
Connectivity and Empowerment: A Case Study of Cell Phone Technology in Rural Congo

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ABSTRACT

Hyperconnectedness, hyperconnectivity, or plainly put, connectivity, cannot be *effectively/fully* addressed without a sustained look into global *connectivity* since entire populations remain *unconnected* and *unempowered*. Indeed, despite claimed global growth, inequalities have increased within and between countries. More particularly, while a number of countries have made steady economic advances, the gap between the rich and the poor has widened. Connectivity with and access to information (technology) alone cannot make the world a better place nor eradicate poverty. As cell phones have increasingly come to be the privileged portal of connectivity and empowerment among the world's poorest, the present study focused on cell phone uses among concerned individuals. To this effect, unlike quantitative research with large-scale figures and top-down, predetermined data about investigated populations, the present study conducted semistructured interviews with 32 parents in the rural Congo with the aim to give voice to them to capture their own accounts or lived experiences on ways in which cell phones produced development among them. One key contribution of this study was to advocate for broader and synergistic capabilities of the world's poorest beyond the mere commodification of cell phone connectivities and technologies.

INTRODUCTION

No matter how connectivity or something similar arising from the information age is (intended to be) defined or approached, the challenges involved in the ways in which individuals and communities or organizations relate with one another and with information and communication technologies [ICTs] cannot be evaded. Most definitely, research inclusive of broad-based terminologies used across the globe and across disciplinary boundaries

as regards connectivity or the processes thereof has a greater resonance with, and wider impact upon, concerned individuals than that restricted to one simplistic, linear terminology. There is hardly a sphere of social reality that has remained unaffected by the digital era. If this is the world in which we live, researchers that shun it are less likely to get their points across. The idea brings home Marx's ([1845] 1946, 65; emphasis in original) statement that "philosophers [or information researchers/thinkers] have only *interpreted* the world, in various ways; the point, however, is to *change* it." As ICT or information researchers, we cannot change the contemporary world—a world crammed with connections—by avoiding research into and discussions on connectivity or connections. The call for this issue of *Library Trends* particularly sought to engage a discussion with greater global resonance and impact.¹

Structures Embedded in the Digital Era

The research carried in this paper was qualitative, interpretive research. However, while in recent decades greater awareness about qualitative, interpretive research has been raised across scholarly journals (and *Library Trends* is one of them), renowned research methodologists Denzin and Lincoln (2018a, 10; emphasis added) bemoaned, "The *academic and disciplinary resistances to qualitative* research illustrate the politics embedded in this field of discourse. *The challenges to qualitative research are many.*" One of the bonuses of qualitative research concerns the ability to engage with the terminologies and attendant worldviews of researchers and of the researched. One reason for the many challenges crippling qualitative research is that, as Coakes, Bryant, Land, and Phippen (2011, 40) specified, "entrepreneurs and innovators using the [information] technology do not all share the values which seek to use technology to enhance the lot of mankind." To turn the tide of things that ruin humankind ought to be the crux of the matter among researchers. Another reason for the challenges faced is that the methodology used by analysts conversant in matters of ICTs or of digital modernity is found to be that which perpetuates the structures of dominations and exploitations typical of old modernities or worlds. As Eikhof and Warhurst (2013, 495) remarked, "'creative industries' model of production [or ITCs-led modernity] translates into particular features of work and employment, which then translate into social inequalities that entrench discrimination based on sex, race and class." These and similar challenges have motivated scores of authors to adopt a critical framework or approach toward the social structures embedded in the digital era. As Denzin and Lincoln (2018b, x) asserted,

A critical framework is central to this [qualitative research] project. . . . It speaks for and with those who are on the margins. As a liberationist philosophy, it is committed to examining the consequences of racism, poverty, and sexism on the lives of interacting individuals.

As noted above, interacting individuals—also called networking or connected individuals—are the millions of individuals involved in the many interactions offered by new digital devices across the globe. Accordingly, a critical qualitative research is one that “focuses on structures of power and systems of domination. It opens the door of the academy so that the voices of oppressed people can be heard and honored and so that others can learn from them” (Denzin and Lincoln 2018c, 33). Voices are heard and become multiple and authentic when structures of dominations are removed. Voices—also termed terminologies—might seem to be confusing, ambivalent, or complex simply because “qualitative research utilizes an open and flexible design” (Corbin and Strauss 2015, 4).

The idea in adopting interpretive, qualitative research (details below) was to “study things in their natural settings, attempting to make sense of or interpret phenomena in terms of the meanings people bring to them” (Denzin and Lincoln 2018a, 10). In a world filled with unknowns, it is more productive to dialog about terms used and ideas proposed than to provide absolute, silver-bullet answers, believed to be free of confusion and discussion. Researchers need not only to relay the many meanings that selected individuals (such as this study’s participants) attach to (their) things and worlds, but rather to relate to or side with the experiences lived or suffered by those individuals in connection with the meanings brought forth. Experiences include, for example, the phenomenon of connection among investigated parents in the rural Congo, not to mention the concepts used in literature about these and similar populations. The point is precisely to emphasize, as Denzin and Lincoln (2018b, xvi; emphasis added) went on to explain, “the avowed humanistic and social justice commitment to study the social world from the *perspective of the interacting individual*.” In all fairness, the interpretation of the researcher(s) ought to derive from and dovetail with that of concerned individuals. As Patton (2015, 11) reminded us,

The particular niche and contribution of qualitative methods in uncovering unanticipated consequences comes from the *openness of inquiry* [emphasis in original]: asking open-ended interview questions, doing fieldwork in a way that is open to whatever turns up . . . to discover patterns that are hidden in the details, and *observing with open eyes and with an open mind* [emphasis added].

Research questions were open-ended, asked with the goal to drill deep into and uncover the patterns embedded in the experiences of reality within and around concerned parents. In other words, the goal was to produce *thick, sedimented, or multivocal* description (details below) vs. linear, thin, univocal, and universal description. This is because reality is rather made of multiple versions, multiple sediments, and multiple voices than coming from one version or voice.

New Spaces for Indigenous Voices

This is also because multiple voices are more powerful, more empowering, and more *connective* than one voice. As Denzin and Lincoln (2018b, xv) clarified, “the open-ended nature of the qualitative research project leads to a perpetual resistance against attempts to impose a single [voice], umbrella-like paradigm over the entire project” of research and reality. Thus, terminologies were/are meant to be rather *shared* from as many angles, prisms as possible than *locked or silenced* in *one (yes-or-no) voice*. As Denzin and Lincoln (2018b, x; emphasis added) indicated,

So near the end of the second decade of the 21st century, it is once again time to move forward into an uncertain, open-ended utopian future. It [is] time to open up new spaces, time to decolonize the academy, *time to create new spaces for indigenous voices*, time to explore new discourses, new politics of identity, new concepts of equity and social justice, new forms of critical ethnography, new performance stages. . . . *We must renew our efforts to honor the voices of those who have been silenced by dominant paradigms.*

As is evident from the above statements, research is called upon not only to open or launch spaces for new voices but also to honor and listen to the voices muffled for a long time by dominant paradigms or worldviews. In addition, voices were seen as places or forums of connections among researchers and concerned individuals. In this respect, Denzin and Lincoln (2018b, x; emphasis added) stressed,

We need to *find new ways of connecting persons* and their personal troubles with social justice methodologies. We need to become better accomplished in *linking these interventions* to those institutional sites where troubles are turned into public issues and public issues transformed into social policy.

As noted in these remarks, research entails efforts and commitments to *connect or link* people with their dreams and with social justice projects and practices. What this means is that, as Denzin and Lincoln (2018c, 33; emphasis added) elucidated,

aligned with the ethics of the traditionally marginalized, which could ultimately reconceptualize the questions and practices of research, a critical social science will no longer accept the notion that one group of people *can “know” and define (or even represent) “others.”* . . . We endorse a radical, participatory ethic . . . an ethic that calls for *trusting, collaborative nonoppressive relationships between researchers and those studied*, an ethic that makes the world a more just place.

As seen in the comments above, instead of being a practice of representation or manipulation of the other by others, research was being defined as a site, a forum of mutual sharing, trusting, and collaborative relationships or connections to make the world a better place. This approach was what

indisputably abundantly transpired in the announcements pertaining to Trend 4 in the *Library Trends* Call for Papers (details below).

Call of "Library Trends" Regarding the Voices (to be) Listened to

To explain, *Library Trends* launched a call for papers that is one of its kind since this call touched on some of the most pressing topics of our times that for a long time went unnoticed by technology as well as information experts. Indeed, as *Library Trends* announced on its site,

This Call for Papers invites submission of papers that focus on Trend 4, which is concerned with empowerment of "new voices and groups" in hyperconnected societies. The editors of this special issue of *Library Trends* invite contributions that take up this theme, developing it in the light of specific examples that address the ways in which "our future information system" does or does not listen to and empower new voices and groups. Papers not centrally located in a library context but which impinge on, or have implications for, libraries are very welcome. We are particularly keen to publish papers that focus on Africa, Asia, and Latin America. Other possible topics are suggested below, but there are many other appropriate ones, and we encourage a wide variety of subjects.

Examples of topics that were welcomed included the following: "the sense in which certain groups or forms of internet presence are 'listened to,' and whether this goes any further towards actual empowerment; also the extent to which certain groups are ignored, discounted, or worse." In light of this, the present paper undertook open-ended qualitative research interviews with 32 parents in the rural Congo in order to garner in-depth, *sedimented* knowledge on ways in which these individuals were listened to and/or empowered by the spread of cell phones. The paper sought to assess the extent to which connectivity or hyperconnectedness takes place in this part of the globe.

Also, this call of *Library Trends* regarding the voices (to be) listened to alongside the individuals (to be) empowered is one of its kind in the history of interdisciplinary research methods or social sciences and the humanities. In fact, few interdisciplinary subjects have engaged with discussions falling within this remit. As Lindlof and Taylor (2011, 11) alarmingly posited,

Researchers should study (and potentially challenge) the means by which oppression is created, reproduced, and transformed. . . . Researchers should consider their *complicity* in reproducing oppressive conditions (e.g., by endorsing the paternalism of service providers toward "helpless" clients). Instead, they should adopt dialogic methods that encourage the development of authentic and collaborative relationships with their participants. Research goals and procedures should support subordinate groups in their human pursuit of interests, such as voice, dignity, justice, and autonomy. Potentially, researchers contribute to the "emancipation" of these [largely marginalized and disenfranchised] groups by providing them with new resources for

thinking, feeling, and acting. Potentially, researchers and group members can discern and exploit vulnerabilities in dominant institutions, depriving them of needed resources such as consent and legitimacy.

In light of the argument put forth above, it is no exaggeration to state that researchers of all persuasions are hard-pressed to believe that they (ought to) contribute to the injustices seen in the world around us. Perhaps to complicate the matters further, the terms used in the information age are not straightforward either. For example, as Reyes (2016, 417) noted, “the basic definition and function of a mobile is also rather fluid.” This is the world in which most mobile-era-born individuals go about their daily grind. Researchers will not do a good job by shunning these terminologies and associated services and social dynamics. In fact, “the recent preponderance of ‘mobile’ as a prefix . . . suggests how *impactful and widespread* are the products, services, and practices circulating with and through mobile phones” (Reyes 2016, 417; emphasis added). Another reason for a researcher’s innocence (or complicity?) is that “rural areas are continuously placed at the periphery when provisions of ICT infrastructure and tools are brought to the fore” (Diga and May 2016, 5). It is thus unfair for researchers to ignore populations that are left out.

Opportunity of Emancipation or Manipulation

Still another reason is that the global implications of mobility or of the new information technologies are being spread by or through cell phones at a pace never seen before. As Walsham (2017, 1) put it so well, “ICTs have penetrated all corners of the globe, not least through the unprecedented spread of mobile phones.” Cell phones have become the portal of global connections. As Konoka, Giglerb, Bereczkya, and Miklósi (2016, 538) wrote, “one of the most prevalent material objects of modern society is the mobile phone.” Cell phones are thus a reason or opportunity for emancipation or manipulation, depending on a person’s views.

Stripped to its basic meaning, “the empowerment concept is often understood in terms of power relations between people with less power and people with more power (terms as having power above others)” (Sam 2017, 360). Empowerment is thus the ultimate goal.

Connectivity simply means “to stay connected to families and other people” (Sam 2017, 367). This definition of connectivity can be said to include mobile connectivity because it is channeled through cell phones. The assumption is that “access to financial, business and employment resources [through cell phones] partly depends on social connections involving family, friends, acquaintances and connections” (Sam 2017, 366–67). Connectivity, just like cell phone, is a concept that has been directly linked with the idea of empowerment as well as development. As Sam (2017, 360) stated,

The argument for this is that mobile phones are personal tools; therefore, how they are used and what they are used for solely rest on individual choices and expected outcomes. In other words, empowering poor people through mobile phone usage involves an *agentic* [emphasis in original] process—a process whereby people take the lead in making choices and being able to transform those choices into desirable outcomes.

Cell phones come to be defined as tools of empowerment insofar as they enable people to make informed, liberating choices. Because cell phones are undeniably becoming ubiquitous, they are linked with the struggles for survival or development in developing countries. As Sam (2017, 361) maintained, “The argument is that the more [cell phone] users have access to and are able to use resources the higher the degree of empowerment and the higher the degree of empowerment, the more they able to use the mobile phone productively.” The idea shown in the preceding statement is that cell phones enable users to have access to various resources regarding their daily lives (e.g., health, education, business, etc.). For example, it has been argued that “mobile phones increase the users’ ability to exchange relevant information cheaply and in a timely manner thereby altering individuals’ access to developmental input” (Asongu, Boateng, and Akamavic 2016, 11). As can be seen, cell phones are believed to entail empowerment and development. Empowerment includes the choices derived from or facilitated by cell phones, and development refers to the outcomes arrived at in using cell phones. What is most interesting for this paper’s discussion is that, as Asongu, Boateng, and Akamavic (2016, 6) noted, “inclusive human development relies heavily on connectivity of individuals and organisations, that is, individual-based personal relationship that often arises within communities of practice, inter- and intra-organisation networks . . . and more importantly communication within and between locations.” Connectivity is proven to be the building-block environment of development. Without doubt, this connective environment of development is dependent on cell phones. Therefore, the bottom-line argument is that

mobile telephony is regarded as a catalyst for productivity and for disseminating and obtaining information in SMEs [small medium enterprises], minimizing the need for travel and face to face meetings to clinch deals. Mobile phones give small enterprises the capacity to contact new clients and suppliers rapidly. Mobile telecommunications thus promote greater fairness by enabling disadvantaged populations to have access to information which would be difficult or impossible to obtain by using only fixed telephone lines. (Chéneau-Loquay 2010, 18)

The claimed connectivity is shown to be a connectivity of business or market opportunities that were unavailable or at least prohibitively expensive before the advent of cell phones. However, marginality was not resolved

with the cell phone because “the available literature on the use and impact of mobile telephony for ‘development’ purposes does not suggest any overriding and consistent trend as regards social and economic change” (Chéneau-Loquay 2010, 32). Several years after Chéneau-Loquay’s (2010) remark, Qureshi (2015, 511) recounted,

It has been argued that ICT4D [information and communication technologies for development] research fails the poor. . . . It fails the poor because: (1) few researchers engage in advancing policy positions needed to make a difference, choosing instead to focusing on highly specialized, largely quantitative studies that make ICT4D research less accessible to the general public; (2) ICT4D researchers do not engage closely with the users of their research findings thus disconnecting findings from real-world issues.

The above remark shows how ICT-research has not kept pace with the issues of connectivity faced by the world’s poorest. Perhaps even worse, as recently articulated by Sam (2017, 359), “it is not strongly evident that the use of mobile phones completely emancipates them [the world’s poorest in Sierra Leone] from socio-economic and political exclusion.” In this poignant observation, cell phones are seen to be fueling exclusion rather than connectivity. From a slightly different perspective still related to cell phone technology, Iribarren, Cato, Falzon, and Stone (2017, 1) concurred: “Mobile health (mHealth) is often reputed to be cost-effective or cost-saving. Despite optimism, the strength of the evidence supporting this assertion has been limited.” Research done on cell phones raises questions as to what extent (the promised) cell phone connectivity has been achieved, let alone to what extent the voices of the world’s poorest have been heard ever since the advent or scholarship of cell phones in the mid-2000s.

Digital-Era-Born Individuals

As it should now be clear, one of the features of the information age resides in the proliferation of all too fuzzy, confusing terminologies as new digital technologies are invented. Examples include words such as blog, blogosphere, apps, mobility, cyborgs, leaks, spreadsheets, webinar, wikis, profiles, accounts, friends, networks, and contacts, among others. Since these and similar terms characterize digital-era-born individuals, it would be unrealistic to ignore them or to produce research that is dismissive of them. One reason being that “we are in a new age where messy, uncertain *multivoiced* texts, cultural criticism, and new experimental works will become more common” (Denzin and Lincoln 2018a, 23; emphasis added). This is a world of openness in lieu of a world of *closed* society. In this world, “society’ is increasingly viewed and treated as a ‘network’ rather than a ‘structure’ (let alone a solid ‘totality’): it is perceived and treated as a matrix of random connections and disconnections” (Bauman 2007, 3). Terminologies used are thus terminologies of openness, dialog, and flex-

ibility. This is one of the reasons that “social scientists also learned how to produce *texts that refused to be read in simplistic, linear, incontrovertible terms*” (Denzin and Lincoln 2018a, 10; emphasis added). Linearity or incontrovertibility are the names of the world that preceded the Web era.

Put differently, one of the pitfalls of linearity often underestimated is the representation of the other by others, meaning that one voice is taken to be the voice that (best) represents and speaks for all. As Lincoln and Denzin (2003, 1060) upheld,

The decentering of the Eurocentric grand narrative, the centering of polyvocality, the ragged race between margin and center . . . all signal that the time of the fiction of a single, true, authentic self has come and gone. . . . Slowly it draws on us that there may not be one future, one “moment,” but rather many; not one “voice,” but polyvocality; not one story, but many tales . . . to inform our sense of lifeways, to extend our understandings of the Other.

As described above, the point is that the other (people) have to tell their story in their terms, cultures, voices, or perspectives. Indeed, multivocality or polyvocality comes with the necessity of listening to one another as opposed to imposing one voice. One explanation for this is that

we occupy a historical moment marked by multivocality, contested meanings, paradigmatic controversies, and new textual forms. This is an age of emancipation, freedom from the confines of a single regime of truth, emancipation from seeing the world in one color. (Lincoln, Lynham, and Guba 2018, 106)

As claimed in the above statement, the compression, confinement, or *totalitarization* of all spaces, voices, texts, or narratives into one voice is what deafens creativity and expressivity while showing the world in one color.

The idea of hyperconnectedness or connectedness enjoys vast acceptance among authors of information-related fields. Connectedness has come under different appellations such as network, connectivity, connection, online, wireless, etc. For example, Castells (2016), a contemporary sociologist versed in matters of ICTs, proposed the network or network society as the foundational concept of his research and worldview. This paper used the word connectivity. Indeed, connectivity is a word that has gained explosive popularity in a variety of disciplines, for example: physics (Jeon and Kim, 2012), engineering (Kobayashi, Kobayashi, and Watanabe, 2016), biology (Nigam et al., 2016), computer science (Ferrero and Hanusch, 2014), urban studies (Knight and Marshall, 2015), and economics (Calatayud, Palacin, Mangan, Jackson, and Ruiz-Rua, 2016). However, in this study,

the term “connectivity” is most widely used in the context of communication technology—in the linkages between electronics, computers, computer systems and the people who use them—and while it has a very specific association with communication technology it also serves

as a proxy for one essential element within all communication—the complex phenomenon of being connected. (Angelopulo 2014, 209–10)

As is apparent from the above explanation, connectivity implies humans who are being active online. In this respect, hyperconnectivity or hyper-connectedness signifies the ability of being online or connected with added applications or features, such as m-banking, text, GPS, WhatsApp, etc. Put differently, a hyperconnected society is a society where being connected is privileged with a set of applications that enhance online activity.

It all appears that the key technology at play in the hyperconnected society is the internet, more particularly cell phones, as these technologies are increasingly employed as a gateway to the internet. The reason is that “mobile phones, reaching almost four-fifths of the world’s people, provide the main form of internet access in developing countries” (World Bank 2016a, p. 6). Cell phones are a means of not only communication among the poor, but of internet connection and related applications. Of interest here is the idea that with added applications of connectivity on them, cell phones can lead to development in developing countries (Loudon 2016; World Bank 2016a). Development is employed in this study as the umbrella term under which empowerment can be perused. One key reason for this is that development substantially entails a full empowerment of those concerned in the development process (Sen 2009). Meanwhile, much like its kin phrases shown earlier, “connectivity’ is in many ways not particularly suitable as a scientific construct. . . . With its multiple meanings the term is operationally *non-specific*” (Angelopulo 2014, 210). This has led this study to focus on cell phones in concert with development in order to best focus on connectivity among rural populations.

Research Questions and Aims

Thus this study was faced with two research questions:

1. Do cell phones produce development among parents in rural areas of the Congo?
2. Do cell phones improve the living conditions of parents in concerned rural areas?

Two aims of the study were stated, namely,

1. to inquire into ways in which cell phones generate development among parents in rural areas of the Congo, and
2. to give voice to parents in related rural areas to capture their lived experiences of cell phones and development.

One reason for this type of work was that the paper endeavored to give voice to “*traditionally marginalized voices from a range of racialized, gendered, and cultural locations*” (Cannella 2016, 7; emphasis added). The hope was

that the information age, or the so-called “connectivity age,” would be an age of *inclusion or fuller human realization*, not an age enabling “the disempowerment of others” (Cannella and Lincoln 2016, 245). As clarified above, with a focus on development, the research questions and aims stated in this study help best inquire into the concept of empowerment with regard to cell phones. Indeed, a developed society is one with citizens that are *empowered* in as many areas of social life as possible, for instance: education, health, transportation, nutrition, housing, etc. (Sen 2009).

TERMINOLOGY

Terminology can vary from author to author. Therefore, three terms central to this study need clarification—namely, connectivity, empowerment, and development. First, connectivity comes from the Latin verb *nectere* and the participle *nexus*, which mean to link, weave, or bind (Lewis and Short, 1879). Indeed, “several English words are derived from *nectere*—for instance, Internet, next, connect, net, nest, annex, nexus, and so on” (Cibangu 2015a, 4). The idea behind the linguistic roots of connectivity is one of knitting, weaving, linking, binding, joining, tying, fastening, etc. As noted earlier, the basic meaning of connectivity taken in this study is that of joining or linking someone with something or someone online.

After connectivity, the second term that warrants clarification in this study is empowerment—a concept that has been extensively championed by development experts (Chambers [1983] 2013, [2002] 2011, 2012). There is not a unified definition of empowerment. However, it is generally accepted that empowerment is the ability to give a society’s members the necessary resources or abilities to live better and fuller lives. As Chambers ([1983] 2013, viii; emphasis added) 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*.” Empowerment is understood in this study as a means and end of development. Indeed, empowerment entails the initiative of enabling concerned rural populations to help themselves or take the reins of their lives. This is in large part because “the initiative, in enabling them [rural populations] to help themselves, lies with outsiders who have more power and resources and most of them are neither rural nor poor” (Chambers [1983] 2013, 2–3). Empowerment becomes integral to development. As Alkire (2010, 25; emphasis added) explained, “Human development *empowers* people to advance the common good, enabling them to have a voice and to participate in the processes that affect their lives,” or else, a development or technology design “could be criticized for being top down, expert-driven and disempowering” (Alkire 2010, 39). Even more poignantly, Sen (2009, 249; emphasis added) emphasized, “Development is fundamentally an *empowering* process.” Empowerment without development is all but an *underdeveloping, maldeveloping*, and counterpro-

ductive endeavor. To explain, a failure of development or *maldevelopment* (Amin [1989] 1990) is a failure of empowerment. In fact, rural communities in the developing world, as the ones being investigated in this study, are known to live a life with little to no power or empowerment, with a malfunction of the power system.

As can now be anticipated, the third and last term to clarify in this study has to do with development. In essence, as Sen (1999, 3) delineated,

Development can be seen, it is argued here, as a process of expanding the real freedoms that people enjoy. Focusing on human freedoms contrasts with narrower views of development, such as identifying development with the growth of gross national product, or with the rise in personal incomes, or with industrialization, or with technological advance, or with social modernization.

As argued in the above characterization, a narrower view of development tends to stick to a given social outcome. In this respect, for example, it is tempting to see development as a rise in digital connectivity. While some social outcomes can be beneficial, they shall not supplant the fuller gamut of development process. Development, however, seeks to remove the unfreedoms that prevent the poor from living better and fuller lives. More precisely, in this view of development, “attention is thus paid particularly to the expansion of the ‘capabilities’ of persons to lead the kind of lives they value—and have reason to value” (Sen 1999, 18). Development seeks the fullest expansion of people’s capabilities to enable people to live fuller and better lives. Development is a process of actualizing people to the fullest. From this definition it follows that empowerment does not imply a mere use of power(s) but rather the fuller actualization or *capabilization* of individuals in everyday life.

PROBLEM STATEMENT

In the last few decades there has been a growing consensus among social science authors about the link between cell phones and development, and now between cell-phone-channeled connectivity and development. To a great extent, this largely shared view attributes to cell phones a catalytic role for development. At the same time, the view of cell-phone-led connectivity begs several questions; for example, the ways in which connectivity plays the role of fostering or being fostered by development, and what factors are involved. As Loudon (2016, 9) contended,

Mobiles apps and services have also been embraced by the development community as a way to reach previously unserved populations, who now have access to communications in the form of basic mobile phones. . . . As yet, therefore, there is limited evidence to support strong claims about the development potential of m4d [mobile phones for development] apps and services.

It is evident from the claim above that research needs to be done into ways in which cell phones produce development. Thus this paper looked into ways in which cell phones produce development among selected rural populations in the Congo, to assess how empowering were cell phones and the connectivity they brought. The reason being, as explained earlier, since connectivity is a vague concept (Angelopulo 2014), for selected populations as well as academics and researchers, cell phones and their potentials for development were used to best pinpoint the contributions of connectivity among rural populations. The rest of the paper revolves around five main sections—(1) literature review, (2) methodology, (3) findings, (4) discussion, and (5) limitations—together with a concluding section.

LITERATURE REVIEW

The nexus of a literature review (Babbie 2016; Bryman 2016) is not so much about a manipulation or utilization of authors per one's set goals as it is about *pointers* to discussions held in a given field. This is largely because authors and their works come from and speak for contexts that are unique and different, based on *situated* particularities and not *abstract(ed)* totalities or essences. This study was not aiming for propositions and knowledge *universally* and *univocally* applicable to and imposable on authors and works across the globe, nor for the method of grounded theory applied to the data collected and associated literatures, nor for a discourse analysis of handpicked writings, but rather for an in-depth, *sedimented* knowledge (Husserl [1913] 2002) about the *experiences* and *voices* of a specific group of participants *silenced* and *marginalized* for a long period of time. Comparison, communality, application, or essence, however one calls it, “implies *selection, abstraction, and de-contextualization* to some degree” (Kocka 2003, 41; emphasis added). To this effect, the goal of the study was to peer deeper into the topic under study to unbundle the totalities, individualities, and patterns amassed, *sedimented* in the course of centuries and experiences. The biggest question with the exploitation of authors is “how we are to safeguard ourselves *against the pitfalls in comparing incomparable units belonging to different contexts*” (Azarian 2011, 121; emphasis added). More exactly, Azarian (2011, 123) warned against the positivistic-born de-contextualization of studies or “the abuse of ‘other’ cases in order to show the particularity of the main case” cherrypicked per agendas or ideologies at hand. Essentially, a literature review centers around the questions and aims stated in a given study. Part of what is to be avoided in such an endeavor is the positivistic, universalistic tendency

to produce [extract, and predict] sameness within the home society. . . . Insofar as a group reacts to a different group in terms of its own preoccupations, it is not likely to perceive the way of life of the different group as that group experiences it. Or, to make the point in

cognitive terms, insofar as a group insists on regarding the experiences of others mainly within its own categories of experience, it is likely to generate *errors of understanding and perdition about the others, who invariably organize their experience and act on the basis of categories other than those of the home group*. Only recently in the history of human thought has this tendency for human groups to distort their perceptions of the “*different*” become widely appreciated. (Smelser 2013, 2; emphasis added)

The present study aimed to unearth the experiences of parents in the rural Congo from the perspectives, contexts of parents themselves so that other people and researchers can learn from or relate to these unique, original experiences of the information age.

One essential property of a literature review (Babbie 2016; Bryman 2016; Hansen and Machin 2013) often forgotten is that the review being undertaken consists not so much in generating an assemblage of names and published works, but in a researcher’s ability to untangle the trends embedded in works done so as to bridge the gaps uncovered and forge some trajectories for future research. The research questions and aims stated in the study help focus on and achieve this task. As a social science, library and information science [LIS] literature (Case & Given, 2016; Bawden and Robinson 2012; Hjørland 2014) overlaps with a number of information-related disciplines and/or social science disciplines in which cell phones and their potentials for empowerment or connectivity emerge as salient research topics. It is worth remembering that cell phones did not enter academic and research circles until around 2005, after the advent of Web 2.0 in 2005 (O’Reilly 2005) with roughly at the same period the explosive burgeoning of multiple networking sites such as Facebook, Twitter, YouTube, Myspace, etc. Most notable in passing here is the term Web 2.0, generally believed to be coined by DiNucci (1999), but systematized by O’Reilly (2005). As DiNucci (1999, 32; emphasis added) argued in his vision of Web 2.0, “The world of *myriad, ubiquitous Internet-connected tools*, often referred to as Internet appliances, has long been predicted. . . . Now the first generation of Internet appliances—Web-ready cell phones and personal digital assistants (PDAs)—has begun to appear.” As is clear from this statement, a vision of Web-led hyper or myriad connectivities was laid out. As networking sites steadily mushroomed in the mid-2000s, O’Reilly (2005) wrote, “This is one of the areas of Web 2.0 where we expect to see some of the greatest changes, as more and more devices are connected to the new platform” (see section 6, “Software above the Level,” para. 6). The new platform of cell phone-operated connectivity is characterized by more and more connected devices and societies.

Information-related fields have seen the topics cell phones, connectivity, and development come under the banner of eight leading streams of thoughts: (1) social networks, (2) microloans or microcredits, (3) market price(s), (4) small enterprises, (5) m-banking, (6) GDP and related

metrics, (7) health informatics, and (8) policy or regulations. First, the social networks stream is anchored on the idea that cell phones spawn connectivity and development with the proliferation of social media sites. Therefore, the more networks there are in society the more empowered or developed are the society's members. For the social mobility or networks trend, the idea is that cell phones are designed for social network, interaction, and communication (Molony 2008; Smith, Spence, and Rashid 2011). Hence, connectivity is a function of cell phones. Second, the microloans or microcredits stream propels the belief that cell phones enable the production of microcredits in rural areas. As such microcredits appear as the key feature of development and connectivity. The archetypic example of this stream of thoughts is the rural women in Bangladesh (Aminuzza-man, Baldersheim, and Jamil 2003) who, with a small or microloan lent by Grameen Bank as part of a project called Village Phone, were able to make microcredits through the sale of cell phones and related services. Village Phone was the earliest project to draw the attention of researchers and academics to the potentials of cell phones among rural societies. The project was founded in 1981 with microloan bank services for rural populations in Bangladesh, and ballooned into cell-phone-based microloans lent to rural women in the mid-2000s. Microcredits were seen as an empowerment of rural women.

Third, the market price(s) or market efficiency stream of thoughts (Aker 2010) teaches that with information shared between traders across spaces and times, cell phones enable individuals to avoid information asymmetries as well as transaction and travel costs. The key benefit of connectivity or of development here resides in the ability of merchants to save money on travels and market prices. The idea being that without cell phones or connectivity, merchants in rural areas would have spent a lot of money travelling around in search of best prices and transactions. Fourth, the small enterprises stream of thoughts indicates that cell phones allow individuals to start small-scale or medium enterprises (Donner 2006; Ilahiane and Sherry 2012) supplying the community with specific items, such as grains, potatoes, clothes, etc. It can be argued here that connectivity helps produce specific goods in the community.

Fifth, m-banking (Shaikh and Karjaluo 2015) represents one of the most touted connectivity- or cell-phone-centric projects seen in recent years among some rural populations, particularly in East Africa. M-banking stream of thoughts prides itself on the ability of the poor to send and receive money and make related transactions through cell phones. The most famous example cited in cell phone literature is that of M-PESA (standing for mobile money in Swahili) in Kenya. Sixth, GDP and related metrics is the first academically supported account (Waverman, Meschi, and Fuss 2005) of the correlation between cell phones and economic growth, with the idea that cell phones took a much shorter span of time to boost GDP,

GNP, and other metrics of development than landline communication did in Western Europe. Therefore, it is thought that connectivity is correlated to sound GDP, GNP, and other metrics development. Seventh, health informatics (Kahn, Yang, and Kahn 2010) asserts that cell phones enhance the provision and management of health products and resources. Eighth, policy or regulations (Mohamad 2014) advocates that better regulations or better policies about cell phones and connectivity are key to a society's development. The eight streams are by no means exhaustive, but they provide the signposts needed to clarify the prominent ideas under which information-related authors have grappled with cell phones, connectivity, and development. The signposts will be most necessary for our discussion.

METHODOLOGY

One important thing that authors undertake in a method section (Babbie 2016; Bryman 2016) is that they situate the method within concerned literatures and discussions in order for the method to be meaningful, germane, or contributive to experts and readers acquainted with the matters investigated. The reason as to how qualitative research was relevant to selected participants was that these participants had never been registered or recorded in any official, national list or census. One positive way of meeting and learning from rural, remote communities was to talk and live with participants in their natural settings. The reason why a qualitative method was appropriate was that "relatively little is known about how rural communities and small businesses use mobile technologies, and what impacts they are having" (Samuel, Shah, and Hadingham 2005, 44). Roughly ten years after this remark, it was determined in Africa that "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" (May, Dutton, and Munyaiazi 2014, 50; see also Sam 2017, 359). Since qualitative research boasts a diversity of methods and techniques (Denzin and Lincoln 2011, 2018a, 2018b, 2018c; Padgett 2017; Patton 2015; Silverman 2016), it was applied in this study using three key techniques: (1) saturation, (2) crystallization, formerly called triangulation, and (3) *sedimented* or in-depth description. To recap, a technique was taken to mean a procedure employed for a given task included in the research.

First, saturation, also called informational redundancy or redundancy (see Patton 2015; Saumure and Given 2008), is a technique reached when no newer information is found in the search or investigation process. Saturation was applied for its ability to discontinue the search or data collection as soon as information started being repetitive. For example, the final sample number of 32 parents was reached as soon as the information collected started being redundant. In other words, information is

saturated when the information obtained starts being redundant. Second, crystallization (Denzin and Lincoln 2011) is a technique wherein—just as the word crystal suggests—multiple prisms or angles are sought to shed more light on the phenomenon or topic under study. Crystallization was employed for its capacity to yield as many prisms, views, angles on the subject being studied as possible. This increases the depth of the information found. Third, in a *sedimented* description the sediments, bundles, deposits, and layers underlying the phenomenon being studied are unbundled. Indeed, one characteristic of a case study as that of this study is that it offers in-depth information on the phenomenon concerned (Yin 2014). *Sedimented* knowledge was implemented due to its capacity to supply not one layer of data or information but a whole host of details or sediments on which the phenomenon being investigated was built or standing.

In addition, ecological sampling (Manly and Navarro Alberto 2015; Navarro Alberto and Díaz-Gamboa 2015), a qualitative research method known for its inclusion of selected participants (details below), was applied in order for this paper's researchers to collect as many participants as possible in an area unseen before or never investigated or registered before. The English word *ecological* comes from the two Greek words οἶκος [oikos] and λόγος [logos] (Liddell and Scott [1843] 1996). *Oikos* means house, family, home, etc., and *logos* stands for logic, norm, rule, etc. The meanings denote the idea that the study was grounded in the house, habitat, or natural context of suggested participants while cohering with the logic, norms, or rules proper to the worlds or experiences of those participants. Indeed, the ecological method (Manly and Navarro Alberto 2015; Navarro Alberto and Díaz-Gamboa 2015) consists in *drilling deepest into* the house, setting, or natural habit of identified participants as opposed to data conceived and stored beforehand in London, New York, or someplace in the name of distant, decontextualized, or unknown subjects. The way ecological sampling works is somewhat similar to that in which tourists skim an area, using natural signs, milestones, rivers, or trails to browse or visit locations as most effectively as possible. Visitors follow specific signs to distinguish the places visited from those not yet or already visited, bearing in mind in this case, for example, the technique of saturation to avoid the repetition of information already gained or insufficient at place(s) already seen. Equally, the qualifier parent was found among participants simply because it was dominant in the location browsed or skimmed. One explanation was that participants were coming to or attending interview sessions with family members or children due to (the predominance of) the communal local culture of which they were parts.

Quantitative research was not adopted in this study on the grounds that, being illiterate, participants were not able to handle questionnaires and surveys. Equally, written documents and sheets of paper were considered as a threat because, during the killings and genocides that took place

in that area several years earlier, a number of people were executed due to written lists of names of individuals and of communities being circulated among soldiers. In addition, for safety purposes, videos and tapes were not used during *sedimented* interviews and discussions. Names of participants and of their communities and locations were not identified, asked, or gathered, either. The reason being that participants could be arrested, executed, or mistreated after the research was completed. Indeed, Human Rights Watch (<https://www.hrw.org>) describes the freedoms of individuals as gravely restricted in the Congo.

What is particular to ecological sampling is that it allows for a higher inclusion of concerned participants in the investigated location. Thus researchers are as sensitive to the reality and place being studied as possible. Ecological sampling traces back to the field of ecology, where a line is drawn to help best identify and include the species of plants or animals in a given location. As ecologists Navarro Alberto and Díaz-Gamboa (2015, 47; emphasis added) elaborated,

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.*

As explained in the statement above, researchers faced with an unknown and remote location, with no numbered houses, post office, roads, etc., as was the case in this study, are able to identify the items or individuals that cannot otherwise be identified in a classical sampling of quantitative research. One other method applied in this study was capability approach (Sen 1999, 2009), which helps the researcher to focus the research on the concept basic needs or capabilities. This also allows concerned participants to seek broader capabilities in order to live fuller and better lives. As noted above, on the one hand, this study chose qualitative research as a research method to allow concerned rural populations to have their voices heard. All too often, these populations see their voices supplanted by national, large-scale databases stored in offices of multinational agencies (Alkire et al. 2015). In other words, most information-related research on cell phones and connectivity tends to be something said, devised, or stored by experts or people other than by those concerned. Indeed, qualitative research is, as Given (2016, 3; emphasis added) maintained, a research with “a focus on *participants’ voices* in data collection, analysis, and

writing.” On the other hand, qualitative research was employed in this study with the goal to thwart the dominance of quantitative research and related databases seen in cell phone literature and social sciences at large. To no small degree, cell phone literature and the conclusions found in it derive from surveys, predetermined data, and associated variables (Asongu 2015; Bornman 2016; Donou-Adonsou, Lim, and Mathey 2016; James 2016)—something known to be proper to quantitative research. De Fina and Johnstone (2015, 160) lamented the recurrent “hegemony of quantitative research” in the social sciences. On no account, however, was this study saying that work done on cell phones with quantitative research was irrelevant; rather, quantitative research was not a good fit for the populations targeted.

The research questions and the aims proposed in this study required research that yielded in-depth or *sedimented*—to borrow a term cherished by Husserl ([1913] 2002)—knowledge. The research questions were asked in order to inquire into ways in which cell phones or connectivity generate development and thus improve the living conditions of investigated parents. The aims of the study sought to relay the perspectives of parents by giving voice to parents. In this sense, in-depth interviews and discussions with 32 parents were undertaken.

One direct consequence of *sedimented* knowledge was that interview questions were being asked with the goal of drilling into as many levels as possible. Four key levels were identified, using saturation. First, the characteristic represents a mark or property distinguishing the thing being studied. Second, context comes from the Latin verb *con-texere* (Lewis and Short 1879), which implies the idea of weaving with, knitting with, etc. Thus context entails the milieu or setting where the phenomenon being studied is situated. Third, experience derives from the Latin gerund *experiens*, which means underdoing, enjoying, feeling, or trying from, etc. Experience comprises the things lived or manifested from within, such as affections, emotions, feelings, perceptions, etc. regarding the phenomenon being investigated. Fourth, interpretation comes from the French verb *inter-prêter*, meaning to show, loan, share, etc. between or within. Experience involves the meanings, lessons learned, reflections, and world-views held in relation to a given topic or phenomenon.

FINDINGS

This study is a case study that exposes the experiences held by selected individuals in a remote area of the rural Congo regarding cell phones, development, and connectivity. Thus the patterns undergirding cell phones and their potentials for people’s development as experienced or lived by concerned individuals in everyday activities are described. The goal was to interview participants of various houses and villages to get their individual cell phone stories. However, interviewed individuals turned out to be par-

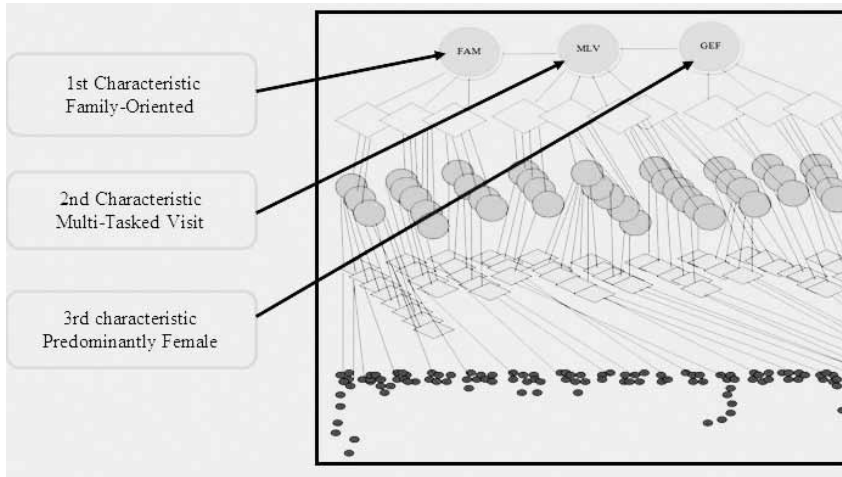


Figure 1. Characteristics of Responses.

ents. One reason for this might well be that in rural communities when children become grown-up adults, they seek land, build their houses on it, and establish their households. The four levels of inquiry distinguished (see details above) are the following: (1) characteristic, (2) context, (3) experience, and (4) interpretation.

Characteristics

The responses of parents were analyzed, and upon saturation three characteristics of participants were identified: (1) family oriented, (2) multi-tasked visit, and (3) predominantly female (see fig. 1).

The first characteristic observed among participants was an overwhelming family-oriented tendency. In other words, not one interviewee came to the interview session alone. Yet, participants were recruited individually at the meeting or market place. 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 reason for the family tendency might be the vital role played by a person's family concerning basic needs. For example, the family carries food items, garden items, kitchen items, etc. More specifically, the family is a vital piece not only for development but also for cell phone uses. Just as family members share items and services within one family and between families, they also share cell phones.

The second common characteristic after family oriented, is multitasked visit, which resonates with the multitasked role that the family plays. 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)

The idea is that the family achieves most basic tasks of everyday life. The third and last characteristic was that most interviewees were female. Of the 32 people interviewed 24 were female. Most notable is the fact that the 8 men came with their wives. 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)

The reason for this might be that women play the role of caretakers of society since they provide for their families and communities.

Context

Just as context is essential for the understanding of human condition or research (Patton 2015), so too the context of cell phone uses and development is key for a better understanding of the ways in which cell phones generate development. Four contexts were identified, upon saturation. The first context was that of communication, with and between various groups, for example, friends, professionals, relatives, etc. As Parent XXX stated,

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

This finding echoes other research on cell phones (Molony 2008). The second context had to do with special occasions such as death, storm, disease, sale, etc. Parent IV put it well,

A cell 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.

Special occasions can force individuals to call for help or advice. The third context in which cell phones or connectivity were needed or used was work, meaning professional or manual labor.

When I bore my second child, a friend of mine called my sister (a nurse) in the city using a cell 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 cell phone by her niece. (Parent XXII)

A nurse was called in on a cell phone to help that woman. The fourth and last context in which cell phones were used relates to history, “digital”

library, or repository of information to save one's important information for memory purposes. 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 cell phone. (Parent XI)

The woman's list of creditors was being kept on a cell phone.

Experience

Three key experiences in which cell phones and connectivity or development were distinguished. The first key experience that people had of cell phones in rural communities was cost and/or debt. As a woman remarked,

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

Cost was one major issue regarding the use of cell phones and connectivity. The second experience, after cost, was people's inability to undertake m-banking, microcredits, and financial activities with cell phones. As a man responded,

Cell 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 cell 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, microcredits, market opportunities, etc. Indeed, these financial activities much advertised on the radio are not free nor do they belong to the poor like us. (Parent XXVIII)

Financial activities are even more expensive than a simple use of cell phones. The third and last experience of cell phones had to do with competition or lack of collaboration between cell phone providers. As one individual related,

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

The finding seen above confirms prior research that has flagged competition between cell phone carriers. Aker and Blumenstock (2015, 355; em-

phasis added) wrote, “Whereas other technologies have required significant investment and coordination from the public sector, the expansion of cell phone networks has been fueled by *intense competition* between operators of new subscribers.” The result was that connectivity or development needed between cell phone users with different providers was impaired. Another individual said,

There are five major cell 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), cell phones do not enable people’s development in the least bit. The legal, social, economic, and personal capabilities of people are constantly denied using cell phones. In rural areas, we (people) have no choices. (Parent XXVI)

As testified in the statement above, cell phones did not enhance people’s capabilities. Hence the connectivity on cell phones did not empower concerned individuals in their basic needs.

Interpretation

Three dominant interpretations were identified. The first dominant interpretation observed in participants’ responses regarding cell phone uses and development was that a cell phone was viewed as a means of recreation used in order to have a conversation with someone. As a man argued,

Well! Cell 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 cell phone aside till the family is able to make ends meet. (Parent XI)

Recreation entails a need to use a cell phone to casually communicate with someone, without a specific purpose in mind. Cost might be one reason that cell phones were considered as a tool of recreation. The second dominant meaning ascribed to cell phones was one of *ad hoc* situation. In line with this, Parent XXIX affirmed,

Perhaps unlike other technologies, cell phones are used to respond to specific pressing situations. And these situations do not occur at all times.

These types of situations happen once or more every year. This means that on top of the recreational aspect, cell phones embody an emergent element.

The third and last dominant interpretation was bodily safety under which cell phone use fell. For example, Parent X declared,

Cell 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. Cell phone plays an important role in that regard since I can connect directly with those absent by activating/pressing a cell phone key.

As is seen in the above statement, bodily safety implies connections with others by pushing on a cell phone key. People wanted more benefits from cell phones, as Parent XXI stated,

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

A cell phone was expected to fulfill people's capabilities to a much greater extent than just communication or recreation. As can be seen, cell phones, connectivity, and development or empowerment span wide-ranging areas among interviewed parents (see fig. 2).

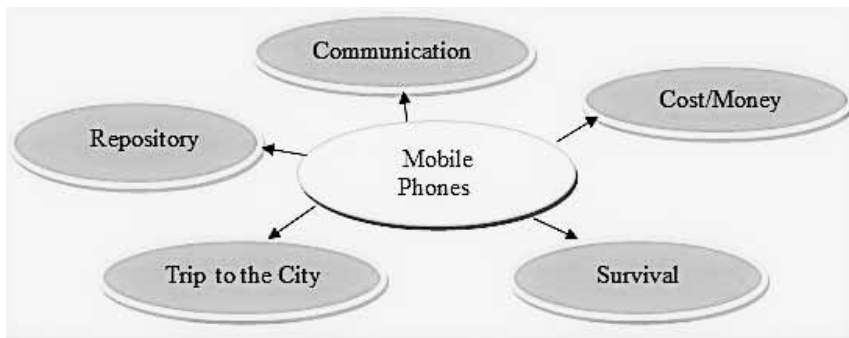


Figure 2. Parents' Model of Cell Phone Uses and Development

DISCUSSION

In this study, cell phones were considered as the central piece around which revolve the effects of connectivity and development, with development being the umbrella term used for a better understanding of empowerment. This also matches with the current definition of connectivity (Angelopulo 2014), namely, the links between computer and accompanying systems and the people who use these systems. The research questions posed in the study enabled the researcher to understand the ways in which cell phones achieve development. To this effect, the aims set forth

in the study were those of giving voice to concerned individuals and looking into ways in which development was being produced. In LIS literature the concept of cell phones and connectivity tend to find an echo in such topics as diverse as ICTs, information access, information uses, information systems, users, etc. This is in large part because cell phones are a topic that sprawls across a whole host of disciplines. It is no surprise that James (2016, 1) described cell phone work as “drawn from ‘grey’ materials.”

Access to Information

The strongest appeal to have drawn the attention of academics and researchers to information technology was made by the two world-wide symposiums organized on the information society in Geneva in 2003 and in Tunis in 2005, respectively (WSIS 2003, 2005). To a great extent, the summits laid a foundation for the idea of access to information as a universal objective to be pursued to counter any growing digital divide. Thus the world was defined as an information society, and information was seen as an economic good, more precisely a new economic resource—after gold, timber, oil, etc. So knowledge was deemed and sought as the driver of the global economy (World Bank 2003). The belief in the “information superhighway” (Röller and Waverman 2001, 909) was promoted among information researchers. It was generally held that “telecommunications infrastructure investment can lead to economic growth in several ways” (Röller and Waverman 2001, 909). The emphasis put on information as the driver of economy resonates with the tenet propounded in the Enlightenment era in the late sixteenth century by Bacon ([1597] 1857, 241; emphasis added) that “*nam et ipsa scientia potestas est* [and indeed knowledge itself is power].” This tenet fits well within the current discussion on empowerment. It was therefore believed that information access was a means of empowerment since it gave people access to power.

Also, the emphasis placed on information access can be traced as far back as Aristotle’s ([4th c. BC] 1933, 980a 22) teaching that “*πάντες ἄνθρωποι τὸν εἶδεναι ὀρεγοῖται φήσει*” (all humans by nature yearn for the act of knowing [concrete knowledge or information]). Along similar lines, Shannon (1948) propelled the information theory with the goal to optimize the transmission and channel of information. As can be seen, information was viewed as inherent to human nature, more particularly as an empowering means. It followed that in LIS, “existing studies have tended to focus *overwhelmingly* on access to information” (Potnis 2015, 83; emphasis added). Because information was something one had to have access to, an important theory was adopted in LIS literature, namely, the diffusion of innovation (Rogers [1962] 2003, especially 1–35). It was also exactly at that time that economist Machlup (1962) published his book on the *production* and *distribution* of information (knowledge). As described above, information was presented as an economic good. So the picture of infor-

mation society was one of information access, with the diffusion and innovation of information systems being a key goal. What cell phones and their digital connectivity have done is that they have *reinforced* the idea of *mass diffusion*, innovation, and production of newly connected technologies. Henceforth, the idea of mass diffusion and innovation of connectivity was widely upheld in LIS literature and beyond. Development becomes the development of information systems. To the effect that diffusion and innovation are the overriding goal in most LIS literature, as Cibangu (2015b, see section “Conceptualizations of Humans”) stated, “humans are conceived of as conquerors and seekers of systems or of certain forms of information phenomena.” The rationale of humans as *conquerors* of systems has been heightened by the pursuit of and interaction with increasingly upgraded wireless technologies. It becomes irresistibly apparent that humans ought to join the crusade and conquest of as many possessions (i.e., accounts, clicks, profiles, followers, contacts, etc.) as possible in the digital world of online activities.

Thingification or Reification

Meanwhile, Marx ([1867] 1977) expounded one of the best—yet not always acknowledged—critiques of technology use in the history of social sciences, a critique most needed for a great many recurrent, corrosive issues of the present day world. The critique consists in the idea of *utilization* or *objectivation* of humans behind the façade of technological and economic advances. This idea derives from Marx’s ([1867] 1977) original German word *Versachlichung der Personen*—variously translated in English as *thingification* or *reification*—which comes from the Latin word *res*, standing for “thing.” The point being that humans are utilized not as humans creative and responsive but as *things, means, machines, or systems*—for the sheer sake of market, productivity, profit, and production, or money. As can be imagined, the production and diffusion of information fall well under the reification or commodification of humans. Closely related to reification is the idea of *fetishization*—more precisely, *commodity fetishism*. This concept originates in Marx’s ([1867] 1977) original German word *Warenfetischismus*, literally meaning “fetishism of goods.” Commodification is the consideration of a thing or person as a good or profit in and of itself. Fetishization is the consideration of a thing simply because it feels or is pleasurable, satisfactory, or useful in and of itself. In sum, fetishization and commodification entail the alienation of humans on account of specific gains.

Indeed, the six streams of thoughts under the banner of which topics of cell phones, technology, development, connectivity, etc. were looked at in LIS literature and broader ICTs literature bespeak specific commodities. Studies tend to focus on or fetishize social networks, microloans or microcredits, market price, small enterprises, m-banking, GDP and relat-

ed metrics, health informatics, and policy or regulations. Thus humans and their societies or connections are commodified and reified around those and similar focuses. As van Dijck (2013, 12) deplored, “By the same token, social media are inevitably *automated systems* that engineer and manipulate connections” and users. Reified humans are disempowered and maldeveloped humans. This also implies that commodified humans are *unconnected* or disintegrated humans. The reason for this might be that, as Mansell (2012; emphasis added), at the London School of Economics, UK, warned,

Diffusion studies, 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.*

As is apparent from the statement above, despite the mass diffusion of cell phones, access to cell phones is shown to be inconsequential when it comes to poverty, a crucial topic among rural populations such as the ones being pointed to in this study.

Perhaps understandably, since the early stages of cell phone rapid adoption and connectivity, concerns have been voiced that “there is plentiful anecdotal evidence” (Coyle 2005, 8) regarding the impact of cell phones and connectivity upon the lives of the poor. These concerns have not abated ever since, all of which calls into question the possibilities of cell phones to empower concerned individuals. In fact, access to information has been sharply called into question. To be clear, “there is mounting anecdotal evidence from country studies that access to telecommunications [or cell phones] in rural areas enhances development” (Buys, Dasgupta, Thomas, and Wheeler 2009, 1494). To debunk the commodification of access to information and the ensuing thingification of humans in the name of universal access, a remark made by Potnis (2015, 83) needs mention here: “access to information by itself is of limited value.” Equally, systems or technologies alone do not bode well for a world torn by poverty and inequality. In this sense, Toyama (2015) spoke of the cult of technology, an idea that echoes the commodification of technology described earlier. The cell-phone-led enhancement of development, power, connectivity, etc. is no doubt rebuked. Most pertinently, Mansell (2012, 1) 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.

The commodification of market, technology, or social interaction now powerful with social media cannot but distract authors’ attention from

real world problems of poverty and thus reify humans. As James (2016, 6) recently stressed, “The literature on the impact of mobile phones on the poor is surprisingly scant.” It follows that research done on cell phones does not seem to earnestly engage with the actual effects of cell phones in the lives of the world’s poorest. Authors on connectivity hardly mention connectivity as a tool or subject of poverty eradication. The reason for this might be the system- or machine-centric context in which connectivity or cell phone studies are rooted. As van Dijck (2013, 13; emphasis added) argued,

However, “making the Web social” in reality means “making sociality technical.” Sociality [or connectedness] coded by technology renders people’s activities formal, *manageable, and manipulable*, enabling platforms to engineer the sociality knowledge of people’s everyday routines. . . . And yet connectedness is often invoked as the pretense for generating connectivity, even now that data generation has become a primary objective rather than a by-product of online sociality.

As is pointed out in the above observation, connectivity is commodified by interested companies. The struggles of the world’s poorest are a far cry from what connectivity companies have in mind.

Connectivity Becomes Manipulative

Connectivity becomes manipulative because “we are caught in an environment when even relationships are commodified” (Pang 2015, 53). As researchers of connectivity, we cannot *hyperconnect* nor *hyperempower* the world’s poorest by shunning poverty and its atrocities. Connectivity becomes manipulative, restrictive, extractive, or possessive of persons instead of being expressive, proactive, redemptive, or creative with and among persons. The reason being, “we have to see how the actions and inactions of a great many persons together lead to this social evil [of poverty], and how a change of our priorities—our policies, our institutions, our individual and joint actions—can help to eliminate the atrocity of poverty” (Sen 2008, xiv). Referring to some of the world’s advances, the World Bank (2016b, 11; emphasis added) cautioned that

hundreds of millions of people still live on less than \$1.90 a day, the current benchmark for extreme poverty. The work is far from over, and a number of challenges remain. . . . *The economic growth that drives reductions in extreme poverty continues to disappoint, and substantial downside risks to the global economy remain.*

As remarked above, the mantra of (access to) information as the driver of economic growth has met with a variety of challenges as poverty continues to claim the lives of many among the world’s poorest. In another illustration, the World Bank (2015, 50) recently noted “huge infrastructure gaps” despite claimed global growth. Most notable here is the fact that “the gap

between rich and poor has widened in many countries” (Grabowski, Self, and Shields 2015, 3). Even most importantly, “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*” (OECD 2011, 1; emphasis added).

Speaking from a different angle about the reification of humans behind the façade of connectivity, van Dijck (2013, 13) asserted,

In the offline world, people who are “well connected” are commonly understood to be individuals whose connections are gauged by their quality and status rather than their quantity. . . . From the technological inscription of online sociality we derive that connectivity is a quantifiable value, also known as popularity principle: the more contacts you have and make, the more valuable you become, because more people think you are popular and hence want to connect with you.

It is also problematic that connectivity and research into it tend to be a thing of the elite, educated, connected, and well-off individuals. In a graphic description of the world digital connectivity, the World Bank (2016a, 6; emphasis added) noted,

The lives of the majority of the world’s people remain largely untouched by the digital revolution. Only around 15 percent can afford access to broadband internet. Mobile phones, reaching almost four-fifths of the world’s people, provide the main form of internet access in developing countries. But even then, nearly 2 billion people do not own a mobile phone, and nearly 60 percent of the world’s population has no access to the internet.

As seen in the above observation, digital revolution or connectivity has not affected the majority of the world’s populations. The reason for this might be that connectivity systems or machines lie in the hands of big corporates.

Therefore, this study espoused capability approach to advocate, not for the mere development and fetishization of new digital devices and related connectivity, but rather for people’s broader capabilities about human basic needs. The goal is to allow rural individuals to live better and fuller lives. As Sen (2009, 233) 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.

From the statement above a shift from means- or systems-oriented connectivity and cell phone adoption to that of broader capabilities of people is needed in order for rural individuals to live better and fuller lives. As Parent XXI stated, “One of those conditions is the ability of cell phones to allow for the fuller capabilities of people.” Broader capabilities signify a

fuller spectrum of opportunities or capabilities that the poor have regarding human basic needs (i.e., health, food, shelter, water, cloth, etc.). To illustrate, this fuller spectrum represents the range of actual opportunities that a person has when she loses her house, for one reason or another. The more options the person has in that situation the more the person is developed and thus empowered and connected. Connectivity without people's fuller capabilities is incomplete and destructive.

The extensive body of work done on cell phones presents cell phone users as secondary or passive in the process of design and project. For example, Chéneau-Loquay (2010, 29; emphasis added) indicated, "at the *forefront are the operators and manufacturers*, who have understood how to change the economic model, adapt their phones and applications and open up access to voice and messaging services for more people at affordable prices." As is evident from the above assertion, cell phone operators and manufacturers are placed at the forefront when it comes to the design of and research into cell phones. Recently, Steele et al. (2017, 1) used the same method, saying, "we evaluate the relative value of modeling three traditional poverty measures using aggregate data from mobile operators." Therefore, this study's aim to give voice to cell phone users has become more than urgent. At the same time, the link between cell phones and development has become more urgent than ever before given the spread of cell phones among the world's poorest. For example, May, Dutton, and Munyakazi (2014, 50) observed that "changes in economic output at the national level [of ICT uses] are not necessarily linked to changes in the well-being of individuals and households." Recently, Diga and May (2016, 5) lamented, "We are concerned that there is inadequate recognition of the role that global South based [ICT] researchers can and do play in improving the conditions of their own communities." It becomes increasingly urgent to determine what if anything cell phones are *actually* effecting or producing among the world's poorest, regardless of how the link between cell phones and the poor can be or is described.

Whole Range of Opportunities or Freedoms

This study addressed *head-on* the question of the ways in which cell phones produce development among the poor. The English word *produce* comes from the two Latin words *pro* and *ducere* (*produco, xi, ctum*) (Lewis & Short, 1879). The prefix or preposition *pro* stands for "in front of," "for the benefit of," "forth," "by virtue of," "before," "forward," "on account of," etc. The verb *ducere* (*duco, xi, ctum*) means "to bring," "lead," "conduct," etc. To produce connotes "to bring along," "to bring forth," "to bring forward," "to bring into the world," "to bear," "to beget," "to lead," "to advance," etc. In this study, the extent to which cell phones are measured to bring development into the world is with the idea of capabilities, taken from the capability approach (Sen 1999, 2008, 2012, 2013). In other words, the big-

ger the spectrum of capabilities that individuals have or enjoy surrounding human basic needs (e.g., shelter, food, health, cloth, and water) the more developed these individuals are. As Sen (2013, 11; emphasis added) elaborated, “The understanding of development can be fruitfully seen in this perspective; that is, through understanding the process of development as one of *enhancement of human freedom and capability*.” The point of capability approach is that development or well-being (see terminology section above) is not so much about the things held or possessed, such as house, cell phones, cars, money, assets, etc., as it is about the capabilities available. In other words, if a person owns a house, capabilities represent the whole range of opportunities or freedoms that the person has in case the house is lost or burnt.

In detail, Sen (1999, 36) propounded,

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.

So development is measured not in proportion to the things held, but to the extent of the capabilities that a person has *vis-à-vis* human basic needs. Thus, this paper proposed to move beyond the implementations of outcomes and their measurements to drill deeper into human sufferings or experiences. The paper did so by suggesting a passage or “a change from *means-oriented evaluative approaches*” (Sen 2009, 233; emphasis added) of cell phones possessed or connections held to that of fuller, better human actualization or “realization-focused view” (Sen 2012, 105) about humans and their societies. The goal is to assess or measure the extent of broader capabilities that people have in order to be able to live fuller and better lives. With this approach toward measurement, the paper advocated the idea that the more capabilities people enjoy in relation to human basic needs the more able people are to experience fuller and better human actualization or to live fuller and better lives. The approach is true also of connectivity; the fuller actualization or broader capabilities that connectivity achieves the less manipulative, commodifying, or oppressive is connectivity.

LIMITATIONS

Three main limitations were found to affect the present study. First, this study corresponds to an abridged version of a doctoral dissertation. One consequence might well be that significant portions needed for a better understanding of one or another detail might have been weeded out. Second, connectivity is still a nascent topic of research. Therefore, more studies have yet to be conducted in order to gain firmer and crisper knowledge

of the factors at hand. Third, the lack of basic infrastructure in rural areas prevents many researchers from undertaking solid inquiry into digital connectivity viewed or experienced by rural individuals. However, despite these limitations, the study raised awareness about some of the most pressing challenges of research done on connected societies and cell phones.

CONCLUSION

This study focused on cell phone effects among rural populations in order to peer into ways in which development, empowerment, and connectivity were achieved. While some benefits of cell phones were noted in the literature, a number of shortcomings surfaced such as the commodification of profit as well as the reification of humans and their connected societies under the guise of new digital technologies. It was thus found that connectivity was an elite-based, technology-centric, and poverty-insensitive phenomenon. It was also found that reified humans cannot become hyperconnected or hyperempowered. Using capability approach and giving voice to rural populations were key to the understanding of broader capabilities as a platform for people to live better and fuller lives in a digitally connected world.

NOTE

1. This call for papers is no longer available on the *Library Trends* website; however, it is currently available at <http://blogs.simmons.edu/slis/jobline/2016/02/call-for-papers-hyper-connected-societies-and-empowerment.html>.

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