Case studies

An empirical study on the effects of mobile telephony usage on livelihoods in Brong Ahafo region of Ghana

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Meaningful use of mobile telephony can enhance human development and capabilities thereby empowering people to lead lives they value. They are enabling technologies to deliver human-centred development. This article explores the effects of mobile phone use on livelihoods of users in eight districts in Brong Ahafo region of Ghana. A mixed method approach was employed and qualitative research was used as a dominant paradigm. Interview questionnaires, focus group discussions and observation were used. The study showed that mobile phone ownership was high and their uses were characterised by greater uniformity across socio-economic groups and gender. Mobile phones enhanced traditional structures, facilitated business links, and face-to-face interactions as well as strengthening community ties. Users acknowledged the impact of mobile phones in their ability to

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deal with family emergencies. Poor network connectivity and power outages were major obstacles to mobile phone usage. The study makes original contributions to the knowledge of practical relevance in the ICT4D field as well as with respect to these under-researched Ghanaian regions and provides evidence for policy formulation to improve quality of services in Ghana and elsewhere. The participatory Field Research also provided space for in-depth engagement with local people to understand the technology in social and development contexts.

Introduction

We are living in an era where information and communication technologies (ICTs) are increasingly part of everyday life. Particularly, mobile telephony is widely acknowledged as an important resource for socio-economic development. Its meaningful use can enhance human development and capabilities by making people lead lives they value (Sen, 1999). This is particularly so against the backdrop of the global economy which is extremely driven by the 'information age'. The UN 2030 Agenda for Sustainable Development also recognizes the great potential of ICTs and calls for significantly increased access to ICTs, which play a crucial role in supporting the implementation of all the sustainable development goals (ITU, 2015). Technology affects lives. For those who have gained access to mobile phones and the internet over the last decades, these technologies have played a key role in changing the way they live (Kleine, 2013).

Based on the literature reviewed and informed intuition, the following research question guided this study: What are the effects of mobile phone use on social, financial and human capitals and livelihoods in eight political and administrative districts in Brong Ahafo region of Ghana? The study aim is to inform policy.

The study results provide deeper understanding of the subject area, based on empirical evidence. This research makes an original contribution to ICT4D (mobile phone) debates on the effects of mobile phone use on socio-economic development to policy-makers, researchers, academicians and practitioners in the field of ICT for development particularly in Ghana and also elsewhere.

Related literature

In recent years, mobile telephony has emerged as the fastest-growing communication technology ever. However, the rate of adoption varies according to geographic region and country. The variations in adoption rates include socio-cultural, governmental, economic, industry, and policy-related factors (Castells *et al*, 2007). For example, in Africa, the first mobile phone call was made only in 1987, yet the World Bank's 2012–13 Africa Development Indicators report suggests that more than 80% of urban people in Africa now have access to cell phones (Porter, 2015). The rapid adoption of mobile telephony has generated a great deal of speculation and optimism regarding its effect on socio-economic development, in Africa in particular. For example, policymakers,

newspapers, and mobile phone companies have all touted the poverty-eradicating potential of mobile phones (Corbett, 2008, cited in Aker & Mbiti, 2010). At the Connect Africa Summit in 2007, Paul Kagame, President of Rwanda, posited: 'In 10 short years, what was once an object of luxury and privilege, the mobile phone, has become a basic necessity in Africa' (Connect Africa Summit, 2007). Castells *et al* (2007) further postulate that mobile telephone has become more economically viable than landline services in many poorer countries, which contributes to its relatively rapid rate of adoption in some areas. In a short period of time, mobile telephony has become a dominant technology carving for itself a sphere of influence in technical, commercial, and social domains.

Duncombe (2012) identified a research gap that concerns how the mobile phone compares with other technologies as a means to deliver information-based services. He further postulates that evidence from project-based evaluations suggests that mobile phones can be used effectively as part of a mix of technologies, but there is lack of detailed research into areas of convergence. According to Porter (2015), mobile phones present new forms of sociality and new possibilities of encounter for young people across the globe: nowhere is this more evident than in sub-Saharan Africa, where landline telephone lines are few and mostly restricted to privileged elders. The scale of mobile phone usage among young people in sub-Saharan Africa today is remarkable even within the very poor. Obviously, this critical communication technology has changed the mind-sets of people about communication, co-ordination and safety and it has changed the way people behave in public spheres.

The effects of mobile phones were investigated due to the fact that in recent years there has been a tremendous growth of mobile phone accessibility and, in most cases; mobile phones are considered important ICTs in rural areas (Hancock, 2005). Phone contact in Africa is now commonly perceived not merely as a significant conduit for business interactions but, above all, as key to the everyday maintenance of social networks so essential for protecting and supporting individuals and families in times of stress (Porter, 2016).

In most parts of the world, landlines are losing their currency as a result of the exponential growth in the adoption of mobile telephony, due to its ease of use and its relative low acquisition cost (Castells et al, 2007). In developing countries where landline expansion was restricted to capital cities, the mobile phone became an obvious choice for communication and thence the accompanying peripheral benefits. For example, the highest growth rates worldwide are on the continent of Africa (GSMA, 2014). But this growth is unevenly distributed, with greater access in more developed countries such as South Africa and populated urban areas, a trend that is evident in other parts of the world as well. Kalba (2007) reported that, from a base of 10,000 landline phones in 2000, the Democratic Republic of Congo gained nearly three million mobile phone subscribers by 2005; Nigeria started with about a million landline phones but picked up 19 million mobile ones; Angola, Ghana, Kenya, Mali, Mauritania, Morocco, Tanzania and Uganda have made impressive development. Mobile phones have brought about a revolution in Africa.

Mobile phones are rapidly changing the face of Africa. A growing literature shows how these technologies are reshaping the way business is done, the way social networks are built and maintained, and even the conduct of romantic courtship (Porter, 2015). This is particularly so against the backdrop of the global economy which is driven by the 'information age'. IT is viewed as having the potential, if used properly, to leapfrog the development process from one stage to another (Laguerre, 2013). In the view of Gollakota et al (2012), there is considerable hope that ICT has the potential, under certain conditions, to facilitate improvement in the livelihoods of people in marginalised communities in the global South. For instance, the technology has been applied in diverse new forms to benefit users and service providers. Prominent amongst these users has been its capacity as a financial inclusion tool (mobile money) to the unbanked mostly in developing countries (ITU, 2013). In developing countries where the reach of formal banking is limited, mobile money has become an alternative to financial services (Donavan, 2012; Scharwatt et al, 2015). The developing countries, nevertheless, face huge challenges in their ability to utilize these resources for their growth and development agenda even though there is a measure of progress (ITU, 2012). There are also limitations, which range from infrastructural constraints to an individual's ability to convert access to ICTs into tangible benefits in light of other environmental constraints both physical and socio-cultural. As Castells puts it, lack of access to ICTs represents both cause and effect of social marginalization (Castells, 1999). Mobile telephony has been one of the fastest growing technologies in the world, with mobile networks roughly doubling in size every two years since 2002 (World Bank, 2012:115). In fact, by 2011, around 90 economies across the world had mobile penetration rates of up to 100% (World Bank). However, despite the apparent ubiquity of mobile phones, there is a still significant gender gap in access to these technologies.

The Global Study on the Mobile Phone Gender Gap in Low-and Middle-Income Countries, led by GMSA (2010) clearly indicates a significant difference in mobile phone ownership between men and women: a woman is 21% less likely to own a mobile phone than a man. This figure increases to 23% if she lives in Africa, 24% if she lives in the Middle East, and 37% if she lives in South Asia (GSMA, 2010). In the developing world, there are 300 million fewer female mobile phone subscribers than male (GSMA). The study also indicated that household income, geographic location, age, occupation and level of education play a key role in determining whether a woman is able to own a mobile phone in low and middle-income countries (GSMA, 2010:8). At the same time, mobile phones are still the most accessible modern communications technology and therefore offer a crucial opportunity to bridge the digital divide (World Bank, 2012) and by extension, the gender digital divide.

Research methods and techniques

This research used primary and secondary data sources of information. Primary data were collected using interview questionnaires, focus group discussions and observation. Secondary data were gathered by the review of related literature. The review consisted of journal articles, books, policy documents and reports from organisations dealing with mobile phones. We also administered interview questionnaires to users of mobile

phones in the study locations. We carried out focus group discussions with users of mobile phones from the districts and communities shown in Table 1 below.

Table 1: Size and number of focus groups in Brong Ahafo region

REGION		FOCUS GROUP		
Brong Ahafo	**District**	**Communities**	**Size**	**Age Range**
Brong Ahafo	Asutifi South	Acherensua	13	19-60
Brong Ahafo	Sunyani West	Chiraa	11	21-38
Brong Ahafo	Tano North	Bechem	7	18-45
Brong Ahafo	Techiman	Techiman	9	19-40
Brong Ahafo	Wenchi	Wenchi	11	21-55

Source: Fieldwork, 2014

Cameron (2005) cited in Courtney and Antoinette (2016) posits that focus group discussions are useful for identifying disagreements or controversy about a particular issue. They are also a way of triangulating or confirming data collected using other methods. Critical observation of the issues relevant to the study were made in the surrounding communities. Qualitative data derived from the interviews and focus group discussions were analysed using Nvivo, whereas quantitative data were analysed using SPSS. Data presentation involved using graphs, tables and narrations. Purposive sampling procedures were used to select users for inclusion. Sampling entailed selection of the respondents from a large population of users in the communities. The research locations were of particular interest in the study. Eight districts in the region constituted the sample, as shown in Table 2. Respondents comprised users of mobile phones in the study locations.

Table 2: The study locations

REGION	**DISTRICT**	**LOCATION**
Brong Ahafo	Nkoranza South	Nkoranza
Brong Ahafo	Sunyani West	Nsoatre
Brong Ahafo	Tano North	Duayaw Nkwanta
Brong Ahafo	Tano South	Bechem
Brong Ahafo	Techiman Municipal	Techiman
Brong Ahafo	Wenchi Municipal	Wenchi
Brong Ahafo	Sunyani Municipal	Chiraa
Brong Ahafo	Asunafo South	Acherensua

Source: Field Research, May 2014

Methods of data collection and analysis

To explore the effects of mobile phone use, a three-month study was conducted from March to May in 2014 in eight political and administrative districts in Brong Ahafo region (see Table 2 above). The study locations were chosen purposively by the researchers. Data for this study were collected using interviews questionnaires, focus group discussions and observation techniques. The application of more than one instrument in data collection is vital to provide checks and balances with regard to shortfalls inherent in each of the data collection instruments (Creswell, 2014). Using mixed methods maximises the quality and diversity of information to be obtained from sampled informants (Creswell, 2014).

The study consisted of six categories of units of analysis such as self-employed (informal sector), employed part-time, employed full time (formal sector), and unemployed not looking for job, retired people and students. The questions for respondents ranged from access, affordability and use of mobile phones, ownership and number of mobile phones possessed and how their investments in the use of mobile phones had been helpful for economic, social and human activities. Barriers to the use of mobile phones and the importantance of mobile phones in emergency situations were also explored.

Data analysis involved a number of closely related operations, performed with the objective of summarising the collected data and organising them in ways that they answer the research questions. The operations include editing, coding, classifying and tabulating. It also entailed categorising, ordering, manipulating and summarising data, to find answers to the research questions (Peil, 1982).

The Statistical Package for Social Science (SPSS) was used to code and analyse quantitative data from the interview questionnaires with users of mobile phones that came from the set of closed-ended questions. Before the actual analysis, data were cleaned, edited, checked for consistency and coded. These processes were essential to ensure that data collected were systematically organised in a way that facilitated analysis (Kothari, 2004; Mugenda & Mugenda, 2003:115). Data editing and cleaning were strongly followed by data coding. Data coding transforms raw data into symbols that can be tabulated and counted. The data was converted to numerical codes representing attributes or measurements of variables (Mugenda & Mugenda, 2003:116).

The data from the focus group discussions were analysed using Nvivo software. They were conducted on premises suitable for discussions and moderated by the lead researcher. Research assistants took notes during the discussions. The Nvivo software was used for coding, analysing and interpreting the focus group data. All discussions were recorded digitally, and group photographs were taken with permissions from group members. An Nvivo project was created in the Nvivo software where all the transcribed data, observations and ideas were stored and later linked together. The transcribed data documents on the Nvivo project, as well as the original recordings, were reviewed several times and comments made by the respondents were compared until themes materialized.

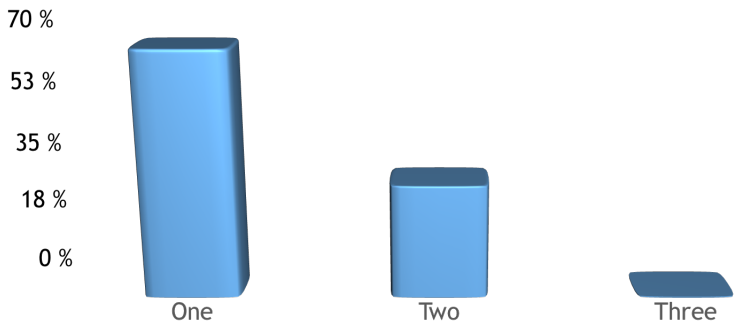
The themes and all the information pertinent to answering the research questions were used to create Nvivo nodes. Creation of nodes is an important step in the analysis of qualitative data using the Nvivo software. Nodes are created to summarise, reduce and simplify the data. In Nvivo, a node is defined as a container for categories and coding of the data. Nvivo nodes can represent themes, concepts, processes, people, abstract ideas, places or any other categories in the project. Nodes are, therefore, the route by which coding is undertaken.

Our 'positionality' as Ghanaians in terms of race, gender, economic status, employment, ethnic orientation/background and sexuality were extremely adhered to and as a result it minimized influence on the data collected. According to Apentiik & Parpart (2006: 37), the lifestyle, attitude and behaviour that the researcher adopts in the field can influence the researched community's reactions to him or her. We constantly considered the ethics of the research process and how to deal with our participants. Our reflection on the research ethics were on a continual basis to ensure an appropriate balance in our relations with the research participants to minimize influence on the data collected.

Results and discussion

The mobile phone ownership was quite high in all the districts visited (see Figure 1). This could be explained by the characteristics of the respondents; most were young and economically active and more likely to own and use mobile phones due to their prominence and significance to their diverse needs. This situation sturdily affirms a study by Porter (2015) that competition between network providers has often been instrumental in bringing down call costs, encouraging regular phone communication among even the very poor.

Figure 1: Number of phones owned by respondents
Source: Fieldwork, 2014



Source: Fieldwork, 2014

However, some have access to mobile phones through borrowing from friends and other sharing means among friends, colleagues and family members. Figure 1 show that in all the districts researched, 67% respondents own one mobile phone while 0.3% of respondents owned three. It was also observed that low network coverage remained the most serious challenges to the users. The quality of mobile phone service in these districts was compromised as some network operators had not extended telecommunications masks to some remote locations to boost quality of service.

Table 3 shows the distribution of respondents by districts and gender at the research sites in the Brong Ahafo region. Since a non-probability sampling technique was used to select respondents, efforts were made to include both sexes. The number of women who used mobile phones was lower than males in all eight districts.

Table 3: Distribution of respondents by district and gender in mobile phone use

Region	**District**	**Gender**					
		Male (n=)	(%)	Female (n=)	(%)	Total (n=)	(%)
Brong Ahafo	Asutifi South	15	57	11	42	26	14
Brong Ahafo	Nkoranza South	19	70	8	29	27	14
Brong Ahafo	Sunyani West	14	66	7	33	21	11
Brong Ahafo	Sunyani-West	22	84	4	15	26	14
Brong Ahafo	Tano North	13	92	1	7	14	7
Brong Ahafo	Tano South	24	80	6	20	30	16
Brong Ahafo	Techiman Municipal	18	24	1	5	19	10
Brong Ahafo	Wenchi	16	76	5	23	21	11
	Total	141	76	43	23	184	30

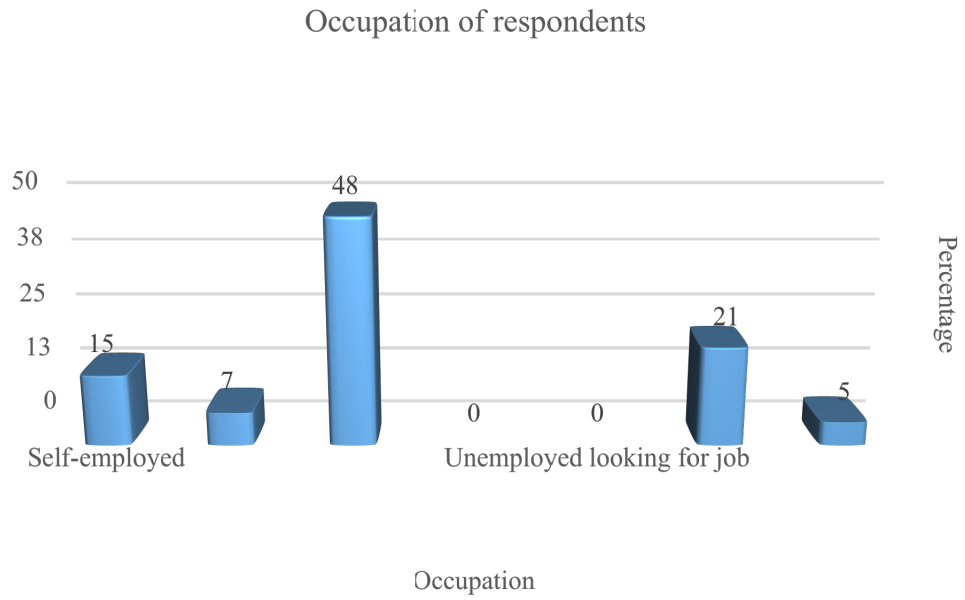
Source: Fieldwork, 2014

Some reasons attributed to women's exclusion were cultural influences, lack of skills, illiteracy, poverty, lack of time and male-dominated corporate control. Roman & Colle (2002) posited that hundreds of thousands of women all over the world might be shut out of the information society because of their literacy level and gender-related issues. This sturdily affirms our study as observed and narrated in relation to gender in some rural communities. In using her mobile phone to run her petty trading business (snail business), a petty trader in one of the researched communities had in mind not to break any norms about female economic independence. Due to this, she was divorced and not re-married: Some women traders in researched communities attested that they had to choose between their marriage and their economic advancement, since their husbands could not cope with their increasing economic empowerment and social independence.

Respondents were asked what they do for living. Various economic activities were mentioned. These activities were grouped into six categories, based on how related the activities were, with the sole aim of coding and streamlining the data. The categories were: self-employed, employed part-time, employed full-time, unemployed not looking for job, retired people and students. Figure 2 shows that 48% of respondents were employed full-time while 15% were self-employed, working in the informal sector. Seven percent of respondents in the districts under study were employed part-time. This confirms an assertion by an officer at UNDP Ghana office on August 13, 2014:

"*The use of ICTs is an enabler for socio-economic development; more especially mobile phones have facilitated the penetration of ICTs in most communities, to the extent that in the very remotest village, cell phones can be used. ICTs (mobile phones now facilitate businesses) with a single call information can be shared across.*"

Figure 2: Occupation of respondents



Source: Fieldwork, 2014

The above assertion supports a study by Mandoga, Matswetu and Misheck (2013) in Zimbabwe highlighting the Millennium Development Goals set by the UN in 2000, which stressed the importance of ICTs in the global development agenda. The UN 2030 Agenda for Sustainable Development also recognizes the great potential of ICTs and calls for significantly increased access to ICTs, which will play a crucial role in supporting the implementation of all the sustainable development goals (ITU, 2015). Our research findings further showed that there was not much gender difference in access and use of mobile phones in the researched communities.

A police woman and mobile phone user in Wenchi interviewed in July 2014 posited:

'*People at all levels of socio- economic ladder of this community irrespective of gender were able to access mobile services'.*

Our results concur with Coyle (2005) and Sinha (2005), who posited that people at all income levels are able to access mobile services, either through owning or sharing. This also validates a study by Porter (2016) that found sharing phones among family, friends, and neighbours reduces capital expenditure in very poor households, but for many, especially youth, the phone and its associated running costs are a priority, sometimes even above food. Gender, age and education do not seem to create obstacles to access.

With regards to mobile phones and financial capital, business people in the research locations used the mobile phones to communicate with suppliers and customers. The phones helped them to check the availability of supplies before travelling; without the phones they would have to travel more frequently, the cost of doing business would increase and they might lose customers. A study by Porter et al (2012) firmly endorses how mobile phones facilitate travel. Her findings show that mobile phones are extremely valuable, especially where key contacts are located at a distance and travel costs and hazards (such as high traffic accident rates and check points where bribes have to be paid) inhibit frequent visits. For farmers and traders in agro-business fields, the phones were used to enquire about the prices of their products in different markets, e.g. farmers of perishable agricultural products posited that they usually communicated with customers when their produce were ready and they could not stay in business without a phone.

Respondents acknowledged the beneficial impact of the mobile phone in the ability to deal with family emergencies. This was mainly associated with health issues, injury and death of close relatives. They indicated that in cases of emergencies, they were able to call other relatives who were living far away for help and financial assistance. Mobile phones enhanced traditional structures, facilitated business links and face-to-face interactions and strengthened community ties. The cultural influence was evident in the use of mobile phones.

People tended to make calls instead of texting. Although other factors, like literacy, accounted for that, it was critically observed that even the youths and well-educated people who could read and write often felt more comfortable talking to people than texting. Texting was viewed as an impersonal way to communicate. Some indicated that they knew how to text and they had sufficient credits to do so but they preferred to call people and hear their voice, instead of using text.

One person opined:

> *'A relative who was a military officer had died and as soon as the picture of the deceased was discovered on the internet, I used my mobile phone to inform other family members and friends from far and near and I think that mobile phone is helping us in times of emergencies'.*

Similar results were reported by Souter et al (2005), where a mobile phone was reported as the most important channel for emergency information and communication between family members. The mobile phone helped respondents to overcome remoteness and access social capital, even from relatives living far away. They also pointed out that much of the vulnerability that people face came from lack of knowledge or information. However, information provided by mobile phones might not mitigate all the vulnerabilities that communities face.

A female drinking bar operator postulated:

> '*I cannot count the number of years I have used mobile phone ... the benefits derived from using mobile phone is enormous. I use it to organise social events*

> *in my bar, interact with my customers and to place business orders from my suppliers'.*

This revealed that mobile phone access is highly valued by all. This is especially the case for its potential role in business and social communications and in dealing with emergency situations (Frost & Sullivan, 2006). Bjärhov and Weidman (2007) cited by Angoitia (2009) shows that, for low-income sectors, the ability to communicate is of prime importance, and that in many cases, mobile phones have turned out to be the only or the best option; it is considered a necessary and an inelastic good. Mobile phones are even more valuable because of new services such as mobile banking and money transfer services.

In terms of human capital, respondents were asked to indicate how their investments in mobile phones had been helpful in knowledge acquisition and how lack of access to mobile phones would affect their knowledge acquisition. About 64% were excited about knowing how to use the different functions in the mobile phones. They disclosed that they saw mobile phones as micro-computers, and it was easy for them to learn later how to use computers because the principles were almost the same.

In terms of social capital, respondents were asked to indicate how their investments in the use of the mobile phones had been helpful in social communication. They were asked to indicate how lack of access to mobile phones would affect them socially if they were unable to access mobile phones. Most respondents (81%) said that mobile phones had helped them to stay in touch with their friends and families in Ghana and abroad to have fast and easy communication. Focus group discussion (FGD) participants also pointed out that, without the mobile phones, they would have to travel to different places to see relatives, even about very small things which could otherwise be communicated over the phone. Consequently, without the phone it would cost them heavily in terms of travelling. Besides, much time and energy would be wasted during travelling. The FGD participants were asked to specify the effects that the use of mobile phones had on social capital. In all the five FGDs regardless of age, gender and location, participants underscored the fact that access to mobile phones had indeed enhanced their social networks and had boosted their social capital. At Acherensua, access to a mobile phone had helped one respondent to travel from Acherensua in Brong Ahafo region to Accra in the greater Accra region. He did not know the place but he conversed with a relative who gave him directions. He said:

> *'Without a mobile phone, I would not have been able to travel to Accra' (X, male, 30, artisan).*

In Techiman, a participant opined that the use of mobile phones has increased the integration between people living in distant places and has improved the social capital between the two groups (Y, female, 26, university student). At Chiraa, a participant also said 'through the use of WhatsApp application on my mobile phone, I have been in touch with my old school friends and receives updates about my school (Z, male, 28, teacher).

Five focus groups were conducted because of financial and time constraints. Table 3 shows the size and number of focus groups in the Brong Ahafo region. Both males and females were combined to solicit divergent opinions. The ages ranged between 19 and 60. Participants were drawn from various backgrounds ranging from students, professionals and civil servants to artisans, farmers as well as traders. Group size ranged from seven to 13 people.

Table 4: Size and number of focus groups in Brong Ahafo region

District	Communities	Size	Age Range
Asutifi South	Acherensua	13	19-60
Sunyani West	Chiraa	11	21-38
Tano North	Bechem	7	18-45
Techiman	Techiman	9	19-40
Wenchi	Wenchi	11	21-55

Source: Fieldwork 2014

Regarding mobile phones and vulnerability, respondents acknowledged the beneficial impact of mobile phones on the ability to deal with family emergencies such as health issues, injury and death of close relatives. Mobile phones were found to be beneficial in calling for help in cases of emergency. Mobile phones were used to call for a taxi in the event that someone became sick and needed to be taken to the hospital. This is something that, in some years back, people living in rural area could not do. The phones helped people to be less vulnerable to family emergencies and shocks. Mobile phones provided them with an opportunity to get help from places beyond their immediate community. Friends and relatives in distant places could respond and offer help where needed.

Conclusion

The conclusion attempts to link the research findings with the larger issues of the use of mobile phones and their effects on livelihoods. The use of mobile phones was characterised by greater uniformity across socio-economic groups and gender in the research communities in Brong Ahafo region and gender was not an obstruction to access to mobile phones.

The result indicates that the mobile phone is the kind of ICT more driven by pull from the demand side than push from the supply side. This is the reason why the adoption of this technology has been so successful within a small span of time, even in the rural areas. The success of mobile phones is mainly due to the demand side pulling rather than the supply side pushing.

On the issue of a mobile phone service, the study concludes that, in spite of the significant improvements that have been made in terms of providing access to mobile phone services, this service is not evenly available in rural areas. Results also show that

physical access to mobile phones was high through individual ownership. However, sufficient conditions for mobile use were lacking in terms of service quality of mobile phone networks. The findings also indicate that mobile phones contribute to: improving livelihoods by expanding and strengthening social networks; increasing people's ability to deal with emergencies; cutting down travel costs and strengthening the efficiency of business and social activities. Walsham (2001) cited in Zheng (2005) poses the following question: Are we making a better world with IT? (in his book *Making a World of Difference*: *IT in a Global Context)*. By "better", according to Zheng (2005), Walsham does not mean purely in economic terms, but related to a "broader global agenda of social or spiritual welfare". For Walsham, there is no simple answer, and we have to make our judgments on a case by case basis, in our own terms, with the broad agenda of trying to improve the world. Whatever the answers are, there is no doubt for an increasing need for reflection and action on the part of individuals, groups and societies in the new "Information Age" (Walsham: 237). This study might not offer the last word on my research question; nevertheless, it makes one step in the direction of achieving a better understanding, or the ability to make a better decision, about mobile phones, sustainable livelihoods and development in Ghanaian context. Though our research concentrated on eight districts in one region, the implications of the study are of great value to other contexts as well.

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