Mbiti, 2010b, p. 208), to “market expansion” (Diga, 2013b, p. 156), “market participation” (Zanello, 2012, p. 694), “trade networks” (*Calling across*, 2005, para 2), etc. It was beneficial and in fact important that in addition to connectedness between people,

cell phones... allow individuals to be active agents in the information search or the use of financial and other services, rather than passive consumers of information. In other words, they are expanding the possibilities for people to be authors of their own lives through being active searchers of information or being able to independently conduct financial transactions. (Graham & Nikolova, 2013, p. 127, see also Maree *et al.*, 2013, p. 20; Porter, 2012, p. 248; Harris & Cooper, 2015, p. xxxv)

As highlighted in the statements above, many benefits could and can be drawn from mobile phone uses. Still, as seen in the present doctoral study, there was another aspect (to the story) of mobile phones that needed attention. As Abraham (2011) indicated, “but... I will *strongly warn against fetishizing* [emphasis added] mobile phones”. This meant that the passage away from the commodity and utility of mobile phones to capabilities surrounding basic needs had the potential not only to see and affirm the broader capabilities of participants but also see that “the question of non-use was not fully [or not at all] explored” (Adera *et al.*, 2014, p. 241), and thus needed to be addressed. Shared ownership or use, for example, implied both users and non-users being served in a particular task (i.e., texting or calling a nurse for grandma).

The main reason behind the focus on the commodity aspect of mobile phones might come from the belief held by and inherited from the Enlightenment era and Bacon's idea that "*nam et ipsa scientia potestas est* [and *indeed* knowledge itself is power (emphasis added)]" (1597/1859, p. 241). So, it was thought that information access was an access of people to power. Another reason why information access was emphasized might lie in Aristotle's idea that "*πάντες ἄνθρωποι τὸν εἶδεναι ὀρεγόνται φύσει* [all humans by nature yearn for the act of knowing (concrete knowledge or information)]" (*Metaphysics*, 980a 22). Thus, information was seen as a hallmark of humans. Therefore, it was imperative that the perspective held in literature on mobile phones went beyond the commodity of financial, market, or corporate gains (see Angello, 2015; Ashraf, 2015; Zheleva, Schmitt, Vigil, & Belding, 2015) and the utility of connectedness, noneconomic uses, or social interaction (see Hampton, Sessions, & Her, 2011; Sagl & Resch, 2015; Smith, Spence, & Rashid, 2011). To this effect, Sen spoke of a *serious* departure from commodity and utility. As Sen (2009a) explained,

The capability approach focuses on human life, and not just on some detached objects of convenience, such as incomes or commodities that a person may possess, which are often taken, especially in economic analysis, to be the main criteria of human success. Indeed, it proposes a *serious* [emphasis added] departure from concentrating on the *means* of living to the *actual opportunities* [emphasis in original] of living. This also helps to bring about a change from means-oriented evaluative approaches. (p. 233)

The statements above reiterated the calls made by several authors about an overemphasis being placed on (the utility of) information access.

For reasons mentioned above, "existing studies have tended to focus *overwhelmingly* [emphasis added] on access to information" (Potnis, 2015, p. 83). The focus on information as an economic catalyst was illustrated with the idea of "information superhighway" (Röller & Waverman, 2001, p. 909). The reason being, it was widely believed that "telecommunications infrastructure investment can lead to economic growth in several ways" (Röller & Waverman, 2001, p. 909). However, Potnis (2015) recently cautioned that "access to information by itself is of limited value" (p. 83). Thus, as noted earlier, this study went beyond the mere commodity or utility

information access, skills, or mobile phone uses (see Case Study VIII: Youths) by proposing the broader capabilities of individuals in their day-to-day activities. Still, as explained earlier, this study or its participants were not denying the importance of economic growth gained out of information flows. For example, it was identified that “the successful organizations are those able to generate knowledge and process information efficiently... In this sense, *the network enterprise... transforms [information] signals into commodities by processing knowledge [emphasis in original]*” (Castells, 2010, p. 188). Rather, this study was drawing attention to the fact that “economic growth is only one of several necessary ingredients for promoting human flourishing” (Spence, 2009, p. 73).

The point being made here was that by eliminating the “unfreedoms” (Sen, 1999, p. 15) of people, broader capabilities gave more freedoms – hence more liberation – than the mere uses, utilities and commodities of information and social networks did. Thus, the shift proposed in this study was the one of going past the *commodification* or multiplication of information access or networks and *fetishization* of connectedness between people or social interaction to the fuller *capabilization* or actualization of human beings. One of the best ways to know that a passage was made from commodity and utility to capability was, for example, with the question or reflection on *what if* (a person were to lose). The idea being,

the focus of the capability approach is thus not just on what a person actually ends up doing [such as market participation or connection with people], but also *on what she is in fact able to do*, whether or not she chooses to make use of that *opportunity* [emphasis added] ... since our freedom and choices are parts of our actual lives. (Sen, 2009a, p. 235)

As proposed in the statement shown above, the point of capability approach was not *only* on the things held or gained -- although made available or abundant more than ever before --, but the *actual abilities* of a person when she happens to lose those things.

In other words, the idea was not only about the commodity and utility of “mobiles and the mobile network as a tool in one’s context that provides access to more resources than were previously available” (Smith, Spence, & Rashid, 2011, p. 78) or “cell phones and information

technology... giving people around the world – and particularly the poor – new capabilities for making financial transactions and accessing other services which were previously unavailable to them” (Graham & Nikolova, 2013, p. 127), but rather the *actual abilities* (see Case Study VII: Chiefs, Case Study VIII: The youths) people had if they lost or could not keep the resources given, services rendered, moneys sent, devices obtained, shelters provided, roofing repaired, etc. Those actual abilities were capabilities, not just commodities and utilities. That was one of the greatest messages of capability approach, and of this study as well. To illustrate, as explained in methodology chapter (see section on evaluation and measurement), the measurement focus was on what were the options or opportunities that a person had if she lost her house, because, for example, of earthquake, flooding, divorce, job loss, etc.? The answer to this question was the actual abilities or opportunities people had – not just the commodities or utilities held. It was these actual opportunities or capabilities that shed light on and went beyond the person’s commodity and utility of having a house and related amenities.

Still, with this example, the study was not saying that the person’s house was not important, beneficial, useful, pleasurable, etc., but that the capabilities surrounding the house gave more options for the person to live a better and fuller life. Participants of this study showed how the commodities and utilities of mobile phone uses were not enough *in and of themselves* to help individuals live better and fuller lives in their community. For example, voluntary work – such as battery charge, prepaid cards, mobile phone set, etc. -- was helpful, but not sufficient, predictable, or permanent. Since the research questions of this study were to see how mobile phones produced development and how they improved people’s living conditions, focusing only on the commodities and utilities of mobile phone uses would lead to a misleading idea on the extent of capabilities people had, not to mention that according to Sen (1999) development consists in the *expansion, enhancement, maximization, or fulfilment* of capabilities surrounding fundamental basic needs, *not in* the means, utilities, or commodities obtained. This was largely because “in noting the nature of human lives, we have reason to be interested not only in the various things we succeed in doing, but also in the freedoms that we actually have to choose between different kinds of lives” (Sen, 2009a, p. 18).

The second feature, after the shift made from commodity and utility to capability, concerned the combination of capabilities. Since the research questions of this study were to look at how mobile phones produced development and how they improved people's living conditions, limiting a study to one capability would be an indication of the selected capability, but not of development for the concerned community. This was partly because it was tempting -- as it was seen in most, *by no means all*, mobile phone literature -- to focus on one single capability or business. To be clear, Sen (2009a) specified, "the capability that we are concerned with is our ability to achieve various combinations of functionings that we can compare and judge against each other in terms of what we have reason to value" (p. 233). Also to clarify, "the concept of functionings, which has distinctly Aristotelian roots, reflects the various things a person may value doing or being" (Sen, 1997c, p. 394). Examples of functionings include, but not limited to: job, shelter, food, mobile phone, etc.

Focusing on one capability had the potential to draw the researcher back into (the trap of) commodity and utility perspectives, discussed earlier. It was noted, for example, that this study's participants were assessing one use of mobile phones (i.e., roofing) against that of flooded bridge. The assessment helped see that roofing was not the sole capability to be looked at. A good example in the literature was that of mobile phone fees seen in Niger (Aker, 2008). In other words, according to capability approach, the ability of selected participants in Niger (see Aker, 2008, p. 12) to cover a rate as *expensive* as that of a US \$ 1 for every two-minute call or conversation with several traders across the region or nation (for several hours or minute or days) -- a rate problematic even for a business run in developed countries -- would raise questions as to why they were unable to purchase basic items closer to them with no fees for calling around, and more especially how the returns of the money spent on calls could be made without raising the price of the items bought. The value of approaching the combination of capabilities was/is to enrich the understanding of capabilities. The point was, as Sen (2009a) insisted,

It is important to bear in mind that the capability approach is ultimately concerned with the ability to achieve *combinations* [emphasis in original] of valued functionings... We have to see the person's overall capability in terms of combined achievements that are open to her. (p. 233, see footnote)

As is clear from the statements noted above, the combination of capabilities gives an idea on what options are open to a person or community. The goal was to avoid the pitfall of being limited to a single capability with its commodities and utilities.

For example, if this study or that of Aker (2008) had focused on whether m-banking generated development, the combination of the capability and commodity to do m-banking for this study's participants with that of cashing the money sent to a physical bank office, which was not possible due to the lack of infrastructures that would allow this, would have been an indication that m-banking was not realistic or feasible in the selected area, not to mention the illiteracy of this study's participants. To be precise, this was not saying that m-banking was not (or could not be) beneficial to this study's participants nor that studies or authors (Adler & Uppal, 2008; Amelio, Djembissi, & Ivaldi, 2007; Coyle, 2007; Goodman & Walia, 2007; Houpis & Bellis, 2007; Mortimer-Schutts, 2007; Tobbin, 2012; Williams & Torma, 2007; Yousif, Berthe, Maiyo, & Morawczynski, 2013; Zainudeen, Samarajiva, & Sivapragasam, 2011) acclaiming the benefits associated with the commodities and utilities of m-banking in developing countries were necessarily incorrect, but rather these studies were not inclusive of key players and thus indicated a narrow view of development and capabilities concerning the investigated area.

It was proposed for example that on technology day (see Case Study I: Chiefs), participants be given advice on m-banking skills and services so that they could take advantage of this new commodity within their community. Also to be precise, the combination of capabilities here advocated was not the same as comparative method, a method that was not followed (see methodology chapter, section on trails of interpretivism, symbolic interactionism) in this study because of its inattention to particularities and contexts. The English word combination derives from two Latin words *com* and *binus, a, um*, with the former meaning: with, through, by, etc. and the latter: two, double, pair, etc. (Lewis & Short, 1879). Combination was understood here as an endeavor to put (something or someone in or by) two items alongside.

The third feature of capability approach, closely related to the second, comprised the idea of a comprehensive or "a broader focus on the lives we can lead" (Sen, 1999, p. 14). The difference with the second feature -- about the combination of capabilities -- was that combination was

about matching one capability against another capability or other capabilities whereas the third feature of capability approach regarded the extent to which the concerned capabilities were being *expanded* or made *broader*. As Sen (2009a) stated, “the concept of capability is thus linked closely with the opportunity aspect of freedom, seen in terms of ‘comprehensive’ opportunities, and not just focusing on what happens at ‘culmination’” (p. 232). What happens at culmination might be certain capabilities seen at a given time, but just like development, capabilities are interactive, dynamic, fluid, etc. over time. Since the research questions of this study were to examine how mobile phones produced development and how they improved people’s living conditions, focusing on capabilities fixed or seen at a certain time might be useful for historical purposes, for example, but would fail to reflect what selected capabilities were, are, and would be in the course of time in that community.

In addition, this study’s participants proposed a closer collaboration of participants with industry, academia, and mobile phone sponsors, with the idea of iterative, constant, interactive, or consultative discussions. This would enable the co-construction of solutions and the evolution or gradual strengthening of capabilities in a way that relates to development needs. Pertinently, the English adjective *iterative* comes from the Latin verb *itero*, meaning: to repeat, renew, celebrate again, etc. (Lewis & Short, 1879). Thus, the goal was for participants (see Case Study VII: Chiefs) to be able to examine or discuss in forums the lessons learned, mistakes made, progress reached, promises met, challenges faced, etc. The idea was a replica of African communal culture (Bongmba, 2005; Diagne, 2005; Esongi, 2011; Eze, 1997; Gambembo, 1995; Gyekye, 1996, 2003; Kanyamachumbi, 1995; Mabe, 2005; Maquet, 1967; Nyerere, 1977; Ramose, 2003a, 2003b; Tempels, 1945; Tshiamalenga, 1975, 1985; Wiredu, 2005) which required public discussion about the community and its members in order to sort out the various issues raised or faced, and development and mobile phones should not be an exception. This approach would reflect the relatively recent transition to and support for participatory approach in development context (Chambers, 2002/2013).

Another point arising from the idea of a comprehensive or broader focus on capabilities involved the inclusion of key players (e.g., chiefs, parents, kiosk vendors, traders, etc.) in the selected area, which in the quantitative tradition was related to as representativeness (Sotos, Vanhoof,

Van den Noortgate, & Onghena, 2007). One potent reason behind the idea of inclusivity about or inclusion of key players found in the investigated community might be African communal culture. Indeed, members tended to be thoughtful of other members throughout the discussions and sessions held. While this idea might seem trivial, it had direct bearing on the methods employed in the study. The ecological method (Krebs, 1999; Manly & Navarro, 2015; Navarro & Díaz-Gamboa, 2015; Nomani, Oli, & Carthy, 2012) espoused in this study, for example, helped ensure a high inclusion of key players. It was noted, however, that many, and by no means all, studies done on mobile phones and development (Abraham, 2007; Aminuzzaman, Baldersheim, & Jamil, 2003; Jensen, 2007) did not display a concern for the inclusion of key players in areas studied or the representativeness of the related larger population. In the same way, although this study attempted to be inclusive so as to gather a range of views and involve the knowledge of different people, it was not claiming that this was statistically driven or the results were representative of the larger population or people as a whole. It is possible that similar results such as the working conditions of kiosk vendors and mast guards could be found among other populations.

Since the research questions of this study were to examine how mobile phones produced development and how they improved people's living conditions in the rural areas of the Congo, findings inclusive of key players, as was the case with this study, were more likely to reflect the concerns raised by the selected key players than a study focused on a single topic or group of individuals of rural areas. For example, had it not been for this study's idea to ensure the inclusion of key players, mast guards and kiosk vendors (see Case Study II: Mast Guards, Case Study III: Kiosk Vendors) -- along with the resulting views, contexts, interpretations, and experiences expressed about the research questions posed -- would have not been identified or looked into, not to mention mobile phone posters (see Case Study VI: Mobile Phone Posters). The study could also have been made of one or two case studies, with little -- by no means valueless -- in-depth conclusions and assumptions about the selected area and concerned individuals. Notwithstanding, this was not saying that an inquiry composed of one or two case studies was not beneficial, but that a study as inclusive of concerned players as possible was likely to provide *more* information about that area than a study that was not. Also, the chances of stumbling upon the unknown, unseen, unheard-of, or out-of-ordinary details were higher with an

inclusive inquiry than with a non-inclusive. More particularly, in “a world of ... growing inequality” (Heeks, 2014b, p. 33), higher inclusion of key players was likely to capture or reach the marginalized, left-out, blind spots, or, to borrow a suggestive characterization of Chambers (1983/2013), the “largely *unseen* [emphasis added] people in rural areas” (p. viii).

One reason why mobile phone research has tended to focus on a smaller set of respondents lay in early leading studies done on mobile phones. To illustrate, the well-known Village Phone research (Aminuzzaman, 2002; Aminuzzaman, Baldersheim, & Jamil, 2003; Lawson & Meyenn, 2000) involved a set of rural women in Bangladesh, but the sampling of the larger population and/or the inclusion of key players in the selected area was not addressed. The same held true of the world-famous research of fishermen in Kerala, India (Abraham, 2007; Jensen, 2007) and several similar research projects regarding mobile phones and development (see Aker, 2008, 2010; Aker & Fafchamps, 2013; Aker & Mbiti, 2010b; de Silva & Ratnadiwakara, 2008; Ilahiane & Sherry, 2012; Muto & Yamano, 2009; Zanello, 2012). As is clear from findings chapter, this study applied the ecological method to ensure a higher number of participants (i.e., players) in the selected area of research, and thus added specific in-depth views and insights of key players, which could not be found and conveyed otherwise. This has led to a more nuanced view of mobile phones and development, and in fact, questioning their role in development and enhancement of fundamental capabilities. It was thus unclear who were the “*largely unseen people*” (Chambers, 1983/2013, p. viii) of Kerala, India, and what was their understanding or focus of development with regard to mobile phones. Unseen or blind-spot people could include the disabled, people with special needs (i.e., allergic to fish), illiterate, the youths, etc., all of which would be interested in receiving, for their community’s needs, mobile phone-processed micro-credits.

The last and fourth feature of capability approach comprised human basic needs. Basic needs are the needs required for the functioning of humans. It bears noting that basic needs were understood in this study as the primary necessities without which human life was impossible. Since the research questions of this study were to assess how mobile phones produced development and how they improved people’s living conditions, basic needs were the privileged indicators of people’s development. The reason was that basic needs were the things that people

in rural areas struggled the most with in order to survive or live better and fuller lives. Those struggles for survival were people's lived experiences of development (see Case Study I: Parents). More specifically, participants were primarily and constantly preoccupied with the idea to ensure broader capabilities in provisioning items of necessity such as wood (for fire, building, planting, etc.), food, hay (for roofing), seeds (for crops and trade), medicinal plants, water, soap, salt, etc. Participants did not want mobile phones to be a diversion from the provision of basic items (see Case Study IV: Group Discussion Session One; Case Study V: Group Discussion Session Two).

Again, the point was not just about the provisioning of the commodities and utilities of those items, but also about *alternative* and *actual* abilities that individuals had in order to provide for their families. Nor was it about placing blame on any anybody for the lack of those items. One idea proposed by this study's participants, for example, on technology day was to receive advice or skills not only on how to prevent drought (for the provision of water), but how to manage or deal with it (see Case Study I: Parents). Mobile phones could help channel or store the information needed for the capabilities surrounding human basic needs. Also, because "capability is indeed a central feature of human life" (Sen, 2009a, p. 295), basic needs constituted a fundamental concept for the understanding and actualization of human life.

There is not a universally agreed-upon list or definition of basic needs. However, it is generally acknowledged that humans cannot best function without a specific set of fundamental needs. It was observed in development literature (Pressman & Summerfield, 2009; Streeten *et al.*, 1981) that a gap was being placed between capability approach and basic needs, and thus authors have tended to bypass the notion of basic needs. The reason for the gap was in part the decline of basic needs approach (detail below, section on reflections on Sen's framework). Indeed, concerns were voiced over

the decline and even rejection such as [that which] occurred for work on *human basic needs* [emphasis in original]. The substantial 1970s wave of works on needs... was strongly criticised, opposed and to a large extent set aside in the 1980s and early 1990s. (Gasper, 2007, p. 48)

The decline and rejection deplored in the above statements might also be the reason why basic needs have tended to escape the preoccupations of authors in areas of ICT and information research.

More precisely, information researchers have tended to focus on the theme of information poverty and information inequality rather than on that of real poverty and real inequality. Indeed, Chatman (1996), the founder of information poverty theory, rejected the link between information poverty and economic poverty, saying, “over the course of my inquiries, however, I discovered that this linkage [information poverty and economic poverty] is not necessarily true” (p. 194). Still, information poverty could lead to ill-informed choices regarding basic needs. For example, a text was sent to travelers warning them not to venture to a bridge because of flooding (see Case Study IV: Group Discussion Session One). But, although helpful, the information provided in this and similar cases was rare or isolated because it depended on whether volunteers were available and had the means to cover the fees of texting. Therefore, since the research questions of this study were about how mobile phones produced development and how they improved people’s living conditions, a broader look into the capabilities of people beyond information access or texting was needed to ensure a holistic or sustainable development of all members of the community, not just travelers. Holistic development and broader capabilities implied the same underlying idea proposed by participants (see Case Study VII: Chiefs) that development was not just about the commodity of fixing a roof, for example, but the broader spectrum or range of capabilities that people enjoyed in the struggles to survive in everyday life.

The view of poverty as a deficiency of needed information – instead of deprivation of basic needs -- has had an impact on information literature and its posture toward poverty and its forces around the globe. The view has motivated analysts of information research to lament that, as Chowdhury (2012) wrote, “however, to date very little research has taken place on information and sustainable development in general” (p. 633). In sharper terms, Cole (2013), a renowned information behavior expert, criticized information views resulting “in adopting new technologies that focus on technical and managerial issues of the adaptation, thus allowing information-as-a-commodity to take precedence over information-as-liberation” (Cole, 2013, para 8). To redress this shortcoming, Cole (2013) suggested,

This ambition [of information as liberation] is surprisingly commonly lacking in information behaviour research, in order for the research area [of information studies] to take hold and influence society, research that does not contain this ambition should not be considered worth doing. (para 3, see also Fidel, 2012, p. xi)

Information as liberation – from hardships, poverty, unfreedoms, deprivation, etc. -- was reflected in participants' idea (see Case Study I: Parents) that – since the research questions were about how mobile phones produced development and how they improved people's living conditions -- participants needed more capabilities than a simple commodity of food or mobile phone use.

The managerial or corporate focus might be one of the factors leading to the view explained in the statements cited above. This was not saying -- as noted earlier with the example of the Rubin Vase (see Rubin, 1915) -- that information behavior was not valuable. The point here was to be aware of the limitations involved concerning a given angle or view of research done on mobile phones and development. Indeed, information behavior and its skills were noted as central to development by the youths (See Case Study VIII: Youths). The idea was that information skills were not the sole focus of development, but rather they were seen as part of the broader spectrum of capabilities. It was also worth noting that information research geared toward people's liberation was not new in information literature. For example, Otlet, one of the founders of information science, was a staunch defender of (information) technology as a liberator of people (see Cibangu & Hepworth, 2016).

Nevertheless, the collapse of basic needs approach did not and should not signify the collapse of the concept human basic needs. Basic needs remain an indispensable tool of people's wellbeing. Indeed, basic needs have spurred "the rise of research on wellbeing" (Gasper, 2007, p. 48) seen the last few decades. As Gasper (2007) stated, "the research agendas of needs and wellbeing are of fundamental importance" (p. 69). Thus, development that is not anchored on basic needs is like a building without foundation. As Peet and Hartwick (2015) wrote, "'development' means making a better life for everyone. In the present context of a highly uneven world in terms of income, a better life for most people still means, essentially, *meeting basic needs* [emphasis

added]” (p. 1). The same can be said of capabilities. In other words, capabilities that are not anchored on basic needs are merely a list of commodities and utilities.

As Sen (1999) put it, “to foster human capabilities and substantive freedoms in general can work through the promotion of these distinct but interrelated instrumental freedoms [of basic needs]” (Sen, 1999, p. 10). Instrumental and substantive freedoms are some of the expressions used by Sen to explain human basic needs. This is because basic needs are the foundation on which human actualization is built. As Sen (1999) elaborated, “the intrinsic importance of human freedom, in general, as the preeminent objective of development is strongly supplemented by the instrumental effectiveness of freedoms of particular kinds to promote freedoms of other kinds” (p. xii). In effect, basic needs are needed to promote other kinds of capabilities.

Another explanation behind the idea of basic needs seen with this study’s participants was, for example, that, as Sen argued,

there are good reasons for seeing poverty as a deprivation of *basic capabilities* [emphasis added], rather than merely as low income. One can find deprivation of basic capabilities in premature mortality, significant undernourishment ..., persistent morbidity, widespread illiteracy, and other failures. (1999, p. 20)

As is now clear, without a sustained look at human basic needs, development and in fact capabilities lose their meaning or purpose. Just like with construction, wherein the point is not so much about a definite list of foundations for all buildings to be erected on, as it is about the idea of foundation for the durability or steadiness of a building, based on the context(s) and need(s) of the landscape at hand. So too, with capability and development, it is imperative and indeed helpful to focus on the foundation (i.e., human basic needs) to ensure the steadiness and durability of concerned basic capabilities, based on the context(s) and need(s) available. The idea being, the stronger is a building’s foundation, the stronger are the building’s floors added one atop another. In the same way, the stronger are the capabilities held around human basic needs, the stronger are other capabilities added one atop another.

Meanwhile, for example, ICT literature has added a tremendous and indeed informative, *commode*, or beneficial list of capabilities (see Wang, 2015, pp. 20-21), but without – again with no guilt or blame implied – a sustained look at human basic needs. As Sen (1999) stated,

Sometimes the lack of substantive freedoms relates directly to economic poverty, which robs people from the freedom to satisfy hunger, or to achieve sufficient nutrition, or to obtain remedies for treatable illnesses, or the opportunity to be adequately clothed or sheltered, or to enjoy clean water or sanitary facilities. (p. 4)

As described in the statements above, specific basic needs can rob people from their substantive freedoms to live better and fuller lives.

Thus, for focus purposes, this study identified five human basic needs, taken from Sen's (1999, p. 4) framework:

1. Food or nutrition,
2. Shelter,
3. Water,
4. Health, and
5. Clothing

No order of importance was implied. So long as a foundation (of basic needs) was laid, other capabilities could be used or proposed, based on the needs at hand in the group, community, or neighborhood. Again, for reasons clarified earlier, basic needs as a whole have yet to become the focal point of studies done on mobile phones and development. This is mainly because mobile phone research is just taking shape, still coming to grips with the boom of social networks and business networks or business done online.

Food or nutrition. The first human basic need to be considered in relation to the contributions made in this study was food or nutrition. Since the research questions of this study were to examine how mobile phones produced development and how they improved people's living

conditions, a person's actual abilities or capabilities to get needed nutrition were a compelling indication of how developed the person was. As explained earlier, the perspective of commodity and utility was prevalent in mobile phone literature dealing with food, with concepts such as reduction cost, transaction cost, travel time, information asymmetry, etc. (see Abraham, 2007; Aker, 2008, 2010; Donner & Escobari, 2010; Duncombe, 2012a, 2012b; Heeks, 2010a; Jagun, Heeks, & Whalley, 2008; Jensen, 2007; Zanello, 2012). While the commodities and utilities aforementioned were beneficial since they helped avoid risks associated with the purchase or provision of food, they were an incomplete indication of what development was (about) in the selected community.

Indeed, this study's participants wanted food purchased within their community and among their individuals (see Case Study VII: Chiefs). One reason might be that participants wanted to be able to check for themselves the quality of the food items, especially produce. The other reason might be that cheap food was not necessarily the right, healthy, or most nutritious food. Thus, one of the best ways to check food was to have it available in the community. This was also how the community could ensure the nutrition of its members. In relation to food, participants also stressed the abilities to have and maintain a garden in their yards, as was the custom in the selected community (See Case Study I: Parents). Therefore, the commodity food in terms of cost, market efficiency, distance, etc. was not enough in and of itself, but the spectrum of capabilities around it was of prime importance i.e., to be able to grow and consume local produce.

Shelter. The second basic need to be looked at for the contribution of this study was shelter. Since the research questions of this study were to assess how mobile phones produced development and how they improved people's living conditions, a person's actual abilities or capabilities to own, manage, sell, purchase, repair, or build a home were a compelling indication of how developed the person was. In other words, a person's "capability to be well sheltered" (Sen, 2009a, p. 233) was one of the possibilities that allowed her to live a better and fuller life. The best example of shelter was with kiosk vendors and mast guards who needed better living and working conditions of shelters (see Case Study III: Kiosk Vendors; Case Study II: Mast Guards).

Furthermore, mobile phone literature on shelter displayed a tendency to determine mobile phone dissemination by shelter or household (Aminuzzaman, Baldersheim, & Jamil, 2003). This tendency came from development studies wherein the measurement of poverty revolved around household as a discrete or isolated unit of analysis (Randall & Coast, 2015). The tendency also came from mobile phone subscription seen in developed countries, which was based on home or house address.

However, the present doctoral study took the spectrum of capabilities as the unit of analysis since household comprised collective phenomena such as the sharing of mobile phones, meals, house, bike, crop, etc. Another reason behind the spectrum of capabilities was that participants wanted broader capabilities concerning shelter or house, for example: legal rights on land (see Case Study VII: Chiefs), skills or means to own or repair the house, etc. (see Case Study IV: Group Discussion Session One; Case Study V: Group Discussion Session Two). Using shelter as an investigated concept of the selected community also brought to the foreground the communal and shared nature of capabilities and how these had meaning in relation to being part of the community.

Water. The third basic need to be reflected on regarding the contribution of this doctoral study was water. Since the research questions of this study were to assess how mobile phones produced development and how they improved people's living conditions, a person's actual abilities or capabilities to drink clean water, store, and use it within, around, and outside her home were a compelling indication of how developed the person was. Participants went further than the simple supply of "clean water and sanitary facilities" (Sen, 1999, p. 4), by suggesting more capabilities needed for several daily activities associated with water, such as gardening, traveling, cropping, painting, etc. (see Case Study IV: Group Discussion Session One; Case Study V: Group Discussion Session Two). Prior research has demonstrated, for example, that "access to water sources such as ponds and wells can also be slippery and hazardous. This may result in reliance on other family members to fetch water or to resorting to unsafe but closer water sources" (Jones, Fisher, & Reed, 2012, p. 169), or that "where there is no convenient water source, a great deal of time can be spent walking long distances" (Fisher, 2008, p. 226). Mobiles can help provide information on the location and/or installation of decent water, domestic, and

sanitation facilities. The reason being, “water, sanitation and hygiene interventions result in *widespread health improvements* [emphasis added] for the whole community” (Fisher, 2008, p. 224).

Also the possibility -- seen in developed countries -- that “water quality information is delivered via mobile phone applications that are integrated with web applications” (Jonoski *et al.*, 2013, p. 1137) could be beneficial to this study’s participants since there were no public services undertaking those kinds of activities monitoring or advising about water quality. In addition to detecting the quality of water, mobile phones with embedded sensors or applications to detect aquifers could be beneficial for this study’s participants, especially in times of droughts or for the sustainability or preservation of water wells. Indeed, the focus placed on water enabled participants to identify other capabilities associated with water.

Health. The fourth basic need to be discussed as regards the contributions of this doctoral study was health. Since the research questions of this study were to assess how mobile phones produced development and how they improved people’s living conditions, a person’s actual abilities or capabilities to receive medical care, get well, and live longer and better were a compelling indication of how developed a person was. Studies done on mobile phones and health had been concerned with clinical or pathological health and/or related information, for example: “tracking health information... [or] increasing the accessibility of health information” (Klasnja & Pratt, 2012, p. 186), but this study’s participants went further by suggesting broader capabilities of *actually* being healed (i.e., local medicinal plants, medical advice, etc.) (see Case Study IV: Group Discussion Session One; Case Study V: Group Discussion Session Two). The idea was not to ignore the knowledge of local medicine or healing altogether – in the name of Western medicine --, but to enhance that knowledge in order for people to live healthier lives.

Also, to be clear, access to health information on mobile phones was not possible in the selected area due to the lack of Internet and electricity. With data stored by mobile phone operators, mobile phones have the potential to display human movements and locations to cellular towers. This can help prevent and monitor diseases. As Eagle (2010) noted, mobile phones “help understand human mobility patterns, yielding real-time estimates of the progression of disease

outbreaks, for example, and guiding public health interventions” (p. 9). As J.G. Kahn, Yang, and J.S. Kahn (2010) stated,

Innovative applications of mobile technology to existing health care delivery and monitoring systems offer great promise for improving the quality of life... Mobile health technologies can contribute to a nation’s health care response, at the regional, community, and individual levels. (p. 254)

As proposed in the statements seen above, mobile phone uses can serve as indicators of a society’s health. Thus, mobile phones provide “an individual’s ability to access, seek, obtain, evaluate, and apply obtained health information to the health needs” (Aryee, 2014, pp. 247-248). Local medicinal plants were an important resource for the health of this study’s participants, and mobile phones could enhance or make available the knowledge of those plants and related health products. Prior research on mobile phones in Africa showed, for example, that mobile phone “enables them [patients] to use the healer’s own plants and herbs” (de Bruijn, Nyamnjoh, & Brinkman, 2009, p. 20). As seen in this statement, mobile phones facilitated the communication about proposed plants and herbs.

Clothing. The fifth and last basic need to be dealt with was clothing. Since the research questions of this study were to assess how mobile phones produced development and how they improved people’s living conditions, a person’s actual abilities or capabilities to be well clothed during the various activities of the day (i.e., gardening, traveling, hunting, swimming, plowing, planting, harvesting, etc.) were a compelling indication of how developed a person was. Clothing was perhaps one of, if not, the most important basic needs in the investigated community. With stored pictures, mobile phones could help participants learn what cloth to wear, how, and under what circumstances (i.e., cooking, sleeping, plowing, swimming, traveling, etc.). Clothing was part of a person’s privacy or identity. One example was with works or activities done during hot temperature(s), with sweat being a possible vector of contamination when the person moved from one activity to another with the same cloths kept on.

Meanwhile, studies done (see Jagun, Heeks, & Whalley, 2008) on mobile phones and clothing were more versed in the productivity or production of cloth – which was indeed an important benefit for a community’s economy --- than people’s capabilities surrounding clothing. Thus, it was noted, for example, that kiosk vendors and mast guards (see Case Study III: Kiosk Vendors; Case Study II: Mast Guards), among others, did not have specialized work outfit during inclement weather conditions, such as strong wind, rain, mud, dust, puddles, drop of temperature(s) at night, etc. This was true of most if not all participants. No case of sickness was reported, but one mast guard was unable to make it to work and a co-worker had to stay for another three to four shifts or nights. It was also noted that missing work was common, as one mast guard related, “*I am waiting here. If the next shift to replace me comes, I leave, if not I wait as many days as it takes for him or another person to show up*” (Mast Guard V).

It was not clear why the shifts were being missed nor that cloths worn at work were causing sickness among the guards since none of that was part of the research questions posed. However, from a capability point of view, with the research questions stated being borne in mind – whether mobile phones produced development --, the conditions seen at work and the cloths put on by mast guards and other participants raised questions as to the spectrum of capabilities or the extent to which these individuals could live better and fuller lives. One argument on the table was that with casual outfits worn during severe weather conditions the concerned individuals were being made more susceptible or vulnerable to sickness than with proper outfits put on.

The idea was that, as explained in methodology chapter, qualitative research (Patton, 2015) requires researchers to be *sensitive* to things taken for granted in a day-to-day routine of participants. Phenomenology also encourages researchers to see the world as a paradox. As Merleau-Ponty (1945/2014) elaborated,

Perhaps the best formulation of reduction is the one offered by Husserl’s assistant Eugen Fink when he spoke of a “wonder” before the world. Reduction does not withdraw from the world... rather it steps back in order to see transcendences [of the world] spring forth... *standing in wonder*... We must -- precisely in order to see the world and to grasp it as a paradox -- rupture our familiarity with it, and this rupture can teach us nothing except the

unmotivated springing forth of the world... This is not because we renounce the certainties of common sense and of the natural attitude... but rather because, precisely as the presuppositions of every thought, they are “taken for granted”. (p. 14)

Phenomenological reduction helped stand in wonder or question the reasons behind the outfits or clothing of not only mast guards but of all members of the investigated community.

To summarize, basic needs provide the foundation from which the spectrum of capabilities made available to people can be affirmed and enhanced. The idea being that, development “simply suggests improvement in the conditions and quality of life of the population. Greater levels of wealth,” and as Filgueira (2001) stressed, “technological advancement, and public policies permit people to live better, to consume more, to feed themselves better, and to get sick less frequently” (pp. 3583-3584). The move from the commodity, utility, and corporate focuses of capabilities was seen to be useful to ensure the fuller and better lives of people. By being grounded in human basic needs, as suggested in this study, mobile phone research could help make that needed move away from commodities and utilities of food, clothing, clean water, shelter, and health to the broader spectrum of capabilities.

Even by just using their senses, before mentioning capability approach, participants did not delight in the mere uses and distributions of mobile phones. Rather participants underlined the importance for them of being more able, more effective, or more creative in their daily struggles for survival. The idea of teaching someone to fish as opposed to giving a fish (Ritchie, 1885) can also explain the focus being placed on creativity or participation in this study. A more poignant concept proposed in this study to highlight the manner in which mobile phone uses were being perceived by investigated participants was that of commodification and fetishization (Marx, 1867/1977). As clearly explained earlier, commodification is the idea that a thing or item is being used or purchased for the sheer sake of satisfaction or pleasure derived from it. The goal is thus to enhance or multiply the pleasure or satisfaction by multiplying the thing itself. Fetishization is the idea that a thing or item is considered good, pleasurable, or useful in and of itself. As mobile phones were being mass-produced (Harris & Cooper, 2015), commodified, and fetishized in cities, participants in researched rural areas wanted the fullest extent or spectrum of

capabilities or opportunities about basic needs in dealing with mobile phones and real life. This means that in no way were this study's research questions a matter of mobile phone commodification and fetishization. In fact, by using participatory method more precisely by insisting on the fullest participation of selected participants, this study enabled participants to be creative, productive, proactive, or inventive with mobile phones as opposed to being passive, commodified, and fetishized. Therefore, the passage or move proposed in this study was that made from commodity to capability space (see Figure 30).

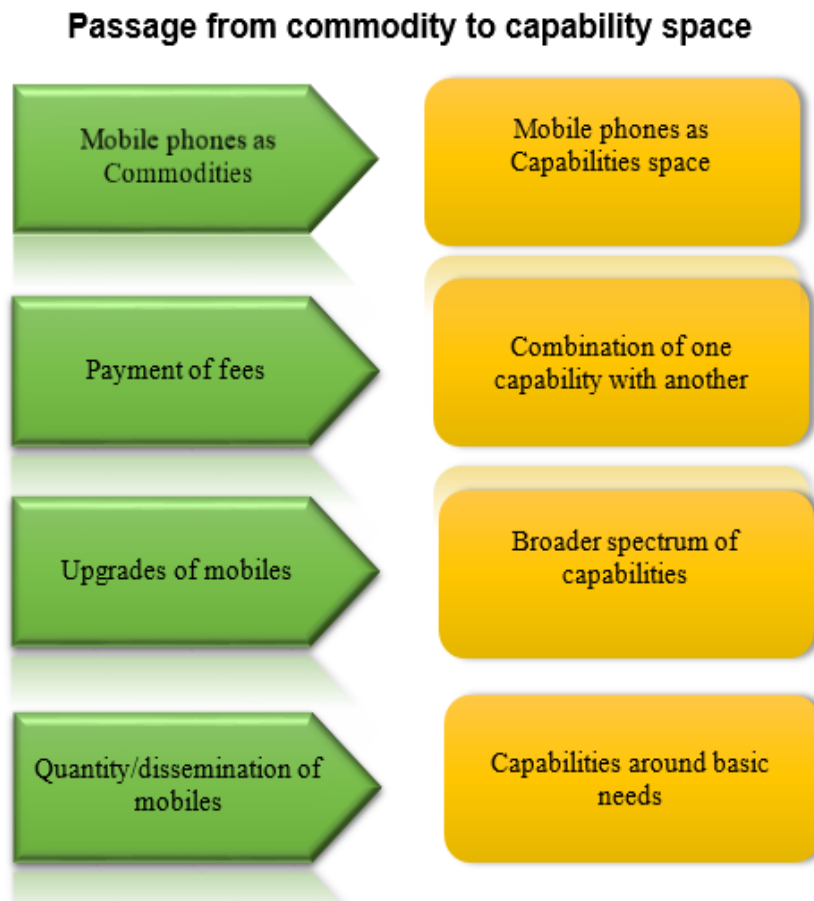


Figure 30: Key Features of Capability Approach

The four key features of capability approach (Sen, 1999, 2009a, 2009b, 2012) best characterize how to eliminate the commodification and fetishization of mobile phones from different perspectives or angles. The idea of space implies the range of freedom, maneuverability, or creativity needed for individuals in rural areas to live better and fuller lives. It bears

remembering that the focus of this study was not so much on the number (four) of the features observed in capability approach as it was on the participation of investigated populations or communities into the research or process and the ensuing discussions and issues raised. Here again, the technique used in determining the number or size of the key features of capability approach was that of saturation (O'Reilly & Parker, 2013). The idea being, an evaluation or calculation of a given item is completed when there is no newer information found.

Reflections on Sen's framework

While Sen (1999, 2009a, 2009b) is known for his position about development, his framework has a wider applicability than is generally seen in development literature. Four areas of applicability were identified, namely: (1) basic needs, (2) market, (3) justice, and (4) interpretivism. First, basic needs represent the background on which Sen's (1992) capability approach is anchored. It was noted that while capability approach is well known for its emphasis on freedoms or opportunities as the conduit of development (Sen, 1999), its rationale of basic needs is often disregarded in development literature. In effect, basic needs are the idea that gives substance to the core arguments of capability approach (see Pressman & Summerfield, 2009, p. 73). As Sen (1992) elaborated, "I go in a different direction... focusing more on the *extents* of freedoms, rather than on the *means* [emphasis in original]" (p. xi). As noted above, basic needs approach was thought to revolve around commodities and their fair distribution. A closely related idea was that of inequality (Sen, 1992, 1997b), which, like basic needs, brought capability approach into greater light. In this study, basic needs were used to shed light on the extent of unfreedoms or lack of capabilities, for example the profit-driven idea of market that participants were faced with.

With regard to inequality, it was noted that despite the claims of economic growth in Africa, most Africans lacked basic infrastructures (Hofmeyr, 2013) in comparison to most people in advanced societies, and this study's participants confirmed this finding. Participants did not suggest a specific list of basic needs nor did they require a mere supply of commodities. For example, the youths (Case Study VIII) insisted on the necessity of computers and mobile phones along with the locally acquired skills and resources. In Case Study V, mid-wives placed an emphasis on water and fire (i.e., electricity) whereas artists privileged transportation. The

reason might be that for mid-wives water and electricity helped best attend to a woman in labor whereas transportation was key to selling the products of artists. The difference indicated above translates the cachet of qualitative research, that is, a context-centric method. The findings above also confirmed the idea that technology was/is necessary to development. In other words, as explained earlier, the youths and mid-wives cited above did not suggest technology for the sake of technology, or the “*technoholic*” cult (see Toyama, 2015, p. xiii), but they put technology within the broader spectrum of capabilities (with needed skills, knowledge, and resources, etc.). The idea being, technology centrism (technology for the sake of technology) was just as bad as centrism on or cult of a person (leader), institution, ideology, etc.

The second area of applicability regarding Sen’s (1993b, 1999, 2009a, 2009b) framework touches on the idea of market. In fact, one of the most cited arguments of mobile phone-infused development relate to market, with topics such as market price, market networks, market partners, market participation, small enterprise, etc. (Abraham, 2007; Aker, 2008, 2010, 2013; Aker & Fafchamps, 2013; Aker & Mbiti, 2010b; de Silva & Ratnadiwakara, 2008; Ilahiane & Sherry, 2012; Jagun, Heeks, & Whalley, 2008; Muto & Yamano, 2009; Jensen, 2007; Smith, Spence, & Rashid, 2011; Srinivasan & Burrell, 2015; Zanello, 2012). However, despite its widespread accounts in mobile phone literature, market is hardly believed to be a central concept of capability approach. The reason for this might be the monetary or extractive focus of studies concerned with market (Fafchamps, 2004; Sen, 1993b). It was identified that market was seen by mobile phone authors as a center of economic efficiency rather than a center of fuller capabilities. This was an indication of how in extensive mobile phone literature both capability approach and market came to be mentioned without further reflection on how they were related.

In the meantime, Sen (1993b) called for “the exercise of moving from welfarist [market] efficiency to the efficiency of opportunity-freedoms, as the criteria of judging competitive market equilibria” (p. 533). It was observed that mobile phone authors have tended to see market as a place of financial transactions, forgetting people’s actualization or capabilities. As Sen (1993b) explained, “ultimately, the challenge that the market systems have to face must relate to problems of equity in the distribution of substantive freedoms [capabilities]” (p. 537). The goal was to move from the commodity space with ideas such as market price, phone calls, market

outlets, market participation, etc. to that of capabilities space. It was argued that capabilities space was the space that provided rural individuals with fuller options to live better and fuller lives.

In effect, as seen above on cross-cutting themes section, this study's participants envisaged market as a forum for fuller actualization – which allowed people not just to sell or buy products, but to have all their human needs attended to (see Case Study VII: Chiefs, Case Study I: Parents, Case Study VIII: Youths). As Sen (1993b) noted, “the welfarist efficiency of competitive market equilibria can [and should] be extended... in terms of opportunity-freedoms” (p. 537) in order for humans to better function as humans. What this meant was not just the purchase of items offered in a market, but “the actual opportunity that each person has... to lead the life that he or she would choose... must be quite central” (Sen, 1993b, p. 527). It was found that the main reason for this capability-fulfilling view of market – in contrast to the money-seeking or profit-tethered view -- was that mobile phone market or spread, just like any market, was to be undertaken in such a way to eliminate, and not create, inequality or poverty within a society.

The third area of applicability of Sen's (1993b, 1999, 2009a, 2009b) framework has to do with justice. It was observed that most mobile phone authors have tended not to key into the theme of justice when it comes to capability approach and basic needs. Yet, injustice is one of the deepest felt experiences of humans. As Sen (2009a) indicated,

What moves us, reasonably enough, is not the realization that the world falls short of being completely just – which few of us expect – but that there are clearly remediable injustices around us which we want to eliminate... This is evident enough in our day-to-day life, with inequities or subjugations from which we may suffer and which we have good reason to resent, but it also applies to more widespread diagnoses of injustice in the wider world in which we live... The identification of redressable injustice is not only what animates us to think about justice and injustice, it is also central [to capabilities]. (p. vii, see also Sen, 2012, p. 101)

The idea to identify and redress the situations of injustices in which individuals live motivate individuals to seek a world in which they can enjoy better and fuller options or capabilities. The best way to think of injustice with regard to mobile phones was with the idea of unfreedoms, to use Sen's (1999, p. 15) expression, hardships, or lack of human fundamental needs seen among selected rural populations. The English word injustice comes from the Latin adjective *justus, a, um*, meaning: rightful, right, complete, sufficient, suitable, full, etc. (Lewis & Short, 1879). Thus, as is also clear per capability approach, living conditions that are not suitable, complete, right, sufficient, etc. constitute injustices, and cannot allow individuals to live better and fuller lives. This study was not so much placing blame on who was responsible for the injustices bemoaned in the investigated community as it was highlighting the areas wherein (see details above about commodities and utilities) this study's participants could and should have broader capabilities in order to be able to live better and fuller lives. Injustice simply indicates that which cannot be accepted as just, fair, correct, etc.

In other words, when individuals are used as mere commodities, utilities, or objects of mobile phone business or networks, they are faced with injustices or unsuitable realities – again no guilt implied. On this note, Sen (2013b) deplored that *The Millennium Development Goals* (2000) did not provide the means of justice for the world's poorest to ensure their capabilities. In fact, it bears specifying that capability approach is an approach of justice, as the title of Sen's (2009a) seminal book on capability says: *The Idea of Justice*. This tends not to be fully acknowledged in most mobile phone and development literature. As Nussbaum (2003) clarified, "capabilities have a very close relationship to human rights" (p. 36) or to, more precisely, "rights as freedoms" (Sen, 2009a, p. 366). It was identified, for example, that this study's participants suggested the removal of injustices -- such as those of mast guards (see Case Study II: Mast Guards) or slums (see Case Study III: Kiosk Vendors) -- in order for concerned individuals to enjoy fuller capabilities in ways in which they used new digital technologies (see also Case Study VII: Chiefs). The point being, a "diagnosis of injustice [unsuitable conditions] will figure often enough as the starting point for critical discussion" (Sen, 2009a, pp. vii-viii) about people's daily lives.

The fourth and last area of applicability related to Sen's (1993b, 1999, 2009a, 2009b) framework is that of interpretivism (see methodology chapter). One of the features of capability approach is its adamant opposition against positivism. It was observed that the interpretivist characteristic of capability approach escapes the attention of most mobile phone and development analysts, without which it is hard to appreciate and comprehend the reality of people and the role of mobile phones in society. Meanwhile, Sen (1970c, 1979a, 1979c, 1979d, 1982b) offered extensive reflections with which to stymie positivistic principles in development studies. Since this study was a study of the perceived experiences that corn growers in the Congo had of mobile phones and development, it inscribed itself in interpretivism. Indeed, interpretivism is best manifested in the move of capability approach from the positivistic, econometric parameters of development to the fullest expansion of capabilities as the conduit of development. Interpretivism also presupposed that this study's conclusions could be used as "lessons learned" (Yin, 2014, p. 40) or "*portable*" (Roy *et al.*, 2015, p. 255) statements, but not as assumptions representative or generalizable from a given sample to the larger population.

The terms most commonly used by Sen in reference to positivism are: consequentialism, outcome utilitarianism, welfarism, Paretianism, etc., with the basic methodological belief being premised on outcomes and the measurable indexes that lead to them. In a pertinent comment, Sen (1979a) argued, "a principle that seems to be shared by all variants of utilitarianism... identifies the goodness of a state of affairs (or outcome) with the sum total of individual utilities in that state" (pp. 463-464, see also informative explanation by Pressman & Summerfield, 2009, pp. 71-72). The emphasis here is placed on outcomes and the utility derived from them. For better or worse, development studies is known for its long tradition of outcome-based research (see log frame approach of development in literature review chapter) or, to use a description of development experts Quarry and Ramírez (2009), "results-based approaches" (p. 2, see also Grabowski, Self, & Shields, 2015, p. xiv). The reason was that

the meaning of development nevertheless focused on European accomplishments. While such accomplishments came with massive social – and often violent – upheaval, they have been represented in theory as a set of *idealized outcomes* [emphasis added] to be emulated by other countries. (McMichael, 2012, p. 2)

As seen in the statements above, the focus was being placed on the outcomes of development in order for any society to be developed. As McMichael (2012) elaborated, “accordingly, the ‘end’ of development justifies the means of getting there, however disruptive [or unsuitable] socially and ecologically the process may be” (p. 2).

However, with “a change from *means-oriented* [emphasis added] evaluative approaches” (Sen, 2009a, p. 233), or, as Sen (2009a) insisted, with “a very substantial departure from the means-orientation” (p. 253), capability approach calls researchers to look past the requirements of outcomes and their measurability to delve deep into human experiences, or, more precisely, into an actualization or “realization-focused view” (Sen, 2012, p. 105) of humans. Therefore, as explained in methodology chapter, the eight case studies of this research revolve around the experiences of mobile phones and development as opposed to outcomes such as incomes, GDP, GNP, etc.

Furthermore, it was observed, as noted earlier, that authors have tended to bypass the link of capability approach and the market (Aker, 2008, 2010, 2011; Aker & Blumenstock, 2015), with market being the place of purchases and financial transactions. This study’s participants, however, proposed market as the forum of freedoms and empowerment to allow rural populations to gain greater capabilities with regard to basic needs. This has led to a more nuanced view of development and the relationships between mobile phones and capabilities. Perhaps most importantly, it was also noted that capability approach is unsuitable for discussion groups and their dynamics.

Thus, participatory method was used to foster a greater participation of concerned individuals into the process. The reason why capability approach was not proven suitable for group dynamics was in large part rooted in the history of both mobile phone and development studies, a history dominated by something of outcome- or commodity-framed research (see Sen, 1988). This meant that the need for universal and abstract outcomes might cause researchers and sponsors to prefer universally applicable and top-down figures rather than locally grounded and inductive findings (Peet & Hartwick, 2015, pp. 11-15). Universally applicable figures could be

relevant in other contexts, but not in that of this study since the research questions posed did not need figures. However, concerning the figures presented on development one might need to exert caution. Unlike most studies steeped in rates, numbers, and outcomes of poverty in developing countries (see Alkire *et al.*, 2015), this study sought to investigate the lived experiences surrounding mobile phones and development, with a view to bringing to light the patterns and lenses upheld.

Another idea closely related to market, was that of m-banking (Adler & Uppal, 2008; Amelio, Djembissi, & Ivaldi, 2007; Budree & Williams, 2013; Coyle, 2007; Goodman & Walia, 2007; Houpis & Bellis, 2007; Hughes, 2007; Maree *et al.*, 2013; Mishra & Bisht, 2013; Mortimer-Schutts, 2007; Tobbin, 2012; Yousif, Berthe, Maiyo, & Morawczynski, 2013; Vaughan, 2007) or M-PESA to use the Swahili term for m-money. Despite its popularity in developing countries, however, m-banking had been shown to be limited to urban areas. As Aker and Mbiti (2010b) indicated, “although M-Pesa has been touted as ‘banking the unbanked’, on average, M-Pesa users are wealthier, better educated, urban and ‘already banked’... Moreover, the data suggest that most of the transfers are occurring within urban areas” (p. 221, see also Mishra & Bisht, 2013, p. 513; Yousif, Berthe, Maiyo, & Morawczynski, 2013, p. 30). This study’s participants showed that m-banking was only heard of on the radio and could not be undertaken in rural areas due to the lack of infrastructure and appropriate literacy.

The point was not that m-banking and studies focused on it were not valuable or could not yield benefits, but that, just like any service or technology, m-banking presupposed minimal equipments, logistics, and skills (i.e., bank, cash, staff, road, Internet, credit card service, electricity, Web server, Web maintenance, etc.) not found in rural areas. It bears noting that “m-banking adoption literature is fragmented... Moreover, the extant literature appears limited by its narrow focus on SMS banking” (Shaikh & Karjaluo, 2015, p. 129). Other studies have shown that “while basic mobile telephony was rapidly adopted across sub-Saharan Africa, uptake of m-money has been much less pronounced, with some notable exceptions (e.g., M-Pesa in Kenya and Tanzania)” (Aker & Blumenstock, 2015, p. 356). This reflects the trend of m-money adoption around the world. For example, “among 140 m-money programs worldwide, adoption

of m-money services remains surprisingly low, except in a few high-profile countries” (Aker & Blumenstock, 2015, p. 357).

Thus, for this study’s participants, m-banking was not even a commodity or utility for them. The other argument to be made from a capability approach point of view was that even if m-banking were a commodity for this study’s participants, this study’s participants would still have needed more capabilities around m-banking and cash than just SMS in case they happened to lose or run out of the commodities and utilities of m-banking. It is those actual capabilities not just m-banking and its gains and popularity that would make this study’s participants *free, safe, and responsible* m-bankers within their community in rural areas of the Congo. Put differently, it was noted that participants did not show any evidence of m-banking and related information transaction. Perhaps to make matters worse, as explained earlier, prior studies on mobile phones displayed a thin coverage of rural populations (Burrell, 2010; Molony, 2005, 2007, 2008a, 2008c, 2009; Porter *et al.*, 2013). The main reason for this might be the difficulties involved in accessing rural areas.

Furthermore, authors have tended to relate rural populations to urban populations, with expressions such as “peri-urban” (Porter *et al.*, 2012, p. 146), “semi-urban” (Stefania & Marina, 2015, p. 13, see also Yousif, Berthe, Maiyo, & Morawczynski, 2013, p. 30), “urban poor” (Mishra & Bisht, 2013, p. 513, see also de Souza e Silva *et al.*, 2011, p. 413), “rural-urban” (Porter, 2012, p. 246), “suburban” (Ling, Bjelland, Sundsøy, & Campbell, 2014, p. 289), etc. Such a slanted approach, in one form or another, leaves readers and mobile phone carriers with a lean knowledge of rural populations and their daily struggles for survival and uses of mobile phones. Thus, it was found in this study, as demonstrated earlier, that there was an urban bias in the literature concerned with rural populations, and thus the rural community tended to be underrepresented. The point was confirmed by prior remarks that there needed to be sustained research into rural areas of the world’s poorest (see Steinfield, Wyche, Cai, & Chiwasa, 2015).

Outliers

Another point arising from the capability approach’s rejection of positivism -- and reflected in mobile phone literature -- concerned a group of topics identified as outliers. Outliers reflect

issues that were not central to the findings. These have been included in this study in order to be faithful to the interpretivistic orientation of Sen (2009a). Topics are said outliers or unique assumptions when they are not common to the participants within a specific case study (see Babbie, 2013; Creswell, 2012, 2014). In addition, one of the main advantages of qualitative research is its sensitivity to outliers (see Patton, 2015; Tracy, 2010, 2013). It was observed that the responses of this study's participants displayed five prominent outliers, involving the community and/or the individual: (1) working conditions, (2) toilet/shower, (3) hours of work, (4) disabilities, and (5) free mobile services (see Figure 31).

Map of Outliers

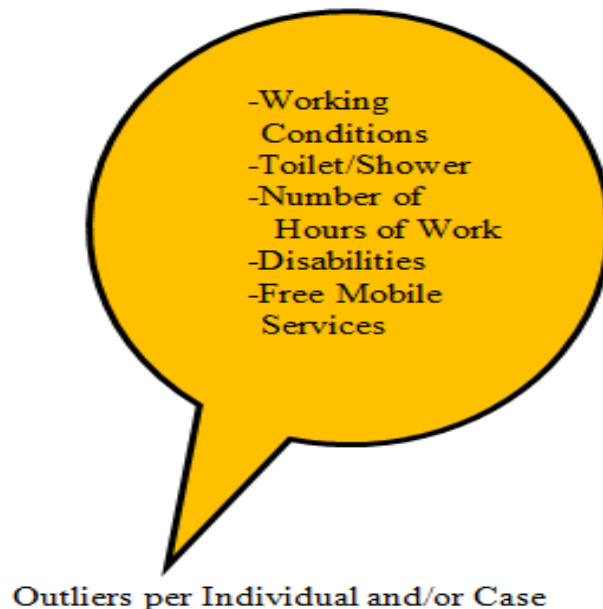


Figure 31: Outliers

It was suggested that the necessity of improving the working conditions of mobile workers (see Case Study II: Mast Guards and Case Study III: Kiosk Vendors) be considered. The reason might well be that mast guards and kiosk vendors were working in life-threatening conditions. The idea implied a need for mobile phone sponsors to have clear policies with regard to the conditions in which were not only mast guards and kiosk vendors set to work, but all workers in the concerned village(s). It was observed that very often mobile phone sponsors tended to focus on policies of

uses and trades of mobile phones, with state officials being the major players – leaving aside mobile phone workers and their working conditions.

The second outlier, related to the first, had to do with toilet and shower (see Case Study II: Mast Guards and Case Study III: Kiosk Vendors). Work conditions presuppose toilet and shower to allow a better health of workers. The reason why toilet and shower tend not to be taken into account by mobile phone designers might be the situation of developed countries where toilet and shower do not fall within the remit of mobile phone designers. Meanwhile, toilet has been shown to be essential to the health of individuals, especially children (see Chambers & Von Medeazza, 2013). For example, prior research has shown “millions of the poorest and most disadvantaged ... without access to even the most basic toilet” (Jones, Fisher, & Reed, 2012, p. 167). Indeed, access to decent toilets “can make a positive contribution to poverty alleviation and economic development” (Jones, Fisher, & Reed, 2012, p. 173). Even more interestingly for this discussion, “there is now an increasing body of basic information on low-cost accessibility options [of latrines], using drawings and photos of solutions that have been found to work locally, aimed at households in rural areas” (Jones, Fisher, & Reed, 2012, p. 172). Mobile phones can capture, store, and circulate those pictures for rural illiterate communities.

The third outlier applied to the hours of work (see Case Study II: Mast Guards). Mast guards were the most exposed to the lax consideration of business hours. It was discovered that mast guards tended to spend entire days at work for a week or so. The reason that hours of work tended to be disregarded in most mobile phone and development literature might be the lack of fundamental rights clearly ascribed to mobile phone workers. For example, Marx (1844/1959, 1867/1977) identified work conditions as an indication of the exploitation of man by man.

The fourth outlier dealt with disabilities (see Case Study II: Parents and Case Study VII Chiefs). It was pinpointed that mobile phone sponsors seemed to be unaware of disabled people among mobile users and workers. Close collaboration with local populations was required to best attend to disabled individuals. Per participatory method, it was arranged that some group discussions be moderated by disabled individuals present at the sessions held. The difficulty of movement and

access that disabled individuals experienced might explain their absence in most development and mobile phone design and research (Alkire *et al.*, 2015; Mäkelä, 2015).

The fifth and last outlier lay in the idea of free mobile phones for people with special needs, such as the elderly, disabled, expectant mothers, etc. (see Case Study II: Parents and Case Study VII: Chiefs). It was distinguished that the concept mobile phones and people with special needs was lacking partly because there was no such thing as a state census itemizing rural populations and their various constituents and services.

Summary

The aim of this study was to assess how mobile phones led or could lead to development. The research being done into mobile phone is just as nascent as mobile phone industry. The study has led to question the view and role of mobile phones in development and enhancement of fundamental capabilities. Studies done on mobile phone phones tended to present snapshots or single-focused reports of mobile phone uses and development, leaving aside the broader capabilities that individuals have in order to live better and fuller lives. Thus, it remains to be seen, for example, what country has or can become developed on account of m-banking more or less like oil industry, cotton industry, or automobile industry, for example, has led nations to tremendous levels of development around the world and across cultures.

There were, however, some trends emerging from mobile phone literature, in which development linked to mobile phones – an important part of the research questions posed -- was receiving specific focuses. A mixture of methods suited to selected rural areas were used to yield a robust and multilayered set of findings. Research questions posed in the study were thus answered, based on the focuses found with mobile phones and selected participants. Indeed, mobile phones were presented with focuses such as extractive or commercial agendas to cover or ensure the fees of mobile phone operation, social networks to enhance human interaction or collaboration in society, and business networks to achieve financial gains. Collaboration is needed as “there is no quick fix” (Fisher, Cotton, & Reed, 2006, p. 9).

This study proposed a shift away from an extractive to productive focus, from the commodities of business networks and from the utilities of social networks to broader capabilities of individuals and their community. The study also proposed the *Utu* communal culture proper to this study's participants to infuse mobile phones with community- and individual-led broader capabilities. To this end, the study suggested to assess afresh the notion of capability according to capability approach. The study laid bare under-researched areas and associated outliers in which development and mobile phones needed to be discussed anew to allow for newer and further theory or knowledge in existing research.

Chapter Six: Conclusion

The aims of this study were:

1. to inquire into ways in which mobile phones produced development in rural areas of the Congo from the perspectives of concerned populations
2. to give voice to selected rural populations to capture their own accounts or lived experiences of mobile phone uses and development

The research questions were put forth as follows:

1. Do mobile phones produce development in rural areas of the Congo?
2. Do mobile phones improve the living conditions of people?

The aims stated in the study were met as the topic of development and mobile phones was one of the most current and discussed topics of modern day societies, especially in rural areas of developing countries wherein mobile phones for one reason or another were increasingly gaining popularity. Since the research questions set forth in this study were not questions of yes or no or right or wrong answers, the answers received were open-ended and thus provided more information than could have been in quantitative or statistical questionnaires. Research Question 1 – how to produce development – was met as the notion of development received sustained inquiry from the study. The same held true of Research Question 2 – do mobile phones improve the living conditions of people? – which was particularly relevant as it touched on human basic needs such as water, shelter, food, health, and clothing.

Contributions to knowledge

Since the research questions were about how mobile phones produced development in the rural Congo and how they improved the living conditions of people, some areas in mobile phone

literature were seen to be under-researched. One overarching contribution of this study worth emphasizing at the outset is the shift away from a snapshot, one-product-restricted, or single-focused characterization of mobile phone uses and development to that of expansion of individuals' capabilities with regard to human basic needs in the selected community or location.

- 1 Focus was placed on technology to allow for technical skills and means among rural populations. The goal was for technical skills to complement extensive research of mobile phones and development focused primarily on human agency, local participation, context of concerned populations, human skills. Part of this doctoral study's findings, the youths for example, emphasized the role of technology for their development and that of the community in which they lived. The reason was that technology was not the only thing that could be imposed upon people (i.e., cloths, knives, drums, names, culture, language, etc.), therefore it could not be ignored altogether. With these and similar things or technologies, the impact of development on people was greater than just the local participation of concerned individuals. If there are mistakes in dealing with a particular technology, the community will evaluate and improve the process of acquisition accordingly, rather than simply excluding or minimizing the role played by that technology.
- 2 Focus was placed on shared ownership of mobile phones to key extensive literature of mobile phones and development into the core practices or ways in which concerned local populations handle technologies.
- 3 Focus was placed on connected households to align extensive previous research of mobile phones and development with rural households and the ways in which they relate to one another.
- 4 One significant contribution made by this study to existing knowledge is that mobile phones can be complimentary to, and not a replacement of, the *Utu* culture. One consequence is that a researcher's unit of analysis is not much

about an individual's uses of mobile phones as it is about the community dynamics (i.e., collective solidarities, connected households, care about persons with special needs, etc.) in which mobile phones are being used.

- 5 Focus was placed on emergency or collective solidarities to mesh existing research of mobile phones and development with the solidarities with which individuals in rural areas aid one another. One typical example of collective solidarities is with corn traders. If a corn trader is going bankrupt or broke (for a variety of reasons: fire, death, sickness, etc.) the community will have a day called *corn traders day* held usually at the broke trader's house, wherein corn traders from around the region are invited, which each bringing any kind of help (i.e., seeds, cash, tools, bed sheets, kitchen utensils, etc.). The day is made of a meal, social gathering, and the distribution of gifts to the broke trader. At the end of the gathering, the corn trader is left with a tremendous amount of help, and is able to start anew his business of corn trader. Such solidarity exists under different circumstances, such as harvest, house building, family dispute, like-threatening illness, gardening, plowing, newborn, etc. Harvest seems to be more common, and sometimes gifts might not be involved.
- 6 Focus was placed on capabilities to move away from a commercial or extractive aspect found in extensive previous research done on mobile phones and development to a capability-enriched perspective of mobile phones.
- 7 Focus was placed on capabilities to move away from a corporate or business aspect found in extensive previous research done on mobile phones and development to a capability-enriched perspective since individuals in rural areas do not own a business or corporate.
- 8 Focus was placed on human basic needs in order for extensive previous research done on mobile phones and development to be attuned to the struggles of the world's poorest.

- 9 Focus was placed on outliers or the marginalized to allow for more inclusive research on mobile phones and development. The reason being, any context or place has in one form or another some outcast, not easily seen, or “largely unseen people” (Chambers, 1983/2013, p. viii) in their midst. For example, what was found was that most guards did not have a toilet or shower at work place. Mobile phones could allow these groups to connect, communicate, and make their needs known to the community in the area investigated. In other words, mobile phones could become a tool with which to enhance the capabilities of the outcast and marginalized.

- 10 Focus was placed on mobile phone-centric libraries to make information services and technologies more beneficial to individuals in rural areas. Just as a mobile phone is shared and maintained by the community, so too a center or booth with mobile services can be shared and maintained by the community to ensure its protection, sustainability, or viability within and for the community. One example of this is Internet cafés seen in developed countries and some urban areas of developing countries to allow the public access of the Internet. Furthermore, just as an educated person in developed countries would walk into a library to collect information of different kinds, based on her needs, so too an illiterate person in rural areas can use a mobile phone as a library or repository of information needed for things such as local medicinal plants, weather forecast, crops, gardens, recipes, etc. These repositories are to be stored and maintained by the community just like a mobile phone is owned or maintained by the community. It bears noting that rural areas do not have public libraries, so mobile phones can play an important role in supplying individuals with needed information and in storing or saving that information for future use. Another example is that in developed countries, mobile phones serve as repositories of pictures and addresses of acquaintances. In the same way, mobile phones can help illiterate individuals in rural areas to obtain or save specific information.

The contributions made in this doctoral study were contributions since they allowed to explore, gain new knowledge from, and/or build theory in “under-researched areas” (Rao & Perry, 2003, p. 236, see also Braun & Clarke, 2006, p. 11; Gabrielsson & Kirpalani, 2012, pp. 67-68) such as those unearthed in the study. More specifically, the stated contributions also supplied the “lessons learned” (Yin, 2014, p. 40) needed to improve existing research and practice.

Recommendations

A number of recommendations/proposals were needed to ensure a richer set of results with regard to mobile phone uses in rural areas. It was recommended that in rural areas:

1. There be consultations between mobile phone carriers, academia, communities/individuals, and advertizing companies to devise locally relevant and capability-expansive mobile phones. For example, participants proposed that individuals – especially those with special needs -- be given advice and skills on market day by experts or researchers. The reason being, such collaboration has the potential to avoid the mistakes encountered in the past, improve the design of mobile phones, and enhance the well-being of concerned populations. It is in the advantage of government or state officials to fund such collaborative work in order to leverage the potentials of mobile phones in rural areas. It is also in the advantage of mobile phone companies, international donors, and private sectors to fund and facilitate this consultation, with the government being the primary sponsor.
2. Persons with special needs, expectant women, and the elderly be given free mobile phone services and devices. The reason being, such services have the potential to eliminate discrimination against the disabled and those with special needs.
3. There be consultations between academia, industry, and mobile phone carriers to sponsor and undertake in-depth research on the literacy and design of mobile phone and other technology uses. The reason being, such collaboration has the potential to increase the skills of concerned populations and ensure the use of various technologies in the community.
4. Community-run mobile services be held once or twice a week from village to village to provide technology, expertise, and advice regarding all spheres of daily life, such as

health, roof, woodwork, battery, charger, crop, food, bike, text message, water well, prescription, bill, bank, credit card, etc. The reason being, such services have the potential to foster a view of development centered on the community, with individuals being offered broader capabilities to enjoy better and fuller lives.

5. There be consultations between credit card companies, banks, and communities/individuals to allow people to open, maintain, and own their accounts using mobile services and devices. The reason being, such collaboration has the potential to install in more effective ways m-banking services and goods in a place that did not have any.
6. Mobile phone carriers provide information or literacy on the fundamental legal rights of people about the services and technologies received, the assets or things owned, and the human dignity presupposed. The reason being, such information has the potential to empower the vulnerable in rural areas and make mobile phone era more human than commercial.

Limitations

According to reductive phenomenology (see methodology chapter, choice of methods, phenomenology), a researcher ought to be aware of underlying preconceptions along the research process. The reason being, underlying preconceptions can prevent the researcher from seeing the world (of research) as it really is. Indeed, “we [researchers] must -- precisely in order to see the world and to grasp it as a paradox -- rupture our familiarity with it, and this rupture can teach us nothing except the unmotivated springing forth of the world” (Merleau-Ponty, 1945/2014, p. 14). Therefore, due to circumstances encountered in the selected areas of research, the study was plagued by two major limitations:

1. Despite the self-awareness required in the phenomenological method (see methodology chapter), the researcher’s Western background carried some predispositions/preconceptions in his interactions with participants. The reason being, the study might cover or justify the “White man’s burden” (Easterly, 2006b, p. 3), with the idea of being uncritical or supportive of the West. In other words, the received preconceptions might affect the way the questions asked to participants were

conceptualized in the sense that Western-biased ideas – take-for-granted -- might escape criticism. For example, although m-banking was prevalent in certain places in Africa (Adler & Uppal, 2008), questions related to m-banking were asked maybe because of Western media reports, regardless of whether the concept was or was not germane to selected participants and their daily lives.

2. Although done evidently for security reasons, the forbiddance to shoot videos and pictures deprived readers from the visual and audio aspects of the research. The reason being, “humans are visual animals” (Yeshurun *et al.*, 2009, p. 321, see also Lu & Doshier, 2014, p. 3; Peoppel & Overath, 2012, p. 2; Koch, 2004, p. 1108), they understand certain things better with images than without. For example, responses and actions of the disabled during sessions could have been better captured on videos than on handwritten notes.

As can be argued, the limitations listed above point to areas that could be identified and capitalized as areas for further research.

Future research

Areas of future research included, but not limited to:

1. Longitudinal of mobile phones in the selected areas to see the sustainability of development in the investigated area. As seen with prior mobile phone and development literature being focused particularly on the tasks and skills of mobile phone users, more work than this doctoral study’s aims allowed to accomplish is needed to investigate and promote the infrastructures, equipments, and systems required for full and sustainable mobile phone industries in rural areas.
2. The health of mast guards and exposure to magnetic/electrical equipments. As seen with prior mobile phone and development literature being particularly extractive and commercial to disseminate mobile phones to the largest extent, more work than this doctoral study’s aims allowed to accomplish is needed to investigate and promote the broader capabilities of involved individuals to ensure healthier and more decent impacts of mobile phones in rural areas.

3. Rates of mobile phones, based on shared ownership. As seen with prior mobile phone and development literature being focused particularly on private ownership and bounded households, more work than this doctoral study's aims allowed to accomplish is needed to investigate and promote the collaborative networks of *Utu* local culture to ensure broader impacts of mobile phones on both users and non-users of mobile phones.
4. Mobile phone-embedded detectors or sensors of aquifers for making water well. As seen with prior mobile phone and development literature being focused particularly on corporate and business purposes, more work than this doctoral study's aims allowed to accomplish is needed to investigate and promote mobile phones as digital libraries or repositories of information for various basic needs such as water well, weather conditions, roofing, mudslide prevention, reforestation, election tallies, etc.
5. Replication of this doctoral study in other contexts, locations, or continents of developing world. As seen with most mobile phone and development literature being markedly scattered in silos, more work than this doctoral study's aims allowed to accomplish is needed to investigate and promote synergistic and replicative works between various areas of development.
6. Design of mobile phones tailored to rural needs, with an emphasis on people with special needs. As seen with prior mobile phone and development literature being focused particularly on urban areas and/or *urban-biased* rural areas, more work than this doctoral study's aims allowed to accomplish is needed to investigate and promote the specifics of rural populations with a view to fully enhancing the capabilities of concerned communities and their members.
7. Design of mobile phones inclusive of and/or susceptible to individuals largely considered or left as the outcast, outliers, or marginalized. As seen with prior mobile phone and development literature being focused particularly on communication with friends and beloved ones, more work than this doctoral study's aims allowed to accomplish is needed to investigate and promote mobile phones as tools tailored to the needs of the outcast, outliers, or marginalized in selected areas.

8. Design and uses of mobile phones tailored to the needs of illiterate individuals in rural communities. As seen with prior mobile phone and development literature being focused particularly on m-banking and text-intensive communication, messages or transactions more work than this doctoral study's aims allowed to accomplish is needed to investigate, promote, and enhance audio, video, and tactile applications of mobile phones in order for the design and uses of mobile phones to respond to and convey the needs and situations of illiterate individuals in rural communities.

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APPENDIX I: Development agencies

Development Agencies

ACTS [African Centre for Technology Studies] (Kenya)

<http://www.acts.or.ke/>

Action Aid (UK)

<http://www.actionaid.org.uk/about-us/research-and-publications/education>

ADBG [African Development Bank Group]

<http://www.afdb.org/en/>

AFD [Agence Française de Développement]

<http://www.afd.fr/lang/en/home>

AGRA [Alliance for Green Revolution in Africa]

<http://www.agra.org/>

AGRF [The African Green Revolution Forum]

<http://www.agrforum.com/>

AusAid [Australian Government Aid]

<http://www.ausaid.gov.au/Pages/home.aspx>

AWS [Austria Wirtschaftsservice] (Austria)

<http://www.awsg.at/Content.Node/>

BuddeComm aka Paul Budde Communication Pty Limited (Australia) www.budde.com.au or

<http://paulbudde.com/>

CGDEV [Center for Global Development] (US)

<http://international.cgdev.org/section/publications>

CGE [Center for Global Education] (Ireland)

<http://www.developmenteducationreview.com/about#about-the-CGE>

CIMMYT [Centro Internacional de Mejoramiento de Maíz y Trigo] (International Maize and Wheat Improvement Center) (Mexico)

<http://www.cimmyt.org/en/>

DERC [Development Education Research Centre] Research Papers (University of London Institute of Education)

<http://www.ioe.ac.uk/research/4502.html#ResearchPapers>

DEZA [Direktion für Entwicklung und Zusammenarbeit] (Switzerland)

<http://www.deza.admin.ch/de/Home>

DHF [Dag Hammarskjöld Foundation] (Sweden)

<http://www.dhf.uu.se/hammarskjold/>

GCAAP [Global Call to Action Against Poverty]

<http://www.whiteband.org/>

GIZ [Deutsche Gesellschaft für Internationale Zusammenarbeit] (Germany)

<http://www.giz.de/>

IAAE [International Association of Agricultural Economists]

<http://www.iaae-agecon.org/>

IECAH [Instituto de Estudios sobre Conflictos e Acción Humanitaria] (Spain)

<http://www.iecah.org/web/>

INASP [International Network for the Availability of Scientific Publications]

<http://www.inasp.info>

Irish Aid (Ireland)

<http://www.dci.gov.ie/>

JICA [Japan International Cooperation Agency] (Japan)

<http://www.jica.go.jp/english/>

Lux Dev [Luxembourg Development] (Luxemburg)

<http://luxdev.lu/fr>

M.S. Swaminathan Research Foundation

<http://www.mssrf.org/pub.html>

NORAD [Norwegian Agency for Development Cooperation] (Norway)

<http://www.norad.no/no/forside;jsessionid=11A3EBD04FE5AEA63D4D55C641D4207B>

ODI [Overseas Development Institute]

<http://www.odi.org.uk/>

OECD [Organization for Economic Co-operation and Development]

<http://www.oecd.org/>

Oxfam International

<http://www.oxfam.org.uk/en>

Peace and Collaborative Development Network

<http://www.internationalpeaceandconflict.org/page/about-the-pcdn-network>

PRGF [Poverty Reduction and Growth Facility] (IMF)

<http://www.imf.org/external/np/pdr/prsp/poverty2.htm>

PRSP [Poverty Reduction Strategy Papers] (IMF and World Bank)

<http://www.imf.org/external/np/prsp/prsp.aspx>

Sacred Africa (Kenya)

<https://sites.google.com/site/sacredafricacom/sacred-africa-programs>

SAPRIN [Structural Adjustment Participatory Review International Network]

<http://www.saprin.org/>

SIMLESA [Sustainable Intensification of Maize–Legume Systems for Food Security in Eastern and Southern Africa] Sustainable Intensification of Maize–Legume Systems for Food Security in Eastern and Southern Africa

<http://simlesa.cimmyt.org/index.php>

SAIIA [South African Institute of International Affairs] <http://www.saiia.org.za/>

The Norman Borlaug Institute for International Agriculture (US)

<http://borlaug.tamu.edu/follow-the-borlaug-institute/>

UKAID [United Kingdom Aid]

<https://www.gov.uk/government/organisations/department-for-international-development>

UNCTAD [United Nations Conference on Trade and Development]

<http://unctad.org/en/Pages/Home.aspx>

UNDP [United Nations Development Programme]

<http://www.undp.org/content/undp/en/home.html>

UNECA [United Nations Economic Commission for Africa]

<http://www.uneca.org/>

UN Food and Agriculture Organization

<http://www.fao.org/home/en/>

UNWFP [United Nations World Food Programme]

<http://www.wfp.org/>

WHO [World Health Organization]

<http://www.who.int/en/>

Information Associations and Development Centers

ACM [Association for Computing Machine]

<http://www.acm.org/>

AIS [Association for Information Systems]

<http://ais.site-ym.com/?>

Capturing the Gains Working Paper (University of Manchester School of Environment and Development, UK)

<http://www.capturingthegains.org/publications/workingpapers/>

Center for Global Development Working Papers (US)

http://international.cgdev.org/section/publications?f%5B0%5D=field_document_type%3A2050

Centre for International Development of Northumbria University at Newcastle (UK)

<http://research.northumbria.ac.uk/cid/publications/>

Global Economy and Development at Brookings Working Papers (US)

<http://www.brookings.edu/about/programs/global/global-working-paper>

Harvard University Center for International Development Working Papers (US)

<http://www.hks.harvard.edu/centers/cid/publications/faculty-working-papers>

ICIS [International Conference on Information Systems]

<http://icis2013.aisnet.org/>

ICTLogy

<http://ictlogy.net/bibliography/reports/projects.php?idp=1379>

IDRC [International Development Research Centre] (Canada)

<http://www.idrc.ca/EN/Pages/default.aspx>

IEEE [Institute of Electrical and Electronics Engineers]

<http://www.ieee.org/index.html>

IKM [Information and Knowledge Management] Working Papers (Germany)

http://wiki.ikmemergent.net/index.php/Documents#IKM.C2.A0Working_Papers_with_Summaries

IMF [International Monetary Fund] Policy Papers

<http://www.imf.org/external/pp/ppindex.aspx>

INASP [International Network for the Availability of Scientific Publications]

<http://www.inasp.info>

iSchools [Information School] iConferences [Information Conferences]

<http://ischools.org/the-iconference/>

ITU [International Telecommunications Union] publications/statistics (Switzerland)

<http://www.itu.int/en/publications/Pages/default.aspx>

King's College London Working Papers (UK)

<http://www.kcl.ac.uk/sspp/departments/geography/research/epd/workingpapers.aspx>

London School of Economics and Political Science Working Papers (UK)

<http://www.lse.ac.uk/internationalDevelopment/publications/Working-Papers.aspx>

Michigan State University Center for Gender in Global Context Working Papers (US)

<http://gencen.isp.msu.edu/publications/papers.htm>

Michigan State University International Development Working Papers (US)

<http://fsg.afre.msu.edu/papers/idwp.htm>

Navarra Center for International Development Working Papers (Spain)

<http://ncid.unav.es/en/investigacion/working-papers/all>

New York University Development Research Institute Working Papers

<http://www.nyudri.org/publications/working-papers/>

OECD [Organization for Economic Co-operation and Development] Working Papers

http://www.oecd-ilibrary.org/development/oecd-development-centre-working-papers_18151949

Oxford University Department of International Development Oxford Poverty & Human Development Initiative [OPHDI] Working Papers (UK)

<http://www.ophi.org.uk/resources/ophi-working-papers/>

Oxford University Department of Economics Center for the Study of African Economics [CSEA] Working Papers (UK)

<http://www.csa.e.ox.ac.uk/research/gprg-resprogs.html>

Princeton University Center for Arts and Cultural Policy Studies Working Papers (US)

<http://www.princeton.edu/~artspol/workpap.html>

Princeton University Research Program in Development Working Papers (US)

<http://www.princeton.edu/rpds/papers/>

UNDESA [United Nations Department of Economic and Social Affairs] Working Papers

<http://www.un.org/en/development/desa/working-papers.html>

UNDP [United Nations Development Programme] Working Papers

<http://web.undp.org/developmentstudies/researchpapers.shtml#working>

University of Bath Centre for Development Studies Working Papers (UK)

<http://www.bath.ac.uk/cds/publications/#id23>

University of East Anglia School of International Development Working Papers (UK)

<http://www.uea.ac.uk/international-development/research/publications/working-papers>

University of Manchester IDPM Development Informatics Working Papers (UK)

<http://www.sed.manchester.ac.uk/idpm/research/publications/wp/di/index.htm>

University of Sussex Institute of Development Studies [IDS] Working Papers (UK)

<http://www.ids.ac.uk/publications/ids-series-titles/ids-working-papers>

USAID Working Papers (US)

<http://www.usaid.gov/results-and-data/progress-data/mcp/working-paper-series>

Wissenschaftszentrum Berlin [WZB] Discussion Paper

<http://www.wzb.eu/en/publications/discussion-papers>

World Bank Working Papers

<https://openknowledge.worldbank.org/handle/10986/8>

APPENDIX II: Interview Script

INTERVIEW SCRIPT

Criteria/Conditions

Conversations are held in the house or compound of the grieving family/person. Semi-structured as they were, interviews correspond to a classic conversation, with the caveat that they involved one way or another the basic needs of people (i.e., water, food, shelter, clothing, and health).

Essence or Example of Questions

Since the interviews were semi-structured, they did not require a systematic/replicable questionnaire for all interview sessions and group discussions. The essence of questions is indicated below:

1. How long have you been using/borrowing mobile phone(s)? (Subscription is not a factor)
2. Does mobile phone help you obtain firewood?
3. How many goats or chickens do you raise? (Equivalent of “what do you do for living?”)
4. Does mobile phone help build/fix your hut? (Equivalent of house)
5. How many hours do you take to get to the water well?
6. Does mobile phone help you obtain malaria pills?
7. Does mobile phone help you obtain mosquito nets?
8. Does mobile phone help you obtain/store food?
9. Does mobile phone help you obtain bricks and cement to build a decent house?
10. Does mobile phone help you obtain/fix your thatch? (equivalent of roofing)

APPENDIX III: Mnemonics for interviews

Mnemonics for group discussions and interviews (a blue print applicable to any question asked above in order to get in-depth answers)

For a smooth undertaking of the meeting, the signs to watch for and adapt to include: facial expressions, head (mind), heart, and body. A good and engaging interaction involves all these areas. People are using all these areas when talking. The moment one of those aspects is out during the conversation (e.g., heart), it is time to turn the mood up (with activity, game, subject, etc.)

Level 1 NEWS (i.e., news, events, world, and situation)

Examples:

News: How is your family? Events: Did the river dry completely last week? World (local): Do you get a lot of wind where you live? Situation: How do you get along now?

Level 2: EMA (experience, meaning, and action)

Examples:

Experience: What's your experience with m-banking? Meaning: What does mobile phone mean to you? Action: how does the meaning impact you or how do you perceive mobile phone?

Level 3: 4WH (why, when, where, who, and how)

Level 4: Human anatomy (i.e., head, eyes, ears, mouth, heart, hand, and feet)

Examples:

Head: What do you think of mobile phones? Eyes: Have you ever seen mobile phones? Ears: have you ever heard of m-banking? Heart: What do you feel when you think about mobile phones? Hand: Can you handle a micro-credit business with mobile phones? Feet: Have you stumbled upon difficulties in increasing your corn production.

Appendix IV: Author's publications

- Cibangu, K.S. (2016). The contribution(s) of modernization theory to ICT4D's research. In H. Rahman (Ed.), *Human development and interaction in the age of ubiquitous technology* (pp. 1-24). Hershey, PA: IGI Global.
- Cibangu, K.S. (2015a). Toward a more informed and informative use of the concept network in ICT4D. *International Journal of Information Communication Technologies and Human Development*, 7(2), 1-19.
- Cibangu, K.S. (2015b). Communication science and information science: Convergences and divergences. *Emporia State Research Studies*, 50(1), 22-35. Retrieved May 01, 2015, from <http://academic.emporia.edu/esrs/vol50/cibangu.pdf>
- Cibangu, K.S. (2015c). Human dark skin and Equatorial Africa: Toward a critique. *Current Research Journal of Social Sciences*, 7(3), 49-66. Retrieved from <http://maxwellsci.com/print/crjss/v7-49-66.pdf>
- Cibangu, K.S. (2015d). A new direction in information science research: Making information science a human science. *Information Research*, 20(3). Retrieved September 15, 2015, from <http://www.informationr.net/ir/20-3/paper686.html#.VfgmbvIVikp>
- Cibangu, K.S. (2014a). Mobiles phones and socio-economic development in rural areas of Africa. *Blog Centre for Information Management Blog Loughborough University*. Retrieved December 4, 2014, from <http://blog.lboro.ac.uk/cim/mobiles-phones-and-socio-economic-development-in-rural-areas-of-africa/>
- Cibangu, K.S. (2014b). Mobile phones and economic development in Africa: An information science study of maize growers' experiences in the Congo. *Proceedings of iFutures 2014: University of Sheffield, July 22, 2014 Sheffield, UK*.
- Cibangu, K.S. (2013a). A reconsideration of modernization theory: Contribution to ICT4D's research. *International Journal of Information Communication Technologies and Human Development*, 5(2), 86-101.
- Cibangu, K.S. (2013b). A memo of qualitative research for information science: Toward theory construction. *Journal of Documentation*, 69(2), 194-213. Retrieved May 1, 2015, from <http://www.emeraldinsight.com/doi/pdfplus/10.1108/00220411311300048>

- Cibangu, K.S. (2013c). Toward a critique of the information age: Herbert Marcuse's contribution to information science's conceptions. *Paper Presented at the Eight International Conference on Conceptions of Library and Information Science. Copenhagen, Denmark, August 19-22, 2013*. Retrieved October 2, 2013, from <http://informationr.net/ir/18-3/colis/paperC30.html>
- Cibangu, K.S. (2013d). Mobile phones and economic development in Africa: An information science study of maize growers' experiences in the Congo. *Poster presented at Transforming the digital world. Proceedings of the CIM [Center for Information Management] Loughborough University, Loughborough, LE 11, 3TU, UK, September 25, 2013*.
- Cibangu, K.S. (2012a). Qualitative research: The toolkit of theories in the social sciences. In A. López-Varela (Ed.), *Theoretical and methodological approaches to social sciences and knowledge management* (pp. 95-126). Rijeka, Croatia: InTech.
- Cibangu, K.S. (2012b). Karl Popper and the social sciences. In A. López-Varela (Ed.), *Social sciences and cultural studies: Issues of language, public opinion, education and welfare* (pp. 19-38). Rijeka, Croatia: InTech.
- Cibangu, K.S. (2010a). Paradigms, methodologies, and methods. *Library and Information Science Research*, 32(3), 177-178.
- Cibangu, K.S. (2010b). [Review of the book *Toward a sociological theory of information*, by Garfinkel, H.] *Journal of Documentation*, 66(2), 297-299.
- Cibangu, K.S. (2010c). Information science as a social science. *Information Research*, 15(3).
- Cibangu, K.S. (2009). Oral communication and technical writing: A reconsideration of writing in a multicultural era. *Journal of Technical Writing and Communication*, 39(1), 79-105.
- Cibangu, K.S., & Hepworth, M. (2016). What ICT4D and information management researchers can learn from Paul Otlet's notion of development. *Information Development*, 32(5), 1639–1656.
- Cibangu, K.S., & Hepworth, M. (2016). The uses of phenomenology and phenomenography: A critical review. *Library & Information Science Research*, 38(2), 148-160.

Appendix V: Author's Biography

Sylvain K. Cibangu is a PhD candidate in the Centre for Information Management in the School of Business and Economics, Loughborough University, Loughborough, UK. He completed his master's degree in the social sciences at Regis University, Denver, CO, USA, and a master's degree in Information Science at the University of Washington, Seattle, WA, USA. His research interests involve research methods, qualitative research, identity of communication studies, foundations of information science, information and communication technologies, and international development.

APPENDIX VI: Postgraduate Research Student Skills Training Record

Postgraduate Research Student Skills Training Record			
Academic Year:	ID no:		
2013-2014/2014-2015	B212421		
Name of Student	Full/Part Time:		
Sylvain Cibangu	Full		
Name of Supervisor(s):	Dept:		
Mark Hepworth, Donna Champion	School of Business and Economics, Centre for Information Management		
NOTE: RDF = Researcher Development Framework			
Department Based Training. This includes external training approved by the Department.			
Activity	Skills Addressed (use RDF)	Time Claimed (Days)	Date Completed
Departmental Induction	B1/B2/B3/D1	1.0	10/03/2012
Departmental Induction	B1/B2/B3/D1	1.0	17/07/2013
Strategic Research Data Management	A1/A2/A3/C1	0.5	27/07/2013
Twitter, to tweet or not to tweet	D1/D2/D3/C2	0.25	31/07/2013
The Eight International Conference on Conceptions of Library and Information Science (Copenhagen, Denmark)	D1/D2/D3/C2	5.0	18-22/08/13
Brown Bag Meeting September	B1/B2/B3/D3	0.25	11/09/2013
Writing a World-Class Paper	D1/D2/D3/C	0.25	25/09/2013
Getting the Most out of Scopus and Mendeley	C1/C2/C3/D3	0.25	25/09/2013
Transforming the Digital World: Launching the CIM	A1/A2/A3/C3	1.0	25/09/2013
Critical Success Factors (Knowledge Management Seminar)	B1/B2/B3/D2	0.25	02/10/2013
Determining the Identity of a Research Interest Group	A1/A2/A3/C1	0.25	04/10/2013

APPENDIX VI: Postgraduate Research Student Skills Training Record

Facilitating and Delivering Tutorials	B1/B2/B3/A3	1.0	07/10/2013
Knowledge Audit: Findings from a Case Study	C1/C2/C3/B1	0.25	06/11/2013
Making Yourself Attractive to Employers	C1/C2/C3/B1	0.5	07/11/2013
Job Hunting in the UK and Abroad	D1/D2/D3/C2	0.25	12/11/2013
Interest Group for Development	A1/A2/A3/B3	0.25	28/11/2013
Why We Do KM (KM Creates Values)	D1/D2/D3/C2	0.25	04/12/2013
Qualitative Research Method I	A1/A2/A3/D3	2.00	5-6/12/2013
Quantitative Research Method I	A1/A2/A3/B2	2.0	14-15/01/14
AHRC Impact Festival	C1/C2/C3/D1	0.25	17/01/2014
Practice Your Speech	B1/B2/B3/D2	0.50	17/01/2014
Angus' (Dean) Presentation to all SBE PhD students	B1/B2/B3/D1	0.25	14/01/2014
Enterprising Researcher & Protecting Your Intellectual Property	C1/C2/C3/A3	0.50	17/01/2014
Knowledge Management in the Networked World	D1/D2/D3/C1	0.25	05/02/2014
Interest Group for Development	A1/A2/A3/D2	0.25	12/02/2014
4th Annual Health and Wellbeing Research Conference	D1/D2/D3/C3	1.00	17/02/2014
Destination Management and Creative Industries	C1/C2/C3/A3	0.25	05/03/2014
Preparing to Teach: Teaching Skills Part A	B1/B2/B3/01	0.50	11/03/2014
Promoting Learning: Teaching Skills Part B	B1/B2/B3/D2	0.50	12/03/2014
Writing and Reading Academic Research Articles: Results and Findings Section	C1/C2/C3/A3	0.50	17/03/2014
Quantitative Research Method II	D1/D2/D3/C3	2.00	20-21/03/14
Writing and Reading Academic Research Articles: Exploring the Discussion Section	C1/C2/C3/D1	0.50	24/03/2014
Brown Bag Meeting March	B1/B2/B3/A3	0.25	26/03/2014
Working with Small Groups: Teaching	D1/D2/D3/B1	0.50	26/03/2014

APPENDIX VI: Postgraduate Research Student Skills Training Record

Skills Part C			
Writing and Reading Academic Research Articles: Exploring the Noun Phrase Usage in Academic Writing	D1/D2/D3/C3	0.50	31/03/2014
PhD Conference School of Design	C1/C2/C3/A3	1.00	02/04/2014
Launching the Centre for Service Management	A1/A2/A3/D2	1.00	03/04/2014
Research Methods in Post-Conflict Spaces	D1/D2/D3/C2	0.50	25/04/2014
Getting Articles Published for Researchers	C1/C2/C3/D3	0.50	30/04/2014
Knowledge Diversity from Diverse Public Data	A1/A2/A3/D2	0.25	07/05/2014
One-Day Conference MBA (SBE): Well at Work	C1/C2/C3/A3	1.00	12/05/2014
Qualitative Research method II	D1/D2/D3/C2	2.00	13-14/05/14
SBE PhD Conference: Your Research	A1/A2/A3/D2	1.00	29/05/2014
Brown Bag Meeting June	B1/B2/B3/D3	0.25	18/06/2014
Brown Bag Meeting November	B1/B2/B3/D3	0.25	20/11/2014
Brown Bag Meeting December	B1/B2/B3/D3	0.25	18/12/2014
Brown Bag Meeting January	B1/B2/B3/D3	0.25	15/01/2015
Brown Bag Meeting February	B1/B2/B3/D3	0.25	19/02/2015
Brown Bag Meeting March	B1/B2/B3/D3	0.25	26/03/2015
Mindful Researchers	A1/A2/A3/D2	0.50	26/03/2015
Brown Bag Meeting April	B1/B2/B3/D3	0.25	16/04/2015
Writing Your Thesis with Word 2010	A1/A2/A3/D2	1.00	26/05/2015
Training Summary		Days	
Department Based Training		35.05	
Other Activities			
Total Training Days		35.05	